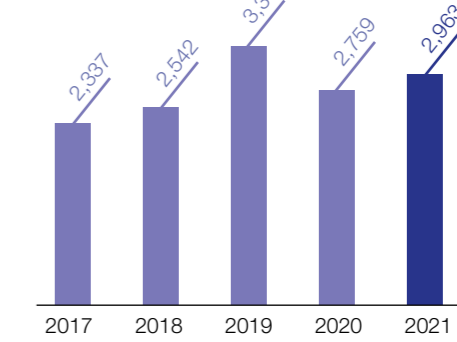


ACTIVITY REPORT 2021

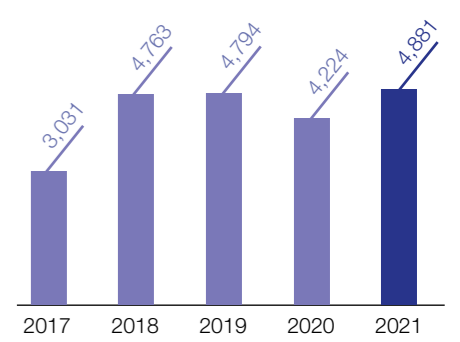


BESIX in 2021

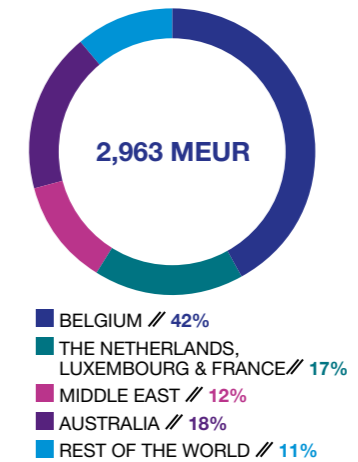
EVOLUTION OF REVENUES
(IN MEUR)



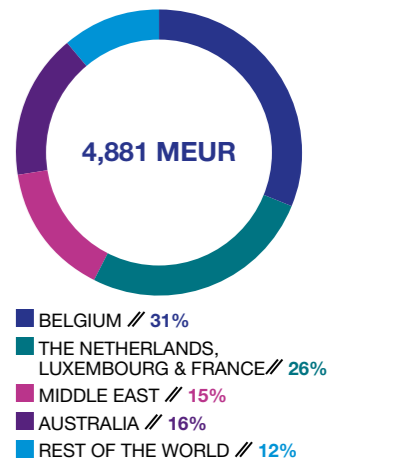
EVOLUTION OF ORDER BOOK
(IN MEUR)



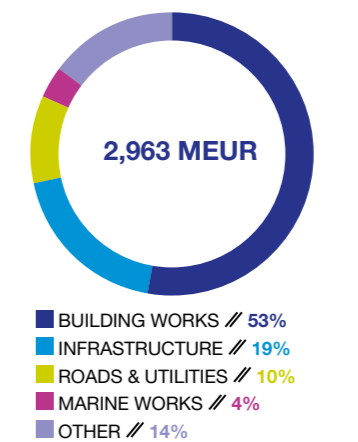
REVENUES BY REGION
(2021)



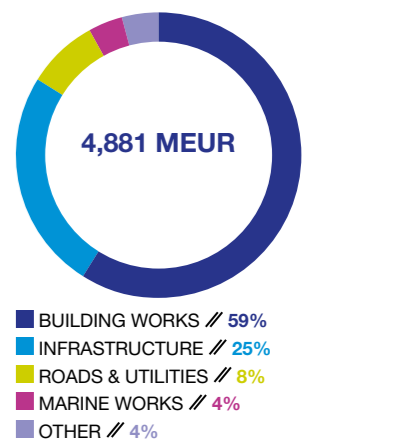
ORDER BOOK BY REGION
(AT 31/12/2021)



REVENUES BY AREA OF ACTIVITY (2021)



ORDER BOOK BY AREA OF ACTIVITY (AT 31/12/2021)



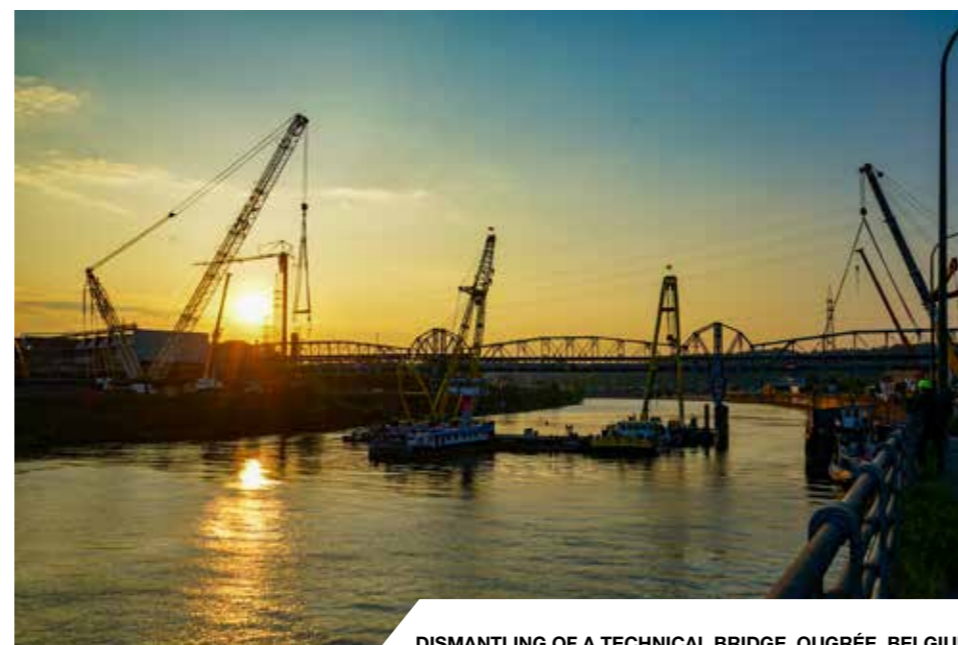


DRINKING WATER PRODUCTION PLANT,
LA MÈ, IVORY COAST

Consolidated Key Figures 2021

(in MEUR)	2021	2020	2019	2018	2017
Revenues	2,963	2,759	3,332	2,542	2,337
Adjusted EBITDA	130	75	123	151	149
Net income	27	-10	42	96	103
Adjusted EBITDA margin	4.4%	2.7%	3.7%	5.9%	6.4%
Operating profit margin	1.4%	0.0%	1.4%	4.1%	4.5%
Total assets	3,222	2,83	2,888	2,683	2,362
Total equity	686	625	701	696	663
Net cash position	64.9 ¹	57.5 ¹	141.0	135.7	34.1
Cash flow from operating activities	10	-49	118	98	59
Solvency ratio	21.2%	22.0%	24.2%	25.9%	28.0%
Order book	4,881	4,224	4,794	4,763	3,031

1. Excluding IFRS16 and PPPS non-recourse financing.



DISMANTLING OF A TECHNICAL BRIDGE, OUGRÉE, BELGIUM

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110 years of global expertise

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BESIX AT A GLANCE



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Company profile

A GLOBAL MULTIDISCIPLINARY PLAYER, WITH 110+ YEARS OF EXPERIENCE

BESIX Group is a leading Belgian industrial group operating in the **construction, real estate development and concessions sectors**. Founded in 1909, it has grown steadily over the years. As a global multi-service group, BESIX is able to take on projects of all sizes and complexity, and draws its strength from its entrepreneurial roots.

NV BESIX SA, its largest subsidiary, offers services in the different stages of construction projects, with branches in Europe, Africa, Asia and North America. BESIX Group subsidiaries also include Six Construct in the Middle East, BESIX Watpac in Australia, as well as regional and specialist contractors in the Benelux including Jacques Delens, Vanhout, Lux TP, Wust, Socogetra, Franki Foundations, BESIX Infra and BESIX Unitec (formerly known as Van den Berg).

The Group stands out by having its **in-house Engineering department**, a distinctive feature in the industry, which is home to state-of-the-art expertise in structural engineering, geotechnical engineering, methods & planning, BIM, parametric design, sustainability, concrete technology, and façade. Thanks to its value engineering capabilities, BESIX is able to improve project design and adapt implementation processes so as to limit construction costs, reduce risks, increase the lifespan of projects, and optimise their functional objectives.

To reduce its risk exposure, BESIX has been diversifying its activities on a geographical and sectoral level, through organic growth, acquisitions, or shareholdings. The Group's expansion in the Middle East, where it has built an impressive portfolio over the last 60 years, and more recently in Africa and Australia, illustrates the success of this strategy. Through its many projects and initiatives, BESIX is constantly seeking to consolidate its purpose: **'To excel in creating sustainable solutions for a better world.'**

THE GROUP IN 5 KEY DATES

1909 //

Founding of the Société Belge des Bétons, (SBB), which undertakes prestigious construction projects



1966 //

Founding of subsidiary Six Construct to take charge of major projects in the Middle East



2004 //

Management buyout, SBB becomes BESIX Group



2010 //

Inauguration of the Burj Khalifa in Dubai (UAE), the world's tallest tower, built by Six Construct



2021 //

BESIX is awarded the construction of the Tour Triangle in Paris (France); this 180-metre-high tower is the 3rd high-rise building built by BESIX in Paris



KEY FIGURES 2021

BESIX GROUP IS PRESENT IN 25+ COUNTRIES ON 5 CONTINENTS



82

NATIONALITIES



11,000+

PERSONS EMPLOYED



€2.9 billion

2021 TURNOVER

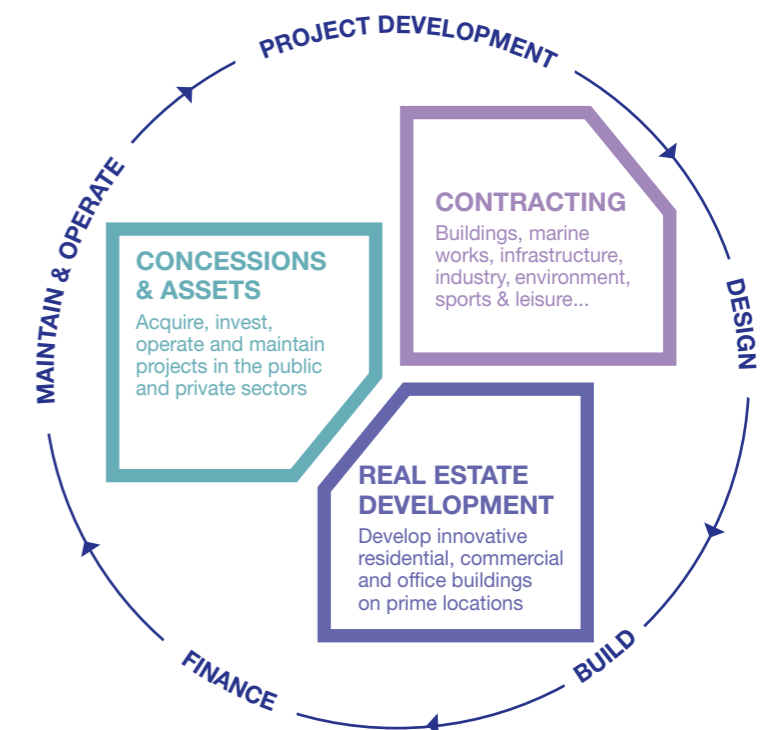


€4.8 billion

2021 ORDER BOOK

A dedicated partner, from construction to concessions

Always highly regarded as a valued construction partner, BESIX has become a full-fledged services company that operates on the whole value chain. While construction is still its core business, the Group's Concessions & Assets and Real Estate Development activities have been growing steadily. BESIX can rely on a vast and diversified expertise to take on projects from financing to design and construction to long-term maintenance.



Group Structure

OPERATING ACROSS FIVE CONTINENTS, BESIX ENCOMPASSES MANY BRANCHES AND LEGAL ENTITIES, FULLY OWNED BY THE GROUP. THERE ARE ALSO SOME COMPANIES IN WHICH BESIX OWNS A MINORITY OR MAJORITY STAKE.

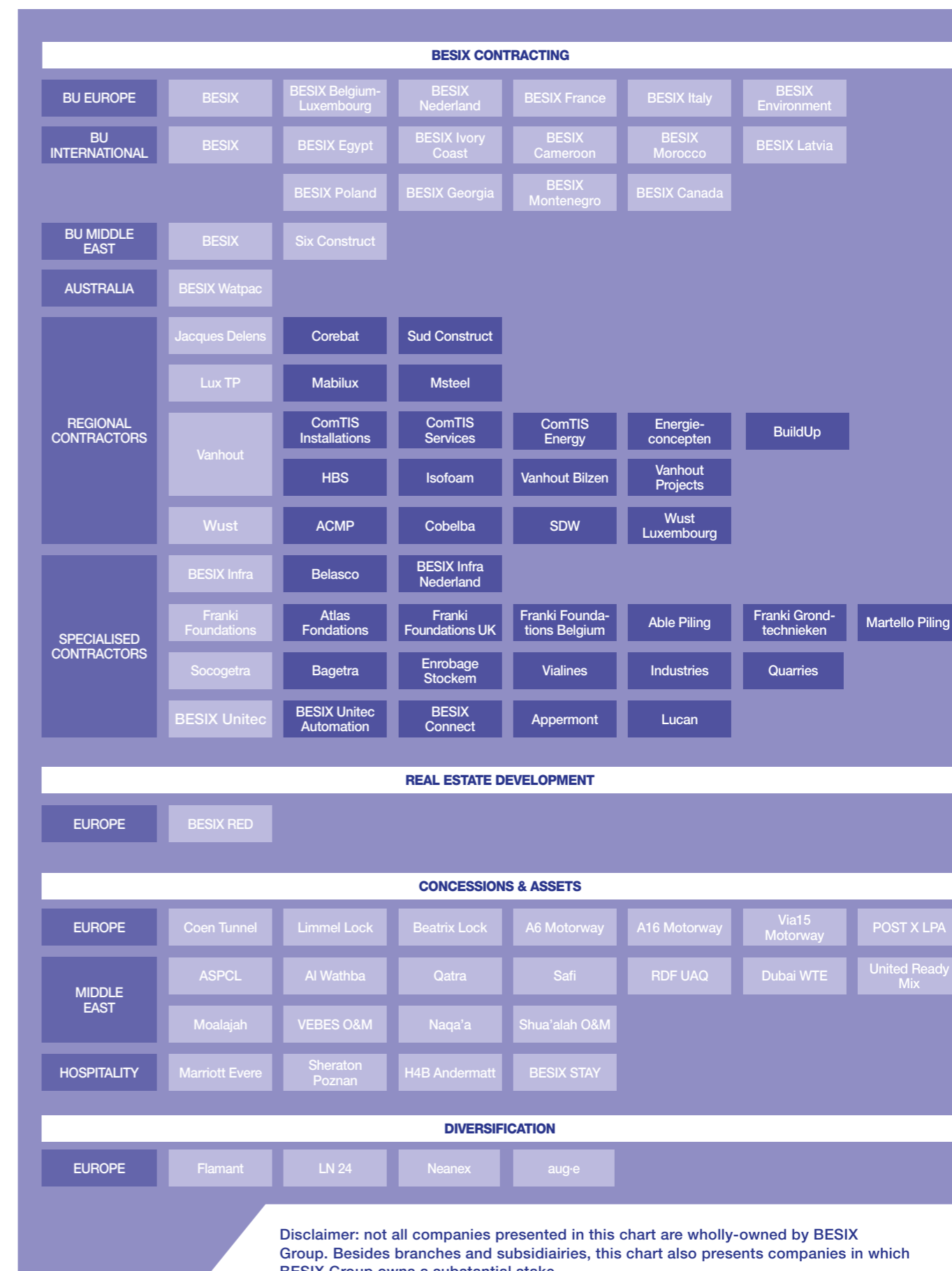
/// BESIX's branches were created as the Group diversified geographically. In most cases, the BESIX name goes in front of the country in which they are established. For example, BESIX Egypt is a branch integrated into the 'Business Unit (BU) International', just as BESIX Nederland and BESIX France belong to the 'BU Europe'.

/// Most of the legal entities are companies acquired by BESIX over the last few decades. They are the result of vertical integration and sectoral or geographic diversification. Although they are fully owned by BESIX, many of them have kept their original name or a direct reference to it. For example BESIX Watpac (Australia), Lux TP (Luxembourg) or Martello Piling (United Kingdom). Besides commercial considerations – vital for companies whose brand embodies their specific expertise – this reflects the policy of controlled autonomy embedded within the Group.

Not all BESIX companies necessarily fall within these two categories.

/// Some companies were created by the Group itself: for example Six Construct, founded in 1966 to develop the Group's activities in the Middle East, or BESIX Real Estate Development established in 1988, to further the Group's real estate development business.

/// Companies in which BESIX owns a stake also retain their identity. This applies to Flamant, for example.



Message

FROM THE DEPUTY CEO AND THE EXECUTIVE CHAIRMAN

Johan Beerlandt - Executive Chairman



Pierre Sironval - Deputy CEO

Dear reader,

In 2021, the pandemic, the commodities price hike and the inflationist fever have cast a long financial shadow over the entire globe. In its 113-year history, BESIX Group has weathered many storms to emerge stronger, and this period will have been no exception.

For most of our existence since 1909, we have been genuine builders. Our century-long legacy and capabilities speak for us. After all, we have built what is still today the highest tower in the world! Our strong capabilities in complex project management and execution gives us, as proud contractor, a very valid license to operate: builders we are, builders we remain.

Along the last two decades, the group evolved from this single-capability model into a multi-disciplinary organisation, and ventured into the creation of concessions and public-private partnerships in the Middle East and Europe. Our real estate development went beyond the borders of the Benelux into new countries such as Portugal and Switzerland. We acquired or created specialized contracting activities such as road works, quarries, asphalt plants, concrete production units, foundations, automation, optical fiber cabling, etc.

This journey made us the diversified group we are today, where contracting takes the lion share of our activity, and where parallel activities are enhancing positively our revenues. Going forward, we will continue to evaluate new investment opportunities.

This strategy has proven its relevance as it allowed our group to be back on track after a complicated 2020. Even if all our expectations have not been met, our results nevertheless clearly show that our contracting activities are recovering, both in the BESIX business units and in our regional and specialised entities. Our order book is solid, with some outstanding new contracts in every business line.

The difficulties we experienced in 2021 are not likely to disappear in 2022. Inflation, rising prices for building materials, disruptions to our supply chains, not to mention Covid-19, are challenges that we will have to continue to address. However, BESIX Group is perfectly equipped to face these difficulties: the key is our ability to work together and to combine and share our expertise and knowledge.

I have been pleased to work alongside Pierre Sironval and the executive team. It has been my role to guide, to support, to offer counsel, to challenge and to encourage. The years 2020-2021 have been in equal parts, challenging and rewarding and I am immensely proud of what we have achieved together.

On behalf of the Board of Directors, I would like to express my sincere thanks to Pierre and the members of the executive team for their stewardship of the group during this tumultuous period, and to reiterate the sincere confidence we have in our many employees, wherever they are in the world.

Johan Beerlandt
Executive Chairman

Dear reader,

2021 will be remembered as a year where the pandemic, again, upended everything. Wave after wave, the world has had to adapt to the 'new normal' and it had been no different for BESIX Group.

Yes, 2021 has been a year of challenges, but also of recovery. In this tumultuous year, we have supported the economic recovery in the regions where we are present, by participating in major projects, winning new contracts and delivering iconic projects. We have reached a record order book of quality projects, cementing our path back to normalized performance.

Safety for everyone is BESIX Group's number one priority. In this regard, 2021 has our best safety year in terms of the number of work-related incidents of the last decade. This achievement has been possible by the efforts and commitments of all, coupled with strict health & safety protocols. It is not that the crisis has suddenly made us more virtuous. But it has invited us to put more emphasis on shared vigilance and to pay more attention to each other.

The pandemic has also reminded us how essential it is to have a roof over our heads, hospitals for medical care, shops for supplies, road infrastructures to travel, etc. Our jobs meet these essential missions, which only makes them more meaningful. I remain impressed by all that our employees have done to contribute to this year of recovery. Although the pandemic has been hard on all of us, I am pleased to see that the 2021 engagement survey of BESIX Group employees is encouraging with 85% of our staff being satisfied to very satisfied to be with us. This is also a testament to our resilience as an organisation!

As I mentioned above, 2021 was marked by the delivery of magnificent projects, the continuation of our ongoing projects, and the recovery of projects that were experiencing difficulties. This Activity Report gives many examples which I invite you to discover. As you will read, our diversification strategy has once again proven its relevance: our private-public partnerships in water and waste in the Middle East, our infrastructure and utilities entities in Western Europe and our real estate development subsidiary have all performed very well.

With a strong balance sheet and a sound cash position, we are equipped to face the coming months and to continue to serve our clients in the best possible way. As it should, the year 2022 is again placed under the absolute objective of operational excellence.

Truth to be told, the horizon is clouded. The year 2022 has started with a war of aggression on near-European ground. As a result, commodity prices remain extremely volatile and the supply chains are stressed everywhere, exacerbating the existing inflationist trends. We will have to remain vigilant as we steer through 2022: pursuing quality projects, growing our recurring income business, and globally remaining focused on our purpose: to excel in creating sustainable solutions for a better world.

Enjoy your reading,

Pierre Sironval
Deputy CEO

Milestones 2021

JANUARY

05-01 Lantis, as client for the Oosterweel Link (Antwerp, Belgium), awards the contract for the construction of the Right Bank sub-project to the 'ROCO' joint venture, of which BESIX is part.



08-01 BESIX is ISO 45001:2018 certified. This certification, which relates to health and safety at work, covers all contracting activities in the countries where BESIX operates.

29-01 BESIX Infra acquires the road construction activities of STRABAG in the Netherlands and renames it BESIX Infra Nederland. The acquisition includes a transfer of all assets, including all real estate, the asphalt plant, equipment, employees, and ongoing projects.

FEBRUARY

11-02 For the second year in a row, BESIX Group is certified Belgian Top Employer by the Top Employers Institute.



15-02 BESIX RED delivers the public part of the Kaai District project in Aalst (Belgium), which comprises a car park for 900 cars and 700 bicycles and 1,980 m² of offices for the national railway company SNCB-NMBS.

17-02 BESIX Watpac completes the Herston Quarter building, a highly specialised Surgical, Treatment and Rehabilitation Service building in Brisbane (Australia).

MARCH

09-03 With the Schindler R.I.S.E robot, the 340-metre Dubai Uptown Tower, designed and built by BESIX Middle East, is the first supertall tower in the world to adopt robotics for lift installation (UAE).

16-03 Works start on the 318 Valfabbrica state road in Italy. The project includes two tunnels of 874 and 1,545 metres, as well as a viaduct and a bridge.

16-03 Sydney Metro awards BESIX Watpac the contract to build the stunning new Barangaroo Station in the heart of the city (Australia).

30-03 The Kōtui team, with BESIX Watpac as the lead contractor, is selected to design the new Te Kaha Stadium for Christchurch City Council in New Zealand. The 25,000-seat indoor stadium will host major sporting competitions, international concerts, and smaller local shows and events.



APRIL

13-04 The Sea Water Reserve Osmosis plant at the Jebel Ali Power Plant treats 182 million litres of drinking water per day and is starting to supply the city's water network (UAE).

22-04 BESIX Group delivers the French Pavilion for the Dubai World Expo (UAE). The building is an example of respect for the principles of bioclimatic architecture, which is reflected in the choice of materials and a global circular approach.



22-04 BESIX is awarded the POST Rotterdam contract (The Netherlands). The project includes the renovation of a historic building and the construction of a 155-metre tower, in one of the city's most dynamic and lively districts.



28-04 BESIX Group organises its annual Global Safety Time Out, dedicated to occupational cancers and mental health.



30-04 BESIX RED announces the signature of a 15-year lease agreement with Société Générale Luxembourg for the occupation of the entire ICÔNE building in Belval (Luxembourg).

MAY

05-05 Van den Berg, BESIX and ComTIS deliver a sustainable heating system to the Royal Estate of Laeken (Belgium), which will reduce its CO₂ emissions by 2,300 tons per year.



21-05 BESIX RED launches the commercialisation of the first phase of DUJO, its first ever residential development in Portugal, after successfully obtaining the architectural permit.



25-05 Pierre Sironval succeeds Rik Vandenberghe as Deputy CEO of BESIX Group.

30-05 PFO Africa awards BESIX the construction of the Palais des Congrès in Abidjan (Ivory Coast).

JUNE

03-06 BESIX Watpac celebrates the National Reconciliation Week, which honours Indigenous history and culture in Australia.



09-06 BESIX and its partner complete the renovation of the Stationspostgebouw in The Hague, the Netherlands, a listed building.

21-06 BESIX and its partners achieve the financial close of the Dubai Waste-to-Energy project, a 1.2 billion dollar public-private partnership. BESIX is involved in the design, financing, construction, and 35-year operations and maintenance of the project, which includes one of the world's largest waste-to-energy plants.



25-06 The first rotating bridge built by BESIX on the Vistula Split construction site opens to traffic. In addition, the Harbour Master Building is completed.

30-06 BESIX Group, Belgian trade unions FGBT-ABVV and CSC-ACV, and the Building and Wood Workers' International (BWI) support the recognition by the International Labour Organization (ILO) of health and safety at work as a fundamental right.

30-06 BESIX Middle East records 10 million safe man-hours without lost time injury on the 340-metre-high Dubai Uptown Tower (UAE).



JULY

01-07 BESIX Nederland delivers the Terraced Tower skyscraper in Rotterdam, a particularly impressive building in terms of engineering (The Netherlands).

02-07 'Connect Brisbane', led by BESIX Watpac, is selected to design and build the Kangaroo Point Green Bridge. The contract includes a 460-metre-long cable-stayed pedestrian bridge, one of the longest of its kind in the world.



05-07 In partnership with PFO Africa, BESIX is participating in the construction of the F Tower in Abidjan (Ivory Coast), Africa's tallest tower. BESIX is in charge of the project management, as well as the execution of the structural work.



15-07 BESIX Group subsidiary Van den Berg acquires Agidens Infra Automation, a market leader in automation, remote control, interconnection and intelligent energy management for infrastructures, including locks, movable bridges, tunnels, weirs and pumping stations.

19-07 BESIX and its BRAVO-4 consortium partners are the preferred bidder for the R4 West-East project, a Design, Build, Finance, Maintain contract for the Ghent ring road infrastructure in Belgium.

AUGUST

02-08 BESIX and its partners are starting the rehabilitation of the Huccorgne viaduct, a major motorway construction site in southern Belgium.

07-08 BESIX and Orascom Construction successfully transport the King Khufu Solar Boat from the archaeological site of the Giza pyramids to the Grand Egyptian Museum complex. Inherited from ancient Egypt, the King Khufu Solar Boat is considered to be the oldest intact ship in the world.



10-08 The two towers of MIC Construct's impressive Lusail Plaza Towers project in Doha, Qatar, are reaching their highest point.

SEPTEMBER

02-09 BESIX delivers the Quatuor project to its client Befimmo, an exceptional development of four towers totalling 60,000 m² in the heart of Brussels (Belgium).



07-09 In Riga, the construction of the first bridge of the Rail Baltica Central Station is officially launched (Latvia).



07-09 The construction of the Infinity Bridge in Shindagha, Dubai, is completed by Six Construct (UAE).



20-09 BESIX and Proximus acquire stakes in i.Leco, a technology start-up specialising in building energy management. Together, they create aug-e, a platform for smart building applications combining their respective expertise in building, ICT and energy.

23-09 BESIX organises the annual clean-up day in which the group's teams around the world participate. On this occasion, the group's 1,800 volunteers collect 15 tonnes of man-made waste.



23-09 BESIX delivers the Belgian Pavilion for the Dubai World Expo. One of the key features of the building is that it can be dismantled and reassembled identically elsewhere after the Expo.



OCTOBER

04-10 Matexi awards BESIX and Wust the construction of four buildings in the new Paradis Express eco-district in Liège (Belgium). The project comprises four buildings, in addition to the first three built by BESIX for Befimmo.

07-10 DPG Media awards BESIX the construction of Mediavaert, the new Dutch headquarters of the media company in Amsterdam. With over 44,000 m², this building will be one of the largest hybrid-timber office buildings in the world.

08-10 The two emblematic Grotius towers that BESIX and its partners are building in The Hague (The Netherlands) reach their highest point.



22-10 Six Construct, a BESIX subsidiary in the Middle-East, is awarded the Corporate Social Responsibility label by the Dubai Chamber of Commerce for the 9th consecutive time. It is the only construction company to achieve this feat.

27-10 In partnership with Trojan, Six Construct is awarded the contract for the construction of the Guggenheim Museum in Abu Dhabi (UAE). Designed by Frank Gehry, the museum will be the largest of the four Guggenheim museums in the world.



29-10 Unibail-Rodamco-Westfield awards BESIX the construction of the Tour Triangle, which will be the third tallest building in Paris (France).



NOVEMBER

15-11 The Theemswegtracé, a 4-kilometre-long railway viaduct built by BESIX in the port of Rotterdam in the Netherlands, is completed after three years of work.



18-11 BESIX Group subsidiary Vanhout acquires a 40% stake in BuildUp, a company developing innovative and sustainable solutions in the field of modular construction.



25-11 BESIX and its partners deliver the iconic new BNP Paribas Fortis headquarters in the centre of Brussels, a 100,000 m² passive building meeting the highest standards of innovation and environmental performance.



DECEMBER

01-12 BESIX RED and its partner ICN announce the acquisition of a site and the development of a new mixed-use project in Amsterdam Nieuw-West, the second project of BESIX RED in the Netherlands.

01-12 A key milestone is reached in Nachtigal (Cameroon) with the opening of a cofferdam to allow the minimum ecological flow of the Sanaga River to be diverted through the already constructed part of the dam. This new step allows construction of the rest of the dam to begin.



22-12 The construction of the fly-over on the A16 has started. The bridge deck is gradually pushed over the existing infrastructure without hindering traffic, on a length of 400 m, using the Incremental Launching Method (The Netherlands).



Corporate Governance

BESIX FOLLOWS THE BELGIAN RECOMMENDATIONS ON CORPORATE GOVERNANCE FOR UNLISTED COMPANIES ('CODE BUISSE III'). BESIX HAS STRUCTURES AND RULES IN PLACE TO ENSURE EFFECTIVE CORPORATE GOVERNANCE, RISK MANAGEMENT AND CONTROL BOTH IN EACH BESIX COMPANY AND WITHIN THE ORGANISATION AS A WHOLE. BESIX PROMOTES A SIMILAR CORPORATE APPROACH WITHIN ITS SUBSIDIARIES AND ENTITIES.

The Board of Directors, assisted by advisory committees, plays a leading role in outlining, monitoring and controlling such structures and rules and in securing the day-to-day operational and financial management of the Group and its entities by the Chief Executive Officer and the senior management.

The Board includes four external directors, whereby a balanced configuration ensures authority, expertise and independence, and the positions of Chairman and Chief Executive Officer are separated. Decisions are also taken after ample deliberation and consultation and the functioning of the Board is regularly reviewed, also in the light of the prevailing shareholders' arrangements.

A number of advisory committees are organised within the Board of Directors to prepare its deliberations and optimise its decision-making process. These committees prepare the topics discussed during the Board meetings, assess the effectiveness of the internal controls in place and formulate opinions and recommendations:

✂ The Audit Committee supervises the setup of the statutory and consolidated financial statements, the interim financial reports and the relations with the statutory auditor. It works closely with representatives of the senior management, monitors the internal control and risk management systems and the main risks associated with the activities of the Group and its entities, and operates in accordance with its charter;

✂ The Remuneration & Nominations Committee evaluates the performance of the senior management, oversees the HR policies of the Group and its entities and pays specific attention to succession management;

✂ The Strategic & Executive Committee focuses on the vision, mission and strategic objectives of the Group and oversees the business activities and performance as well as the risk management and internal control and organisation, as implemented by the Chief Executive Officer and the senior management.

Board of Directors and Committees



Johan Beerlandt



Rik Vandenberghe



Osama Bishai



Jérôme Guiraud



Ihab Mehawed



Paddy Padmanathan



Philippe Quoilin



Etienne Schneider



Wouter De Geest



Baron Philippe Vlerick

Board of Directors

Name	Position	End of term
Johan Beerlandt ¹	Chairman	2022
Rik Vandenberghe ²	Director	2023
Osama Bishai	Director	2022
Jérôme Guiraud	Director	2022
Ihab Mehawed	Director	2022
Philippe Quoilin ³	Director	2022
Wouter De Geest	Independent Director	2021
Paddy Padmanathan	Independent Director	2023
Etienne Schneider ⁴	Independent Director	2023
Baron Philippe Vlerick	Independent Director	2022
Baron Jean Stéphane ⁵	Honorary Chairman	
Ridder Luc Vandewalle	Honorary Director	

Remuneration & Nominations Committee

Johan Beerlandt¹ (Chairman)
Osama Bishai
Baron Philippe Vlerick

Audit Committee

Wouter De Geest (Chairman)
Johan Beerlandt¹
Ihab Mehawed
Etienne Schneider⁴

1. Permanent representative of Bevafin srl
2. Permanent representative of Audymatt srl
3. Permanent representative of Philippe Quoilin srl
4. Permanent representative of Beta Aquarii srl
5. Permanent representative of Innosté sa

Strategic & Executive Committee



From left to right:

- // **Jan Van Steirteghem**¹
General Manager Business Unit Europe
- // **Jean-Pol Bouharmont**
Executive Chairman BESIX Watpac
Managing Director Business Unit Middle-East
- // **Geert Aelbrecht**²
Chief People Officer
- // **Hans Beerlandt**³
Executive Director
- // **Jean Polet**
General Manager Key Projects
- // **Johan Beerlandt**⁴
Executive Chairman
- // **Tom Neyrinck**⁵
General Manager Concessions & Assets
- // **Gabriel Uzgen**⁶
Chief Executive Officer BESIX Real Estate
Development
- // **Pierre Sironval**⁷
Deputy Chief Executive Officer
- // **Mathieu Dechamps**⁸
General Manager Business Unit International

1. Permanent representative of Kyokan bv
 2. Permanent representative of Gacco bv
 3. Permanent representative of Gabeli srl
 4. Permanent representative of Bevafin srl
 5. Permanent representative of JOTM bv
 6. Permanent representative of B2B Group sa
 7. Permanent representative of Althiel srl
 8. Permanent representative of Athena International srl

02 /

CREATING THE HIGHEST VALUE FOR OUR STAKEHOLDERS



Strategy	20
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BESIX Forward:

MEETING TOMORROW'S CHALLENGES

CHANGING CONSTRUCTION MARKET

The world in which BESIX operates and the construction sector are undergoing profound changes. In response to these changes, BESIX has defined the foundations of its strategy to support its capacity to innovate, maintain a high level of quality, face competition, meet new financial requirements and diversify.

Technological:
artificial intelligence, parametric design, digital twin, 3D printing...

Environmental:
energy efficiency, energy neutral, circularity of materials...

Competitive:
risk sharing, shrinking margins, talent war...

6 STRATEGIC DRIVERS

01//

BEING A LEADER IN INNOVATION

Innovation is where our operations are, where each and every one is empowered and supported to carry out the BESIX innovative and entrepreneurial company culture.

04//

LEVERAGING ON OUR CUSTOMER CENTRICITY

It is key for our business to really know our clients, understand their needs and satisfy them to achieve the desired results. Doing this better than our competitors is a major differentiating aspect.

02//

PROMOTING OPENNESS TOWARDS NEW VENTURES

We have been known for decades for our entrepreneurial spirit. We need to continuously explore and to react positively to new opportunities.

05//

PROMOTING A GREAT PLACE TO WORK

Our ability to provide a great employee experience in an open community of enthusiastic colleagues is a defining factor in our successes of tomorrow.

03//

DEVELOPING 'ONE-STOP SHOP' SOLUTIONS

Our Group has unique capabilities and a multiservice offer, meaning we can provide solutions throughout the value chain, from 'develop' to 'operate and maintain'.

06//

CREATING SYNERGIES ACROSS THE GROUP

This means 'working light' by simplifying and harmonising our internal processes. This can include common choices of tools, organisational formats and resource allocation across the Group.

5 VALUES



Excellence

This takes us straight back to our corporate purpose and trademark: to always excel in what we do.



Passion

We are all passionate about our jobs.



Co-creation

We need to demonstrate this every day, by pooling our minds and skills, and advancing forward.



Unity

Despite the size of our company, there is an attitude where colleagues stand up for each other and are ready to lend an extra hand to help others succeed.



Respect

Respect is all about attitude. It is vital to create an atmosphere of comfort and trust for everyone.

PURPOSE

"Excel in creating sustainable solutions for a better world"

This mission gives our actions a goal that goes far beyond profit. It is pivotal, inspiring our decisions and actions based on a simple question: what kind of future do we want and how do we make it happen? By encouraging new ideas, assuming our responsibilities in a proactive way and by excelling in all of our initiatives, we believe that we can help bring about positive change - economic, societal and environmental.





WHAT BEGAN 110 YEARS AGO HAS GROWN INTO THE LARGEST CONSTRUCTION COMPANY IN BELGIUM AND A GLOBAL MULTIDISCIPLINARY PLAYER. THROUGHOUT THE DECADES, BESIX HAS BUILT ROADS THAT CONNECT COMMUNITIES, DUG PORTS TO ACCOMMODATE SHIPS COMING FROM ALL OVER THE WORLD, DEVELOPED NEIGHBOURHOODS WHERE PEOPLE LIVE, LEARN, WORK, AND RELAX.

TO MAINTAIN ITS RELEVANCE FOR SOCIETY, BESIX NEEDS TO RELY ON A CLEAR AND SENSIBLE PURPOSE AND A WELL-CONCEIVED STRATEGY THAT SET IT APART FROM ITS COMPETITORS. BESIX FORWARD OUTLINES THE STRATEGIC DIRECTION THAT BESIX FOLLOWS SINCE 2018. THE AIM IS TO INCREASE SHAREHOLDER VALUE WHILE WORKING TOWARD A MORE SUSTAINABLE FUTURE FOR EMPLOYEES, CLIENTS, AND COMMUNITIES.

THE WORLD IN WHICH BESIX OPERATES AND THE CONSTRUCTION SECTOR ARE UNDERGOING PROFOUND CHANGES. IN RESPONSE TO THESE CHANGES, BESIX HAS DEFINED THE FOUNDATIONS OF ITS STRATEGY TO SUPPORT ITS CAPACITY TO INNOVATE, MAINTAIN A HIGH LEVEL OF PROJECT QUALITY, FACE COMPETITION, MEET NEW FINANCIAL REQUIREMENTS AND DIVERSIFY, ESPECIALLY IN RECURRING INCOME BUSINESSES. BESIX FORWARD IS BUILT AROUND SIX STRATEGIC DRIVERS AIMED AT MEETING THESE DIFFERENT CHALLENGES.

01 // BEING A LEADER IN INNOVATION

BESIX Group has a tradition of pioneering, contributing to shaping tomorrow's construction sector. In 2021, advanced engineering and technological innovation in project design, construction processes, and long-term asset management remained at the heart of BESIX Group's strategy, as they significantly improve the quality, efficiency, and sustainability of the group's clients' projects.

BESIX Engineering's experts, the operational teams, and the specialist innovative companies in which BESIX Group is a shareholder are called upon to dare and innovate and to spread their knowledge. In 2021, BESIX Group has remained an innovative leader in providing its clients with cutting-edge solutions, through its advanced knowledge and services in Building Information Management, parametric design, digital twins, smart buildings, automation, on-site robotics, circularity, modular construction, energy performance...

READ MORE ON PAGES 24-27 AND PAGES 28-31

02 // PROMOTING OPENNESS TOWARDS NEW VENTURES

Staying open to all new business opportunities and activities is another driver that lies at the very centre of BESIX's DNA: entrepreneurship. It involves a constant curiosity for new products and services, and boldness in seizing potentially promising opportunities. It is these opportunities and new business activities that allow BESIX to diversify and integrate new skills. And in this way to differentiate itself and to continue to grow.

In 2021, several participations or acquisitions took place, especially at BESIX Group's affiliates. With its participation in BuildUp, Vanhout took a strategic step in the offsite construction market. BESIX Infra continued its expansion strategy with the acquisition of Strabag BV in the Netherlands. This acquisition enabled BESIX Infra to expand its operations in the southern Netherlands. The acquisition of Lucan BV, specialist in interconnections for utilities, has strengthened BESIX Unitec in the utility lines installation market. Finally, the acquisition of Agidens Infra Automation, the leader in market automation, remote control, interconnectivity, and intelligent energy management for infrastructure like locks, movable bridges, tunnels, allowed BESIX Unitec to offer considerable added value to its clients.

READ MORE ON PAGES 114-131

03 // DEVELOPING ONE-STOP SHOP SOLUTIONS

In a multi-services group like BESIX Group, the several entities and subsidiaries cover almost every area of construction, from early upstream, like the production of construction materials, to far downstream the value chain, such as interior fit-out. Thanks to its wide range of areas of expertise and specialisations, BESIX can offer efficient and integrated solutions to its clients. This 'one-stop shop' approach allows to optimise planning and execution methods and to reduce costs for the client.

Infrastructure rail works in Waterloo (Belgium) are an example of a successful collaboration between BESIX, BESIX Unitec and Franki Foundations, just as the marine works in the Port of Zeebrugge (Belgium) are an example of a successful one between BESIX and Franki Foundations. By favouring an integrated approach, BESIX was able to offer all the disciplines required for these projects under one roof and to submit particularly competitive bids, both in terms of costs and management and execution of the works.

READ MORE ON PAGES 80-81, 86-87

04 // LEVERAGING ON CLIENT CENTRICITY

Clients are at the heart of BESIX Group's approach to projects. The in-depth understanding of their specific needs and expectations allows the group to create tailor-made solutions and to accompany them in the conceptualisation, design, financing, development, and construction of their projects, and even the long-term operations and maintenance of their assets.

Optimising and adding value, creating and proposing relevant technical or technological alternatives for each client, is one of BESIX Group's major strengths. To this end, the group benefits from an extremely broad and specialised internal integration of skills and expertise at the disposal of its clients. This is demonstrated, for example, by the Dubai Waste-to-Energy project, one of the largest plants of its kind in the world, for which BESIX has been present from the outset and will remain so in the long term.

READ MORE ON PAGES 90-91

05 // PROMOTING A GREAT PLACE TO WORK

BESIX thrives on the commitment and wellbeing of its employees, now more than ever. It is they who make all the difference. Ensuring good working conditions is a priority for BESIX worldwide. All employees are important: whether they are migrant colleagues in the Middle East, expatriates or locals working on European, African, or Australian sites. Each of them contribute directly to the life and success of BESIX. Each of them is important to the Group.

That is why BESIX, a 'Top Employer' for the 3rd year in a row, focuses on employee engagement in a way that positively impacts morale and performance. More than ever, the role of BESIX People's departments is to support their employees, not just in their experience as workers but in their lives as well.

READ MORE ON PAGES 38-49

06 // CREATING SYNERGIES ACROSS THE GROUP

BESIX Group's global footprint and the human and technical diversity of its entities offer extraordinary opportunities for internal sharing of knowledge, expertise, and best practices. This allows for continuous improvement of the organisation and harmonisation of internal processes.

In 2021, this was the case for example in the area of CO₂ emissions reduction, where the practices of the BESIX entity in the Netherlands, which have led it to reduce its emissions by 2% per year since 2014, are gradually being extended to other group subsidiaries and branches.

READ MORE ON PAGES 32-35

Thanks to this clear strategy, BESIX Group can have a considerable and positive impact on society as part of its profitable business. Because of its international scope, BESIX Group has a duty to support economic, social and environmental progress and to improve the quality of life of people everywhere it operates. The ultimate goal is to have a positive impact, to make the economy more sustainable, to contribute to the preservation of the planet and the legacy left for future generations.

READ MORE ON PAGES 32-35 AND 50-53

BESIX Engineering

STATE-OF-THE-ART EXPERTISE AT THE CORE OF BESIX GROUP

BESIX ENGINEERING IS THE IN-HOUSE DESIGN OFFICE OF BESIX AND AS SUCH WORKS EXCLUSIVELY FOR THE GROUP. OVER THE YEARS, WITH THE ACTIVE CONTRIBUTION OF BESIX ENGINEERING EXPERTS, BESIX HAS CARRIED OUT FIRST-CLASS PORT TERMINALS, CUTTING EDGE CIVIL ENGINEERING WORKS, AND THE MOST DEMANDING BUILDINGS. THE INTEGRATION OF A DESIGN OFFICE WITHIN A CONSTRUCTION COMPANY IS A CONSIDERABLE ASSET. IT GUARANTEES AN OPTIMAL COOPERATION BETWEEN THE DESIGN AND CONSTRUCTION TEAMS, WHICH HAS POSITIVE IMPACTS IN TERMS OF COSTS, RISK MANAGEMENT, CONSTRUCTION METHODS, PREPARATION, AND STAKEHOLDERS' COORDINATION. IN ADDITION, THE SHARING OF KNOWLEDGE BETWEEN THE DESIGN AND CONSTRUCTION TEAMS OVER THE YEARS IS WHAT ALLOWS BESIX TODAY TO ADAPT TO THE HIGH REQUIREMENTS OF ITS CLIENTS, TO CREATE UNIQUE STRUCTURES AND, IN SOME CASES, TO REDEFINE THE BOUNDARIES OF ENGINEERING IN CONSTRUCTION.

BESIX ENGINEERING'S SKILLS ARE BASED ON ITS EXPERTS. THERE ARE MORE THAN 150 OF THEM, SPREAD ACROSS BESIX GROUP'S HEADQUARTERS IN BRUSSELS, DUBAI, AND BRISBANE. IT IS THEIR CUTTING-EDGE KNOWLEDGE THAT MAKES THE GROUP'S PROJECTS FEASIBLE FROM A TECHNICAL POINT OF VIEW, BEFORE THE EXECUTION PHASE CARRIED OUT BY THE OPERATIONAL TEAMS. IN THIS SENSE, THEIR ROLE WITHIN BESIX GROUP IS FUNDAMENTAL, EQUIVALENT IN IMPORTANCE TO THAT OF THE PROJECT MANAGERS AND THEIR TEAMS DURING THE CONSTRUCTION PHASE.

INTERVIEW WITH CHRISTOPHE BAUDUIN, TECHNICAL DIRECTOR OF BESIX ENGINEERING AND PROFESSOR IN GEOTECHNICAL ENGINEERING AT THE KU LEUVEN (BELGIUM).

Can you describe the core expertise available within BESIX Engineering?

There are three areas in which we have developed a leading expertise. High-rise buildings, marine works, and civil engineering. This expertise relies on our colleagues who are leading experts in several engineering disciplines. This is the case for geotechnics and structures, two cross-disciplines that are necessary for all projects. We also have experts in Methods & Planning, Façade, and Sustainability. Each of these disciplines is involved in the design and engineering of our projects, according to the specific needs. BESIX Engineering has also developed transversal discipline expertise: concrete technology, steel structures. These are highly specialised engineering capabilities that are involved at specific moments in the design process and on our construction sites. Finally, our engineers also master state-of-the-art tools that we may need for certain projects. This is the case, for example, with Building Information Management (BIM), and parametric design. BIM is used to manage the enormous amount of information in a project and to support coordination between the various disciplines and trades. Parametric Design allows our engineers to automatise well defined



“What BESIX is, as we know it today, is inseparable from BESIX Engineering. By investing in engineering and recruiting high quality experts, BESIX has acquired the ability to design and carry out the most technically complex projects.”

CHRISTOPHE BAUDUIN, TECHNICAL DIRECTOR OF BESIX ENGINEERING AND PROFESSOR IN GEOTECHNICAL ENGINEERING AT THE KU LEUVEN (BELGIUM)

engineering tasks and to run large number of variants allowing far-going optimisation of the design which cannot be achieved if only traditional calculation tools are used. The engineer can focus on developing optimised design instead of spending his or her precious time in performing many times the same calculation.

How does BESIX Engineering reflect the BESIX corporate culture?

What BESIX is, as we know it today, is inseparable from BESIX Engineering. By investing in engineering and recruiting high quality experts, which is our strategy since decades, and by extending steadily our domains of knowledge and expertise, BESIX has acquired the ability to develop its domain of activities and to assume risks in a controlled manner. This has given our group the ability to design and carry out the most technically complex projects. Think of our very large marine jetties, numerous harbours, and high-rise buildings. This has also opened new markets and explains much of the group's current geographical diversification. In this regard, BESIX Engineering is undoubtedly a key part of the group's identity. Even for contracts where the design is carried out by the client, our Engineering department is an extraordinary asset for successfully carrying out the construction tasks. Supported by engineering expertise, the right construction decisions can be made and discussions can be held with the client and their representatives to optimise the project. In addition, for each of our major disciplines such as skyscrapers, geotechnics, or concrete technology for example, BESIX Engineering organises training for operations engineers. This allows them to acquire insight into the inherent logic of design, which contributes to the coherence of projects, across the design and construction processes. For the same reason, and the links that this creates internally, young engineers who join the group often start with a few months or more at BESIX Engineering before joining a site.

DESIGN FOR THE TE KAHA STADIUM IN CHRISTCHURCH, NEW ZEALAND



INCREMENTAL LAUNCHING METHOD FOR THE CONSTRUCTION OF THE TERBREGSEPLEIN VIADUCT

How does BESIX Engineering differ from a traditional design office?

First, as we are part of BESIX Group, our only client, we engage in the project with the same purpose as the builder. We understand much more the needs of our internal client than do external design offices. And clearly, as we participate in a common project, our commitment is much more important. Adding all our 'additional miles' would bring us from Brussels to Brisbane! We do more than consultancy work at some point in the design process: the role of our experts is to give a clear engineering direction and we have a responsibility for this. This implies an additional specificity, which is the obligation for us to understand and consider aspects that are crucial for a project's successful execution. These include planning, logistics, methods, design, financial aspects, and coordination of trades. This is essential as we support our colleagues in all phases of a project, including in the tender, execution, and even sometimes in the maintenance phases. However, BESIX Engineering always maintains a high degree of independence, which goes hand in hand with our responsibilities. This balance is crucial. We approach a project from an engineering point of view, with the ability to find solutions, to consider it in the long term, but also to oppose wrong decisions. This can lead to opposing views and debates, in which we seek with our colleagues the best decision for the project and the group. All this makes BESIX Engineering quite different from a traditional design office.



DESIGN, PLANNING AND METHOD FOR THE WORLD-CLASS DUBAI WASTE-TO-ENERGY PLANT

THE DUBAI UPTOWN TOWER, DESIGNED BY BESIX ENGINEERING. FACADE BY THE FACADE DEPARTMENT



Do you also work with external design offices?

We can do a lot, but not everything. On the one hand, we invest in internal knowledge when the investment is justified, for example by its recurrence in our projects. For specific skills that we do not have in-house, because our projects do not justify it, we have external partners with whom we collaborate. On the other hand, BESIX Engineering does not carry out all BESIX designs. BESIX Engineering has 150 engineers. We seek to use this expertise and manage our capacities in the most efficient way. Our designers therefore often manage a design, and subcontract part of it. Finally, external collaboration is positive. It brings other points of view and provides constructive exchanges that make us grow.

In addition to your career, you are a university professor in the engineering faculty of the KU Leuven. Is this common among your colleagues at BESIX Engineering?

BESIX Engineering has many specialists who combine state-of-the-art theoretical and practical knowledge. Many have parallel activities, and our experts can be found in practically all major engineering faculties in Belgium. Our engineers are also often called upon to participate in normative working groups. For example, to adapt technical engineering regulations at national or European level. We encourage our engineers to take part in these activities. This is rewarding, both personally and intellectually, but it also has a positive impact on BESIX Engineering in terms of knowledge, reputation, and collaboration. A second part of the answer to your question, is that we cannot perform all design works needed for the numerous projects of BESIX. This would require a capacity in personnel that we cannot afford. So, indeed many designs are performed by external design offices. As much as possible however, BESIX Engineering remains involved in a certain way, that can differ from project to project, to maintain our double role: optimising design, and ensuring a sufficient level of technical soundness and rigor in design decisions and implementation.



THE BIM AWARD FOR INFRASTRUCTURE AT THE BELGIAN CONSTRUCTION AWARDS 2021 FOR THE DE GROENE BOOG PROJECT

What are the elements that contribute to a successful project?

Interaction between the different departments of the group, from the outset of a project and throughout the process, is key. At the tender stage, BESIX Engineering contributes to determine the key elements of success and the risks to be managed, in terms of design, construction methods, quantities, and planning. The involvement of BESIX Engineering then differs according to the type of contract. For example, in a Build-only contract, where the client already has a design, we can propose variants that improve the project, which is called Value Engineering. Optimising a project is a major strength of BESIX Engineering, which is the result of our experience. For a Design & Build contract, we will provide the entire design, with a priority on the most efficient and qualitative approach, or we will follow up or manage external design offices. In addition, BESIX Engineering often accompanies the construction teams, or sends engineers on site, to provide engineering support in technical or design managerial aspects.

How does BESIX Engineering intervene in bouwteam or Early Contractor Involvement projects?

This type of project allows us to assist the client right from the conceptualisation stage to develop the best project with all involved parties. BESIX Engineering contributes to this, as do our construction colleagues who provide operational solutions upstream. In this type of case, the client will benefit from the entire expertise of BESIX. The advantage of this type of method is the mutual understanding of the interests, objectives, and constraints of each party. Their success requires a high degree of mutual trust and full transparency. The design developed by BESIX Engineering will be the result of a constructive collaboration with our colleagues and with the client.

Is there one project that you have been involved in that has impressed you more than any other?

I joined BESIX Engineering in 1989. Since then, the department has carried out hundreds of projects around the world, ranging from simple ones to some of the most complex. So, this is not an easy question. For me, the most remarkable thing about BESIX Engineering is the quality of the experts I have always had the opportunity to work with. However, both in terms of the inventiveness that the project required of us and its technical difficulty, I could mention the Roer Tunnel, a 2.5-kilometre-long tunnel in the Netherlands, of which a significant part is an immersed tunnel. At a location where an immersed tunnel is not at all straightforward! It was developed since the tender, as a significant Value Engineering design. This allowed us to win the contract. The

project was extremely cutting-edge, both in terms of design and construction, due to the nature of the soil, in this case a river and flood plains, and strict environmental standards. In the end, this forced us to combine a variety of methods, including cut-and-cover, immersion and underwater concreting, an enormous sunken polyethylene sheet used to create a hydraulic insulation at depth depending on the part of the tunnel. Every aspect of the design was cutting-edge engineering. We developed new and improved many existing design methodologies and construction methods. For instance, the tunnel was immersed on a gravel bed, which had never been done before in the Netherlands. Our JV partner tested several techniques such as steel bulkheads that were successfully used few years later in an immersed tunnel in South Korea. But there are so many other projects that all have their specific aspects. Even after more than 30 years at BESIX, I discover new technical or human aspects, many of them to be continued and developed by the new generations of our engineers. Engineering evolves and the way of doing engineering works is in complete re-shaping period. With its advantages, but also pitfalls! But the message remains: be technical, inventive, and curious; develop your knowledge and create respect through your ability to implement it in inventive and sound solutions. That's the way BESIX Engineering is fantastic for our engineers. We design extraordinary projects, requiring creativity, and then follow them through to delivery. Humanly and professionally, this is just fantastic!

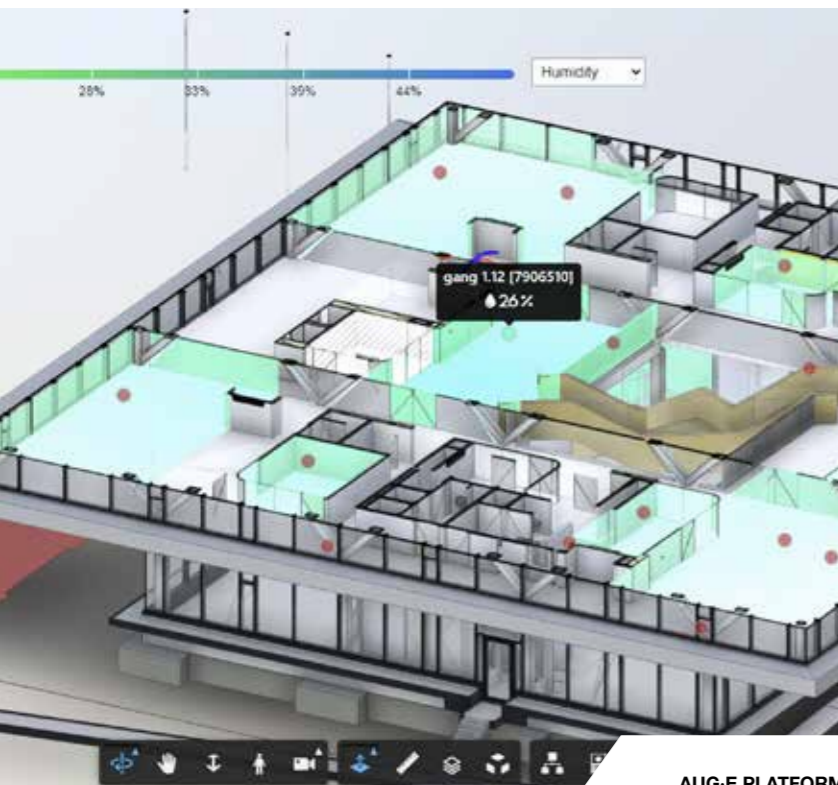


THOROUGH DESIGN AND PREPARATION FOR THE TOUR TRIANGLE, IN PARIS

Innovation

HOW WE SHAPE TOMORROW'S CONSTRUCTION WORLD

INNOVATION IS AN INTEGRAL PART OF THE BESIX GROUP CORPORATE CULTURE. THE ADOPTION OF NEW TECHNOLOGIES AND TECHNIQUES, OFTEN AT THE FOREFRONT OF THE CONSTRUCTION SECTOR, HAS ACTIVELY CONTRIBUTED TO MAKING BESIX GROUP A LEADER IN ITS MARKETS. THE YEAR 2021 HAS BEEN NO EXCEPTION, WITH THE INTEGRATION OF NEW SKILLS IN THE FIELDS OF DIGITISATION AND ROBOTISATION, MODULAR CONSTRUCTION, ENERGY EFFICIENCY, AND SMART BUILDINGS. THESE ARE NEW CUTTING-EDGE PRODUCTS AND SERVICES FOR THE BENEFIT OF THE GROUP'S CLIENTS, CONTRIBUTING TO MAKING THEIR PROJECTS FUTURE-PROOF. HERE IS A NON-EXHAUSTIVE OVERVIEW THAT MARKED THE BESIX YEAR 2021.



AUG-E PLATFORM

Cutting-edge smart buildings

In 2021, BESIX, Proximus and i.Leco created aug-e, a big data software platform for next generation smart buildings. This combines their leading expertise in the building, ICT and energy sectors. aug-e uses, among other things, artificial intelligence to minimise energy consumption and improve the overall comfort level of buildings. To do this, buildings are digitised, along with their energy flows. By making the platform the connection point between users and the building, aug-e minimises energy costs, optimises the use of green and sustainable energy, and improves user comfort through a series of remote controls of building equipment (lighting, ventilation, temperatures, electric car charging, meeting room reservations...). In addition, by inserting historical data into the digital twin, aug-e learns how the building has behaved in the past and will be able to start predicting future energy consumption based on real time energy data enriched with weather forecasts, energy market prices, user feedback, etc. On this basis, aug-e can add other metadata and use cases such as workplace management and predictive maintenance.



TOPOGRAPHIC PLOTTER, MOHAMMED VI TOWER, MOROCCO

Robots as new colleagues

Robotics is increasingly offering advanced solutions in the construction sector. In 2021, the Dubai Uptown Tower, a 340-metre building, became the world's first super-tall skyscraper to use Schindler R.I.S.E., an autonomous, self-climbing robot, to carry out installation work in the lift shafts. BESIX was also the first construction company to use the BIMPrinter on a skyscraper, on the Mohammed VI Tower site in Morocco. This topographic robot creates the setting out of the drawings on the ground to the nearest millimetre, for example to prepare the construction of complex internal walls. In Belgium, in collaboration with the ULB and Innoviris, BESIX Engineering is also conducting research on large-scale masonry assistance robots. Last but not least, BESIX 3D's concrete printing robot also demonstrated its capabilities in 2021. In Dubai, after having completed one of the world's largest façades in 3D printed concrete, visitors to the World Expo were able to admire the street furniture in the Belgian Pavilion, printed by BESIX 3D. Robots offer multiple benefits, including safety, waste reduction, and new architectural possibilities.



SELF-CLIMBING ROBOT IN LIFT SHAFT

The benefits of digital twins

Digital twins are undoubtedly part of the future of the construction industry. Indispensable for smart buildings, they have a wide range of uses. For example, BESIX Group and its partners won the Belgium Construction Award 2021 in the BIM Infrastructure category, in particular for their use of a digital twin for the A16 Rotterdam tunnel, a new energy-neutral motorway that the Groene Boog consortium is building in the Netherlands. Using 3D design and BIM models, engineers created a digital twin called TWIN16. By creating a link between this digital twin and the actual operational control software of the tunnel, they were able to carry out virtual tests and execute all the system tests.



ULTRA-PRECISE BIM MODEL FOR THE SAINT-DENIS PLEYEL STATION IN PARIS

TIMBER STRUCTURE OF THE NIOA HQ, BRISBANE



Complex timber structures

Although wood is far from being a new material in the construction sector, its use is experiencing a new boom, especially in large and complex buildings. BESIX Group has provided stunning examples of this in 2021. In Amsterdam, BESIX NL has started the construction of the new Dutch headquarters of DPG Media. With over 44,000 m², this building will be one of the largest hybrid-timber office buildings in the world. Also in Australia, BESIX Watpac has built the new NIOA HQ, a five-storey timber building, and has completed the timber structure of the 10,000 m² Wurriki Nyal building which will house the City of Greater Geelong's services. Timber offers many advantages over other building materials, for example in terms of CO₂ emissions and speed of assembly on site.

Sustainable energy as a service

Vanhout Group subsidiary ComTIS Energy has developed a solution to the high cost of sustainable energy such as geothermal energy or heat pumps for private individuals. With "Comfort as a Service", ComTIS Energy provides sustainable heating and cooling to homeowners through a subscription formula. The company takes care of the installation and maintenance of energy sources. This solution has already made a neighbourhood in Diest, Belgium, the first gas-free neighbourhood in the region!



SUSTAINABLE ENERGY AS A SERVICE, DIEST, BELGIUM

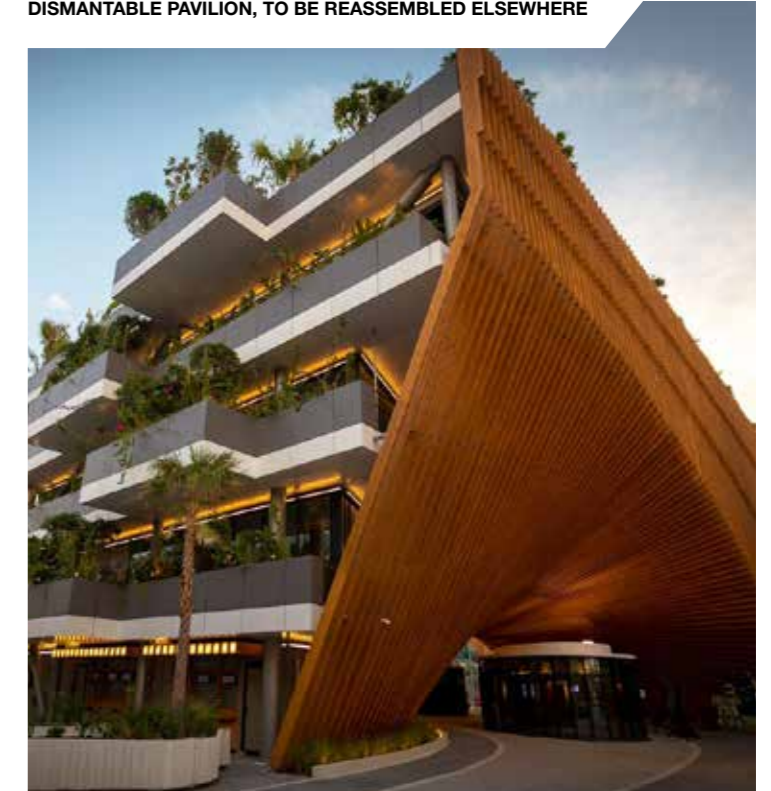


"Innovation is an integral part of the BESIX Group corporate culture. The adoption of new technologies and techniques, often at the forefront of the construction sector, has actively contributed to making BESIX Group a leader in its markets."



MODULAR CONSTRUCTION WITH BUILDUP

DISMANTTABLE PAVILION, TO BE REASSEMBLED ELSEWHERE



Modular and circular construction

Vanhout Group, a subsidiary of BESIX Group, developed a new approach to sustainable housing that combines maximal circularity and fast construction with the optimal use of materials. Vanhout's specialist subsidiaries ComTIS Energy and ComTIS Installations joined forces for this European research project with the KULeuven, Litobox, and BuildUp, a company in which Vanhout acquired a 40% stake in 2021. Based in Belgium, BuildUp specialises in automated prefabrication of tailor-made buildings, and their rapid assembly on site. The project resulted in a proof of concept single family house, made of a record breaking of 75% biobased and 20% upcycled materials. Following the success of this great collaboration, the partners are discussing the launch of CIRCL, a new spin-off company to make modular building available to everyone!

Reassembled buildings

BESIX designed and built the Belgian and French pavilions for the Dubai World Expo. The French Pavilion is an example of respect for the principles of bioclimatic architecture. This is reflected, for example, in the choice of materials and a circular approach, considerably limiting the building's carbon footprint. What the two pavilions also have in common is that they can be dismantled and reassembled in exactly the same way elsewhere. In 2021, the French Pavilion has been acquired by the Centre National d'Etudes Spatiales and will therefore be reassembled in Toulouse, France, after the World Expo. Zero waste.

This is not the first time that BESIX has carried out buildings of this type. For example, the Belgian Pavilion at the Milan World Expo, built by BESIX in 2015, was dismantled and then reassembled at the Citadel in Namur, Belgium. It has been open to the public since spring 2021.

Citizenship & Sustainability

IN LINE WITH RELEVANT ISO AND OTHER GUIDANCE STANDARDS, BESIX GROUP APPLIES AN APPROACH FOCUSED ON CITIZENSHIP & SUSTAINABILITY (C&S). THIS FOCUS IS FULLY INTEGRATED IN ITS DAY-TO-DAY ACTIVITIES, AS WELL AS ITS ACHIEVEMENTS WITHIN THE AREAS OF TENDER, PROCUREMENT, CONTRACT AND INSURANCE MANAGEMENT.

COVID-19 MEASUREMENTS: VARIOUS CHANGES HAVE BEEN MADE, IN ORDER TO BE ABLE TO MORE EFFECTIVELY MANAGE RISKS AND OPPORTUNITIES. THE GROUP AIMS TO CREATE THE SAFEST WORKING ENVIRONMENT POSSIBLE FOR ITS EMPLOYEES, SO THAT THE BUSINESS CAN CONTINUE TO FLOURISH, EVEN DURING THESE UNPRECEDENTED TIMES.

The Group has frequently been asked to demonstrate its approach towards certain major issues facing today's society, such as ethical construction, safeguarding the planet, well-being at work, creating and maintaining a safe workplace and the company's social impact, especially at operational project level.

BESIX Group and its subsidiaries are keen to engage in an increasingly sustainable approach; one that is embedded in a Citizenship & Sustainability Charter and the reference Codes of Conduct. Based on this Charter, the C&S strategy takes into account ten years' worth of learnings, objectives, ambitions and achievements.



PROMOTING FAIR LABOUR PRACTICES

Top Priorities: Human Rights and Climate Change

Defending Human Rights and halting Climate Change remain key priorities, together with maintaining on-going activities and encouraging sustainable solutions.

Human Rights

BESIX Group respects and supports the Universal Declaration of Human Rights. The implementation of the International Framework Agreement (IFA) demonstrates its continued willingness to safeguard the welfare of workers in the Middle East, as well as in other continents such as Africa, where the Group is also active.

In December 2017, BESIX Group signed an international framework agreement with the Building and Wood Workers' International (BWI) and the BESIX European Works Council (EWC). BWI is an international federation of 351 trade unions from 127 countries, including European countries, representing about 12 million workers. An EWC is a body of workers' representatives of a company operating on a European scale, in this case BESIX Group.

The agreement on the respect of international standards and human rights conventions aims to promote the well-being of people working for BESIX Group, its subsidiaries and partners, wherever they are in the world. This includes the establishment of an independent monitoring

INTERNATIONAL FRAMEWORK AGREEMENT BETWEEN BESIX GROUP, UNIONS AND THE BUILDING & WOOD WORKERS' INTERNATIONAL



mechanism for human rights practices. In this context, BWI has free access to construction sites and accommodations for migrant workers. In recent years, BWI and the BESIX EWC have carried out several such missions in Qatar, the United Arab Emirates, and Morocco.

In 2021 BESIX has signed together with the BWI a Declaration on Healthy and Safe Workplaces to support the recognition of health and safety at work as a fundamental right by the International Labour Organization (ILO).

Climate Change

BESIX Group contributes actively to the transition towards a low-carbon society. The Group's climate ambitions have been focused primarily on keeping CO₂ levels in line with the COP 21 CO₂ performance scale, commonly used within the tender process on the Belgian and Dutch public markets.

BESIX Group aims to expand the scope of the current CO₂ performance scale certification (i.e. Belgium and the Netherlands), in order to encompass the whole European Business Unit and a number of Belgian regional subsidiaries. During the course of the year 2022, the current Belgian and Dutch scope is expected to receive Level 5 certification on the 1 to

“We aim to take steps forward within the scope of Citizenship and Sustainability, working closely with stakeholders, developing new actions and fulfilling our mission to ‘excel in creating sustainable solutions for a better world’.”

FRÉDÉRIC DE SCHREVEL,
GROUP CITIZENSHIP &
SUSTAINABILITY OFFICER,
BESIX GROUP



5 performance scale – 5 being the top level. To achieve this ambitious target, the European Business Unit will put into place three main actions: introducing a zero-emission company car fleet, sourcing locally produced renewable electricity resources, and creating specific employee groups who will work to find sustainable solutions for plants, equipment and alternative fuels.

The Group is eager to play a key role in the building of passive or green certified projects. Its engineering teams already develop a number of sustainable engineering solutions: namely smart buildings which can track energy consumption, green concrete, recycled aggregates, sustainable site installation, the use of material passports, moss walls to fight against air pollution, 3D concrete printing, among others. These unique solutions are developed in-house with the help of specific sector experts, as well as those from other important and relevant sectors, such as the vendors in the procurement chain. Other clear objectives are to use fewer resources, favoring more sustainable, raw materials, and to develop digital material passports for the post-construction revalorization of used materials.

BESIX Group is consistently aware of its supply chain management, and therefore continues to carefully consider all potential environmental and social impact when procuring and sourcing directly from buyers, suppliers and (sub)contractors. The BESIX Group's Sustainable and Responsible Procurement Code of Conduct provides the foundation of good business behaviour throughout its value chain.

Citizenship & Sustainability Report

Further details regarding these topics can be found in the Group's fifth report (2019-2021) on Citizenship & Sustainability.

The report describes the Group's actions to continually improve the integration of the Global Compact and its principles into the business strategy, culture and daily operations of BESIX.

This is a crucial opportunity to increase and ameliorate the Group's engagement in and commitment to Citizenship & Sustainability

The report starts with a new initiative; the Group's C&S Charter. This Charter has for many years served as a reference point to determining the Group's Citizenship & Sustainability objectives and to assess its achievements. It will likely continue to serve the same purpose for years to come.

The Group's Citizenship & Sustainability Framework

BESIX Group reaffirms its support of the Ten Principles of the United Nations Global Compact.

As an active member of the United Nations Global Compact, BESIX Group supports the 17 Sustainable Development Goals (SDGs) as a guiding compass, while simultaneously focusing on selected Goals, on which BESIX Group feels it can have the most impact.

BESIX Group is a member of the 'Belgian Alliance for Climate Action', a movement initiated by The Shift and WWF Belgium in 2020.

Sustainable Progress Together With Partnerships

BESIX Group maintains long-standing, strong relationships with specific sector experts, as well as professionals from other relevant sectors. These include (but are not limited to): international institutions and networks (UNGC, EIC, The Shift, ADEB-VBA), universities, companies and start-ups.



VISIT OF BWI'S GENERAL SECRETARY AND BELGIAN UNIONS REPRESENTATIVES TO DUBAI, UAE



Belgian
Alliance for
Climate
Action

SUSTAINABLE
DEVELOPMENT
GOALS

03 /

OUR PEOPLE



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People

BUSINESS DRIVEN. PEOPLE FOCUSED.

IF 2020 WAS THE YEAR IN WHICH AGILITY AND RESILIENCE WERE IN THE FOREFRONT OF THE CONVERSATION IN THE PEOPLE DEPARTMENTS OF BESIX AROUND THE WORLD, 2021 WAS THE YEAR OF RESTORING BALANCE WITH INFORMED STRATEGIES, WHILE DEALING WITH THE AFTERMATH OF THE GLOBAL PANDEMIC.

“IT HAS PROVIDED US AN EXCELLENT OPPORTUNITY TO REDEFINE OURSELVES AND BECOME AGAIN FRONT AND CENTER IN ENSURING EMPLOYEE ENGAGEMENT IN A WAY THAT POSITIVELY IMPACTS MORALE AND PERFORMANCE” ACKNOWLEDGES GEERT AELBRECHT, CHIEF PEOPLE OFFICER AT BESIX GROUP. “THE PANDEMIC WILL PASS BUT, ULTIMATELY, ITS IMPACT ON THE WAY WE AT BESIX RECRUIT AND MANAGE OUR TALENT WILL REMAIN.”

IN MANY WAYS, THE PANDEMIC RENEWED THE EMPHASIS ON THE PEOPLE PART OF HR'S JOB. “ONE OF THE LESSONS OF THE PANDEMIC IS THAT WE HAVE PUT THE ‘HUMAN’ BACK INTO HUMAN RESOURCES,” ADDS GEERT. “MORE THAN EVER, OUR ROLE IS TO SUPPORT OUR EMPLOYEES, NOT JUST IN THEIR EXPERIENCE AS WORKERS BUT ALSO IN THEIR LIVES.”



A wider pool of talents

Year in, year out, BESIX recruits 700 to 800 new employees and workers around the world. In 2021, two phenomena have emerged. With online interviews and hybrid working becoming mainstream, BESIX has started to tap into a wider pool to meet and hire the talented people needed, irrespective of their location. “We have appointed people who might have been inaccessible under more conventional recruitment processes,” testifies Geert. “One of the many examples: online interviews made it possible for us to hire experts from South Africa who are open to world-wide careers. Before the pandemic, we wouldn't have really considered hiring someone remotely.”

The other interesting evolution, which is not specifically linked to the pandemic, is the source of recruitment. “We have observed a strong take-off of referrals. Recommendations from friends and family have actually become our primary channel of recruitment. We welcome this trend: if a colleague personally vouches for a candidate, it's an additional guarantee for the hiring manager that we are talking to the right person. Moreover, it reinforces the family spirit between colleagues, something that fits perfectly in the view of BESIX as a company of connections.”

Best of both worlds

Just like recruiting has become more digital, so has onboarding. The various waves of the pandemic have forced the Group to juggle between traditional, in-person onboarding and digital welcome tracks.

“Unfortunately with social distancing, smaller crews on site and hybrid working in place, casual conversation between two people standing next to each other in line for lunch or at the coffee machine has almost disappeared. The casual contacts between colleagues, so crucial during onboarding, have fallen by the wayside and over time this could be highly detrimental for our company culture. This is why we have invested in a renewed welcome app, dedicated to new employees. With this app, any new hire can ask a People colleague his or her questions and People teams can reciprocally keep in touch easily with all new onboarded

800

NEW HIRES IN 2021

11,000

EMPLOYEES AT 31.12.2021

48 years

AVERAGE AGE

82

NATIONALITIES IN THE GROUP

10.2 years

AVERAGE SENIORITY



“The pandemic has provided us an excellent opportunity to redefine ourselves and become front and center again in ensuring employee engagement in a way that positively impacts morale and performance. It will fade out again, but ultimately, its impact on the way we at BESIX recruit and manage our talent will remain.”

GEERT AELBRECHT,
CHIEF PEOPLE OFFICER
BESIX GROUP



colleagues. This app is here to stay, even though the welcome tracks are again done in-persons as we speak: we combine the best of both worlds,” adds Geert.

Great Resignation?

According to labour market statistics, the pandemic seems to have set off unprecedented churn in certain areas of the world – a trend experts call the Great Resignation. Has BESIX been confronted with a higher quit rate in the aftermath of a difficult 2021? “Yes and no,” explains Geert. “The war for talent in our sector has been going on for decades. Civil engineers and other talents have always been a much coveted audience. What we have witnessed is actually more of a Great Reshuffling. We have witnessed colleagues more willing to move around different jobs. And if they leave us, they mainly stay in the sector – not at a competitor’s but rather at a partner’s in the broad contracting ecosystem. We remain peers and end up still doing business together. That says a lot about how found BESIX (ex-)employees are of the company culture! Another remarkable trend we observe is that we have talents who don’t hesitate to come back after a couple of years elsewhere. Some companies are closed to so-called boomerang hires, we are definitely not: it is enriching to welcome talents back, after they have gained new competences.”

Continuous training as value proposition

In this war for talent, it is no secret that the companies best able to attract and retain their employees are those that demonstrate a commitment to improving their long-term career prospects by offering training and empowerment. “As far as it is possible, we give our experts more freedom to chose projects whose mission and vision truly resonate with them, projects that align with their strengths,” insists Geert. “And we commit to their ongoing development with trainings that are useful, applicable and meeting their working realities.”

“The pandemic has forced us to take a critical eye at our ways of training our workforce. We had to reinvent ourselves with the constant coming and going of in-person training. Virtual training is fine and well for knowledge transfer and for a bigger outreach, but it’s not helping when it comes to networking. So here too, we went for a fully blended learning, with the best of both worlds: a strong digital offer, coupled with a new way of gathering and training our troops.” For instance, instead of offering leadership training days spread randomly over the year, these tracks are now consolidated in fixed weeks, set quarterly. “Two birds with one stone: employees can better plan and integrate their training tracks in their schedule, especially if it involves travelling, and the



TRAINING OPTICAL FIBER, BESIX UNITEC

networking aspect is much more present after a full week of training than after a single day.”

Going forward... and diverse

Socially and politically, 2020 and 2021 marked a global movement for social justice and inclusion. Companies as well are expected to account for the social movements emerging around the globe. How important is this at BESIX? “We have been present in more than 25 countries for decades and part of our staff is used to working across the world, moving –sometimes with their families – at the rhythm of their projects. We also hire our workforce locally on all continents and have 82 different nationalities in the Group. So diversity is something we are naturally comfortable with, but maybe it’s still too implicit,” admits Geert. “Moving forward, our People teams will need to place an increased emphasis on creating an inclusive workforce, by developing robust and explicit strategies to

effectively implement and anchor inclusion.” On its European markets, BESIX sees a 50-50 ratio between female and male engineers among young hires for the first time. “On those markets, we also see that 40% of our trainees are no longer coming from a traditional background: they are truly the reflection of our strongly diverse society. We need to encourage more conversations about inclusion at People level. I do believe we need to make what’s implicit in the Group more tangible.”

Emphasis on culture

“It is our firm’s conviction that BESIX’s route to organisational success goes hand in hand with an inclusive and empowering culture,” concludes Geert. “As the saying goes, with proper strategy, you create the rules for playing, but culture determines the way the game will be played. So our People focus in 2022 will include a stronger focus on how culture and the human aspect can benefit the long-term success of our company.”

Fair labour standards

OUR MIGRANT COLLEAGUES IN THE MIDDLE EAST

IN THE MIDDLE EAST, BESIX GROUP HAS BEEN A MAJOR CONSTRUCTION COMPANY SINCE 1965. OVER THE YEARS, THE GROUP HAS CARRIED OUT SOME OF THE MOST AMBITIOUS AND DECISIVE PROJECTS FOR THE DEVELOPMENT OF CERTAIN COUNTRIES, IN PARTICULAR THE UNITED ARAB EMIRATES AND QATAR. THESE PROJECTS REFLECT THE EXPERTISE OF BESIX GROUP'S ENGINEERS, BUT ALSO THE WORK OF THOUSANDS OF BLUE COLLARS, WHICH ARE ALMOST ALL MIGRANT COLLEAGUES FROM INDIA, BANGLADESH AND NEPAL. THERE ARE 5,000 OF THEM CURRENTLY ON THE BESIX GROUP PAYROLL, WORKING ON THE COMPANY'S CONSTRUCTION SITES. IT IS ALSO WITH THEM, WITH THE LOCAL AUTHORITIES AND WITH INTERNATIONAL ORGANISATIONS THAT BESIX GROUP HAS SET A PRECEDENT IN RESPECTING AND PROMOTING FAIR LABOUR PRACTICES IN THE BROADER REGION, A COMMITMENT THAT IS NOW WIDELY ACKNOWLEDGED BY FOREIGN STATES, INTERNATIONAL INSTITUTIONS, AND NON-GOVERNMENTAL ORGANISATIONS.

BESIX Group's internal policies

BESIX Group has implemented strict internal policies regarding the respect of migrant colleagues' rights, often going beyond its legal obligations. These measures are of course mandatory for each branch or subsidiary of the Group. Among the measures are for instance the fact that these colleagues are employed and paid directly by the Group without intermediaries, and that the company covers their full health insurance. Migrant colleagues are hired through official agencies that do not require them to pay any fees or back payments. Migrant blue and white collars retain their identity documents at all times and are provided with qualitative, comfortable accommodation, including places of worship for each religion and culturally appropriate menus. They freely appoint representatives to relay grievance or requests to the company and have access to all information in a language they know.



Independent monitoring

In recent years, the living and working conditions of migrant colleagues have been independently audited on a number of occasions, including in the United Arab Emirates and Qatar. In addition to those carried out by local authorities, these audits were mainly conducted by the Building and Wood Workers' International (BWI), an international federation of 351 trade unions from 127 countries, representing around 12 million workers. This follows the signing of an international framework agreement with BWI in December 2017 for the promotion of fair labour practices and the establishment of a monitoring mechanism. In this context, BWI has free access to BESIX's construction sites and migrant blue and white collar' housing, when they live in accommodations provided by BESIX Group.

Hand in hand with the unions

In June 2021, BESIX Group, BWI and the Belgian trade unions FGBT-ABVV and CSC-ACV, committed themselves together to support the recognition of occupational health and safety as a fundamental right by the International Labour Organization (ILO). In early 2022, in Dubai, they called on Belgium to support their initiative. On this occasion, they handed over their Declaration for Safe and Healthy Workplaces to the Belgian Deputy Prime Minister and Minister of Economy and Employment, Pierre-Yves Dermagne, in the presence of King Philippe of Belgium, Queen Mathilde of Belgium and representatives of the ILO Regional Offices for the Arab States, the European Union and the Benelux.

Adapting the work to the warmer seasons

Working hours are adapted according to the season. For example, in the United Arab Emirates, work is interrupted from 15 June to 15 September between 12.30 pm and 3 pm. BESIX Group sometimes extends this rule, especially when the humidity and temperature reach levels that are considered too high. In addition, on site, employees are provided with quality equipment, cool and ventilated areas for breaks, drinking water and refreshing towels.

A lasting societal role

With the BWI, BESIX Group has also committed to promoting the rights of migrant colleagues externally. This is achieved in several ways, in particular through the Group's relationships with its subcontractors.

First of all, BESIX Group requires them to sign a code of conduct which obliges them to respect the Group's standards and allows audits to be carried out in their facilities. When breaches are found, the priority is to help them improve and to find solutions. For example, BESIX Group has sometimes hosted subcontractors' blue collars in its own accommodation when subcontractors' facilities were audited as not up to BESIX standards. It has also happened that the Group paid the unpaid wages of subcontractors' employees and deducted them from the payments due to the subcontractor in events where subcontractors were failing to compensate their employees adequately. As such the BESIX Group companies ensure that subcontractor' employees are always paid, which is necessary for their wellbeing.

In the event of unwillingness or blatant breach of standards on behalf of subcontractors, a range of provisions, which local laws allow, enables financial penalties or even outright termination of the contract.

What experts say about us

In recent years, eminent figures from international organisations have publicly cited BESIX Group as a reference in promoting worker welfare in the Middle East. This is the case for the former Chairperson of the Governing Body of the International Labour Organization, Luc Cortebeeck, who declared in the press and in the Flemish Parliament that BESIX's practices were among the best in the field. The director of Amnesty International Belgium did the same in the Belgian press, presenting BESIX as an example to follow. The Secretary General of BWI, Ambet Yuson, has also expressed himself publicly on several occasions, explaining that BESIX Group applies standards in the Middle East that are as good as in Europe.

Excelling in safety

Safety at work is BESIX Group's number one priority on all its sites. This is also the case in the Middle East where BESIX Group has one of the best safety records in the region. This is generally similar to that of the Group's other sites around the world, including Europe. Most sites often achieve several million working hours without an accident resulting in work incapacity.

Number one in the construction sector

In October 2021, BESIX Group's subsidiary in the Middle East, Six Construct, was awarded the Dubai Chamber of Commerce's Social Responsibility Label for the 9th consecutive time. It is also the only construction company in the country to achieve this!



Quality, Health, Safety and Environment

WE ARE #SAFETOGETHER

THE MAIN OBJECTIVES OF THE QUALITY, HEALTH, SAFETY AND ENVIRONMENT (QHSE) DEPARTMENT ARE TO DEVELOP A STRONG, POSITIVE AND INCLUSIVE CULTURE IN THE FIELD OF QHSE AND TO EXCEL WITHIN ITS DOMAINS. IN THE SPIRIT OF ITS CORE VALUES, BESIX IS #SAFETOGETHER. THIS IS NOT ONLY WITH REGARDS TO THE INTEGRITY OF HUMAN LIFE, BUT ALSO WHEN IT COMES TO REDUCING ITS ENVIRONMENTAL FOOTPRINT AND INNOVATING IN QUALITY.

Safety performance

2021 was a challenging year. The Covid-19 global crisis continued to create risks to BESIX's operations, with many constraints impacting the organisation, resources, working methods and increasing the general risk level of the operations.

Thanks to the impressive ability of BESIX project teams, corporate services and Senior Management in adapting to the situation, the accident rate gradually decreased throughout 2021.

However, the year 2021 was sadly marked by two fatal accidents, one on a project in Cameroon and the other on a project in Poland. BESIX teams have carried out in-depth research into the causes of these accidents with all interested parties in order to understand and learn about context and potential improvements.

BESIX Group has recorded 25 High Potential (HiPo) incidents in 2021, twice as many as in 2020. This clearly demonstrates an increase in ownership with our project teams. 27% of HiPo incidents were related to working at height, 24% to lifting and rigging operations, and 11% to energised equipment and movement of equipment.

As a result of these incidents and trends, BESIX is determined to further strengthen the health and safety performance of its projects worldwide. 2022 heralds the deployment of OASIS, a digital platform, which will be available on all BESIX projects, set to radically boost core processes such as risk management, subcontractor management and incident reporting and investigation. The build-up and deployment of OASIS will be one of the corner stones of improvement available at BESIX in 2022 and the years to come.

A renewed focus on health

If anything, the Covid-19 pandemic has increased companies' focus on physical and mental health. A joint task force of the People and QHSE departments collaborated to organise webinars on mental health and resilience. BESIX also developed workshops for managers to help them detect mental issues within their teams and to respond to first signals when someone is not well. As care is a core value at BESIX, these workshops are now mandatory for anyone progressing into a managerial role. Parallel to the workshops, the Group has also grown its team of trained Confidence Officers in order to be equipped with the right expertise to support the organisation internally.

Physical health was also a priority in 2021. Official numbers of the International Labour Organization show that no less than a third of all deaths due to occupational accidents and illnesses every year are in fact work-related cancers. Workers in the construction industry are most at risk. Since these cancers are largely predictable and preventable, BESIX believes that as an organisation it has an important role to play. This is why BESIX Group has partnered with the No Time To Lose campaign of the Institution of Occupational Safety and Health (IOSH), becoming the first building company in Europe to do so. During its Global Safety Time Out, BESIX raised awareness on exposure to asbestos, silica dust, solar radiation and diesel exhaust fumes.



"Thanks to the impressive ability of the BESIX project teams, corporate services and Senior Management in adapting to the situation, the accident rate gradually decreased throughout 2021."

ALEXIS LAROCHE, CORPORATE QHSE MANAGER

SAFETY TIME-OUT ON OCCUPATIONAL CANCER



10 MILLION MAN-HOURS FREE OF LONG-TERM INCIDENT ON DUBAI UPTOWN TOWER, UAE



“The BE SAFE principles increase mutual functional trust between teams and levels of the organisation. This leads to high psychological safety, a climate in which people are comfortable expressing and being themselves.”

GEERT AELBRECHT,
CHIEF PEOPLE OFFICER

Applying BE SAFE principles as a cultural driver

The ambition of BESIX is to create a world class health and safety culture featuring a common sustainable behaviour of ownership. Mutual trust, care and respect are at the centre of this culture. This requires a shift from people being seen as the problem towards people (or their behaviour) being the solution. In other words, BESIX doesn't focus on behaviour as a problem, but as a catalyst of culture.

In 2019, BESIX launched BE SAFE, a behavioural-based safety programme. As the programme took root and grew in 2020 and 2021, BESIX observed effects which went well beyond the primal objective of a behavioural-based safety programme, which was to influence people's behaviours. Workers exposed to BE SAFE started to take matters in their own hands in order to improve their work and workspace. They did not only see(k) risks or opportunities for improvement, they also took finding and developing a solution – be it together with peers or with supervisors – aboard as part of their own role and responsibility. It became, in other words, an intrinsic part of the culture in the workplace.

The BE SAFE principles increase mutual functional trust between teams and levels of the organisation. This leads to high psychological safety, a climate in which people are comfortable expressing and being themselves. Also, more practically and related directly to health and safety, it helps people to feel able to share concerns or failures as well as successes without the fear of embarrassment or retribution. They are confident they can speak up without being judged, ignored or blamed. This is why BESIX has reinforced the application of the BE SAFE principles through its Project Management Safety Walkabouts.

Concrete action for climate

The impact as a construction company in terms of sustainability is twofold. It has a direct impact through its own construction operations and project execution. It also has an indirect impact on the value chain of partners and suppliers, and on the sustainable solutions that BESIX promotes and provides to its clients. This is why the company has set three clear ambitions:

- BESIX strives to become neutral for its own direct (scope 1) and indirect (scope 2) greenhouse gas emissions by no later than 2050.
- BESIX pledges to promote and be a leader in providing sustainable solutions to its partners and clients and, in doing so, help them to achieve their own climate goals and targets.
- BESIX will promote and incentivise its supply chain, in particular the building material producers with the greatest potential in this area, to reduce their greenhouse gas emissions (scope 3) in order to become neutral by no later than 2050.

Over the past year, BESIX has calculated its actual footprint and defined an ambitious scope 1 and 2 reduction programme with a focus on mobility, energy and heavy site equipment. For the latter, the company is testing alternative and more sustainable fuels, such as hydro-treated vegetable oil. In 2022, BESIX will also use its first fully electrically powered heavy site equipment (crawler crane and telescopic handlers). As its own emissions count for only 10-15 % of the total company's greenhouse gas emissions, BESIX is currently working on a strategy to reduce its scope 3 emissions both upstream (supply chain...) and downstream (end products...).

Meeting standards

BESIX Group constantly develops, implements and maintains a documented Integrated Management system that aims to meet the various norms and standards (ISO 9001, ISO 14001, OHSAS 18001, ISO 45001, etc.) and always ensures to analyse the impact of strategic decisions on this system in terms of risk management and compliance management. Its internal quality assurance systems and ISO certified processes demonstrate both operational excellence and the ability and commitment to deliver while ensuring the level of quality expected by the clients.



“Our impact as a construction company in terms of sustainability is twofold. There is a direct impact through our own construction operations and project execution. There is also an indirect impact through the value chain of our partners and suppliers, and through the sustainable solutions we promote and deliver to our clients.”

PIERRE SIRONVAL, DEPUTY CEO



BE SAFE, THE BEHAVIOURAL-BASED SAFETY PROGRAM

BESIX Foundation

A YEAR OF RESILIENCE AND CONTINUITY

IN 2021, THANKS TO ITS ABIDING PASSION, BESIX FOUNDATION WAS ABLE TO CONTINUE ITS CHARITABLE ENDEAVORS DESPITE THE UNIVERSAL IMPACTS OF THE COVID-19 CRISIS.

KiddyBuild at School

In 2021, KiddyBuild, one of the Foundation's flagship projects, found a new life through co-creation. Originally, KiddyBuild invited school children on a field trip to a construction site where pupils could learn about the various trades required to get a building off the ground. Various lockdowns and government restrictions induced by the pandemic made it impossible for such field days to take place.

The Foundation therefore developed the KiddyBuild at School programme, which delighted teachers and children alike. For one morning, BESIX volunteers visited classrooms and introduced school children to the ins and outs of the construction world. The sessions were centered around the BESIX board game 'Construction Heroes', which offered a fun and innovative introduction to the construction sector.



"This was a unique experience for our pupils, which allowed them to dream about a future even during Covid-19. I found this enthusiasm equal to the site visits we were able to enjoy a few years ago. My former pupils are still talking about it now and many of them gravitated towards technical training as they grew up. An activity to be repeated as often as possible! Thank you for offering them this wonderful experience."

SALLY DE CREM, TEACHER AT LA SAGESSE PHILOMÈNE



"The children focus on details we wouldn't even think about. Lots of learning and fun for all involved, young and old! As a volunteer, you will rediscover your job in a completely different way."

OLIVIA DEHON, JUNIOR TECHNICAL OFFICE ENGINEER & 'KIDDYBUILD AT SCHOOL' VOLUNTEER



KIDDYBUILD AT SCHOOL

BESIX CLEAN-UP DAY



“Thanks to the trust and backing of associations like BESIX Foundation, we are able to respond in an ever more impactful, decent and humane manner to the demands of the public we support.”

MAKIDO SORGHU, MANAGING DIRECTOR, AMONSOLI EVENING SCHOOL



“I was glad to participate in the Clean-Up Day organised by BESIX Foundation. In addition to the invasive plants, we collected eight large bags of waste as well as some more substantial items... So many reusable resources finally found their way to recycling. A great collective effort to protect the environment.”

QUENTIN PAYEN, ERP ANALYST & CLEANUP VOLUNTEER

This ‘at-school’ formula was such a success that it will continue to be offered even after the pandemic has subsided.

BESIX Clean-Up Day

Another success was the third installment of the BESIX Clean-Up Day. Across the world more than 1,800 colleagues participated, collecting nearly 15 tonnes of waste!

Following the devastating floods in Belgium this summer, four of the foundation’s partner associations were affected, two of them very seriously: an evening school and a shelter. BESIX Foundation mobilised its network to help them resume their activities as quickly as possible, including organising an educational book-drive and several clean-ups.

In another area of Belgium, the Foundation called upon volunteers to undertake a substantial clean-up on the banks of the Vesdre River to prevent the spread of the invasive Japanese knotweed following the floods.

Throughout 2021, over 2,000 colleagues and a hundred of their relatives volunteered and took part in the Foundation’s various actions from blood-drives to the distribution of warm

STREET NURSES, AN ASSOCIATION SUPPORTED BY THE FOUNDATION IN BELGIUM



BLOOD DONATION DRIVE, DOHA, QATAR

meals to homeless people, winter clothes collections to clean-up activities.

Our supported associations

Each year, BESIX’s employees get to elect their favourite association. The Brussels (Belgium) association ‘Street Nurses’, a medical-social organisation that strives to get homeless people off the streets in a meaningful way, won the 2021 Staff Award. This acknowledgement comes with additional financial support.

In 2020, some 24 projects benefited from the Foundation’s financial support. Most of these supported associations work with the most underprivileged, doing a wonderful job in helping 4,000 beneficiaries in Belgium and abroad.



“How to keep going when the world seems to slow down? This is the challenge we have taken up in 2021. Thank you to all those who spare either their time or their creativity to make our Foundation one of the proudest achievements of BESIX Group. Thank you to our Chairman and our shareholders for supporting us financially since 2009. Without their conviction, we wouldn’t be able to take up the challenge again in 2022!”

FRÉDÉRIC DE SCHREVEL, CHAIRMAN OF BESIX FOUNDATION

04 /

110 YEARS OF GLOBAL EXPERTISE

Our areas of expertise	56
Buildings	58
Infrastructure	78
Marine Works	86
Industry	88
Concessions & Assets	90
Real Estate	92

OUR AREAS OF ACTIVITY

THANKS TO ITS EXPERTISE AND IN-HOUSE ENGINEERING KNOW-HOW, BESIX IS ALWAYS READY TO COME UP WITH HIGH-QUALITY AND COST-EFFICIENT SOLUTIONS ACROSS ITS MANY ACTIVITIES.

CONCESSIONS & ASSETS



BESIX Concessions & Assets devises tailor-made solutions covering the complete infrastructure life cycle. With its broad experience in European and Middle Eastern Public Private Partnerships, BESIX recognises that each project, client and community has a unique set of challenges and takes pride in being able to form collaborative partnerships to deliver on their aspirations. Together with its Client-Partners and applying its range of financing options, BESIX devises a pragmatic approach to achieve a shared interest over the complete infrastructure lifecycle.

REAL ESTATE DEVELOPMENT



BESIX RED has proven itself a responsible player in revitalising cities and acquiring prime locations across the Benelux, France and Portugal. It covers three lines of activities: Offices, Residential and Retail & Services. In addition to its 30 years of experience, BESIX RED relies on a team of great talents, whether it be architects, engineers or entrepreneurs. They serve the specific interests of clients with high-performance developments: maximising convenience of occupancy and optimisation of the environmental, economic and technical factors.

CONTRACTING



Buildings

From world-famous skyscrapers to low-impact housing developments, BESIX's impressive track record speaks for its professionalism and mastery. Today, BESIX continues to design, develop and deliver fully integrated buildings and real estate properties with a unique architecture, cutting-edge technology and performance, complex logistical and environmental requirements, and challenging deadlines. BESIX is especially known for its sound experience in carrying out sophisticated large-scale projects, such as high-rise buildings, shopping malls, hotels, hospitals, schools...



Infrastructure

BESIX takes on the most challenging and large-scale civil construction plans for both public and private clients. Building on its engineering skills and its powerful implementation resources, BESIX constructs complex public works such as tunnels, bridges, railways, dams...



Marine Works

The market for modern port infrastructure is one of the most dynamic in which BESIX operates. Benefiting from its in-house engineers' know-how, BESIX carries out projects mostly on a Design & Build basis, and owns and operates its specialised marine equipment. This comprehensive design and equipment approach yields considerable cost savings. BESIX executes coastal marine works all around the world: breakwaters, jetties, quay walls, locks, marinas, water intakes, shore protection and refurbishment.



Environment

BESIX has established itself as a key player in environmental contracting. BESIX provides innovative and tailor-made integrated solutions for today's growing water and waste challenges, and energy needs. It includes the design, engineering, execution, start-up and commissioning of wastewater and drinking water treatment plants, pumping stations, hydroelectric installations... BESIX also focuses on the creation of by-products from waste, such as biogas, biofuel, biosolids and heat recovery. Recoverable resources and energy optimisation are a must in times of rapid demographic changes and a global transition to green energy.



Industry

In the niche market of industrial structures, BESIX designs and builds logistic and handling centres, warehouses and processing plants, as well as infrastructure for power providers.



Sports & Leisure

BESIX builds places that turn people into participants. World-class football stadiums, multipurpose arenas, theme parks and swimming pools are some of the iconic examples of outstanding infrastructure for entertainment and sporting events BESIX has built over the years, over the continents.



Roads

BESIX provides construction, renovation and maintenance services for roads and road infrastructure. Works range from motorways to the construction of interchanges. Maintenance services are also provided through long-term public-private partnerships. In addition, several specialised entities owned by BESIX Group are active in this field, particularly in the Benelux. This is the case of BESIX Infra in Belgium and in the Netherlands, and Socoetra, both figuring among the region's leading roadworks companies.



Utilities

The Group is active in the utilities sector, both through BESIX and through some of its specialised entities, such as Van den Berg in Belgium. This field comprises a variety of competences, such as the laying of underground infrastructure, including sewage, cable, fibre optic and duct networks. In the field of technical installations, the Group offers services for the construction of high and low voltage infrastructures. Several companies in the Group also offer specific expertise in the railway sector, including signalling systems.



Foundations

From deep foundations to retaining walls, BESIX provides foundations for infrastructures and buildings of all types, including the most demanding ones such as skyscrapers. BESIX Group's subsidiary Franki Foundations is itself specialised in deep foundation techniques and is a European leader in this field.



Construction Materials

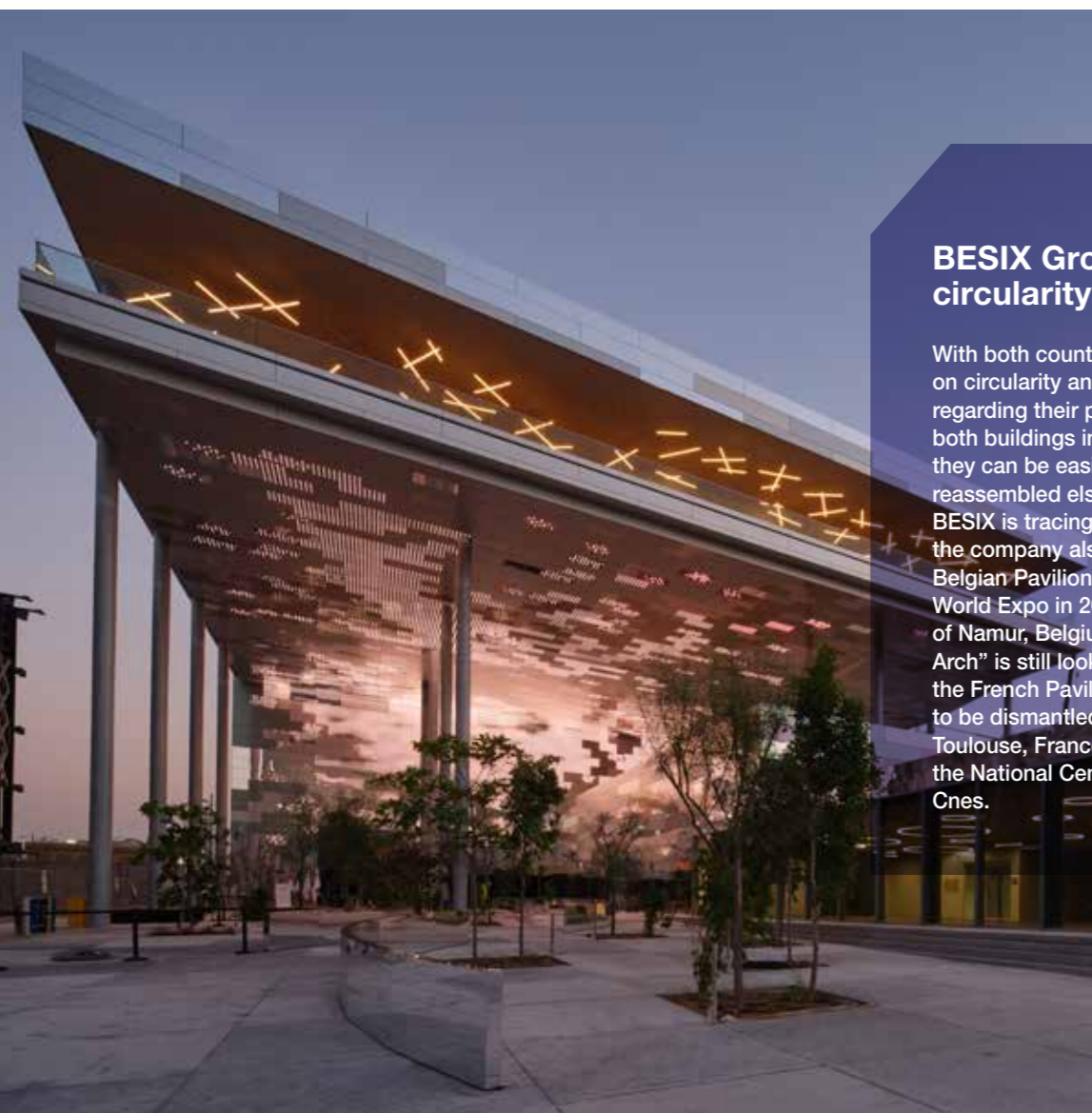
Several BESIX Group companies represent a vertical integration that is extremely valuable for the quality and reliability of their work. This is the case of gravel quarries, asphalt plants and asphalt binder production for companies active in the road construction sector in Europe. The Group also has ready-mix concrete plants and recycled products, notably in Belgium and in the Middle East.



Buildings

BESIX GROUP, ROYAL PURVEYOR IN DUBAI

THE GREAT EXHIBITION HELD IN THE CRYSTAL PALACE IN HYDE PARK, LONDON IN 1851 IS WIDELY CONSIDERED AS THE FIRST OFFICIAL WORLD EXPO IN HISTORY. CONCEPTUALIZED BY ALBERT, PRINCE CONSORT TO THE BRITISH QUEEN VICTORIA, THE GREAT EXHIBITION, HELD TO SHOWCASE THE INVENTIONS OF THE INDUSTRIAL REVOLUTION, WAS A COLOSSAL SUCCESS WITH AMONG ITS GUESTS ILLUSTRIOUS NAMES SUCH AS CHARLES DARWIN, KARL MARX, CHARLOTTE BRONTË, CHARLES DICKENS, LEWIS CARROLL AND ALFRED TENNYSON. 170 YEARS LATER, DUBAI HOSTS THE EXPO2020 THEMED 'CONNECTING MINDS, CREATING THE FUTURE'. THE PAVILIONS ARE CENTERED AROUND THREE MAIN FOCAL POINTS: SUSTAINABILITY, MOBILITY AND OPPORTUNITY. FOR BESIX GROUP, THIS PARTICULAR WORLD EXPO WAS THE IDEAL MOMENT TO SHINE AS ROYAL PURVEYOR, NOT ONLY TO ITS HOME COUNTRY BELGIUM, BUT ALSO FRANCE AND THE UNITED ARAB EMIRATES. LET'S TAKE A CLOSER LOOK.



FRENCH PAVILION, DUBAI, UAE

BESIX Group supports circularity

With both countries focusing heavily on circularity and sustainability regarding their pavilions, BESIX built both buildings in such a way that they can be easily dismantled and reassembled elsewhere. In doing this, BESIX is tracing its own footsteps as the company also reassembled the Belgian Pavilion it had built for the Milan World Expo in 2015 on top of the Citadel of Namur, Belgium. While "The Green Arch" is still looking for a new home, the French Pavilion is already planned to be dismantled and reassembled in Toulouse, France, where it will house the National Centre for Space Studies, Cnes.

BELGIAN PAVILION, DUBAI, UAE



A royal purveyor deserves a royal visit

On the Belgian Day at the Dubai World Expo in the United Arab Emirates, King Philippe of Belgium and Queen Mathilde of Belgium honoured the Belgian Pavilion with a visit. During their visit, BEGIX Group, the Belgian trade unions FGTB and CSC, and the Building and Wood Worker's International (BWI) officially handed over the 'Declaration for Safe and Healthy Workplaces'. The declaration, signed by BESIX Group, FGTB, CSC and BWI, proclaims health and safety at work as a fundamental right. By handing it over to the Belgian government, represented by Mrs. Sophie Wilmès, Deputy Prime Minister and Minister of Foreign Affairs, and Mr. Pierre-Yves Dermagne, Deputy Prime Minister and Minister of the Economy and Employment, BESIX Group and the unions ask to recognize its contents which will lead to the implementation of better working conditions for all on a global scale.

SIX CONSTRUCT, ROYAL PURVEYOR OF THE UNITED ARAB EMIRATES

After celebrating its presence of more than 50 years in the United Arab Emirates, and delivering a slew of iconic projects during those 5 decades, BESIX Group was again awarded a contract in 2017 for a highly visible project in Dubai. Via its Middle Eastern subsidiary Six Construct, the Group was entrusted the infrastructural works for the event site for Dubai EXPO2020, in joint venture with long-term partner Orascom Construction. In a little under two years, the teams built an entirely new district that would host up to 300,000 visitors per day on a surface of 4.38 km², which corresponds to 620 football fields. The scope included irrigation and sewerage, pipes and cabling, roads, electricity and water and telecommunications ducting.

ONE CONTRACTOR, TWO PAVILIONS

After having completed the infrastructure for the event, BESIX Group was able to announce in 2019 that it was building not one, but two pavilions for the World Expo: the "Lights, Enlightenment" pavilion for France and Belgium's "The Green Arch". Both pavilions were supposed to be ready for the opening of the World Expo in October 2020, but works were halted due to the delay caused by the global health crisis. One year later, in October 2021, the 192 pavilions were finally able to welcome visitors from all across the globe.

The Belgian Pavilion was located in the mobility district and aimed to be exemplary in terms of sustainable development. It was an ode to regenerative circular economy, to biobased and geo sourced materials, to the integration of bioclimatic rules and renewable energies, as well as to the preservation of biodiversity and nature. Both the design, the construction as well as the day-to-day operation of the pavilion depended highly on solar energy. Belgian architect duo ASSAR ARCHITECTS and Vincent Callebaut Architectures combined intensive greenery and futuristic design in solid wood to achieve the perfect look. In keeping with the pavilion's pledge to sustainability, all used wood was responsibly sourced from specific locations in Europe and the necessary quantities were meticulously monitored by using detailed geometry on site as well as the latest BIM 3D technology for wood fabrication. The result was a building supported by two pillars, a façade of solid

wood, and an arch allowing visitors to walk under the building to an agora providing shade from the Middle Eastern sun.

Also located in the mobility district and separated from the Belgian pavilion only by neighbor Thailand, the French pavilion reflects the commitment of the French Republic to be an actor of change for an ambitious ecological transition. This is reflected, for example, in the choice of materials and a circular approach, considerably limiting the building's carbon footprint. An important part of the energy consumed by the pavilion was solar, captured by the 2,500 m² of solar tiles integrated into its façade. A micro wastewater treatment plant recycled the wastewater and supplied the watering network and sanitary facilities. In doing so, potable water needs were reduced by 30% in a region where water resources are precious. In addition to its eco-building qualities, the French Pavilion featured various technical feats, including a spectacular 1,800 m² interior façade. Architects Atelier Perez Prado and Celnikier & Grabli Architects added a panoramic terrace also offered a unique view of the Expo site, while the common shelter at the entrance protected visitors from high desert temperatures while queuing in front of the pavilion to enter it.

In conclusion, BESIX Group is immensely proud to have been able to contribute two pavilions and the event infrastructure to Dubai's EXPO 2020 and to have given the over 18 million visitors of the exposition a fantastic day in doing so!



Buildings

LUSAIL TOWERS, A LANDMARK PROJECT IN DOHA

// Project details

LUSAIL TOWERS

Location
Lusail City, Qatar

Client
Lusail Real Estate Development Company W.L.L.

Partner
MIDMAC

Architect
Foster + Partners

Contract type
Design & Build

Construction period
2020 – 2023



LUSAIL TOWERS, LUSAIL CITY, QATAR

THE LUSAIL TOWERS DEVELOPMENT IS LOCATED APPROXIMATELY 15 KILOMETERS NORTH OF DOHA, ALONG THE EAST COAST OF QATAR. THE PROJECT IS A PART OF THE LARGER LUSAIL CITY DEVELOPMENT WHICH INVOLVES TRANSFORMING AND DEVELOPING THE AREA NORTH OF DOHA INTO A RESIDENTIAL AND COMMERCIAL DISTRICT. DESIGNED BY FOSTER + PARTNERS, THIS ALREADY EMBLEMATIC DISTRICT IS KNOWN FOR ITS TWO 70-STORY AND TWO 50-STORY HIGH TOWERS, ARRANGED SYMMETRICALLY AROUND A CENTRAL PLAZA.

MIC CONSTRUCT, IN JOINT VENTURE WITH MIDMAC, ITS LONG-LASTING PARTNER IN QATAR, HAS BEEN AWARDED THE DESIGN AND CONSTRUCTION OF THE TWO 50-STORY HIGH TOWERS AND ADJACENT PODIUMS. THE PROJECT KICKED OFF IN JANUARY 2020 AND IS TARGETED FOR SUBSTANTIAL COMPLETION BEFORE THE 2022 FIFA WORLD CUP.

Did you know?

BESIX is also building other projects designed by Foster + Partners. BESIX-SixConstruct are participating to the construction of the Zayed National Museum in Abu Dhabi (UAE), while BESIX Real Estate Development and Lux TP, a BESIX Group entity in Luxembourg, are developing and building IcoNE, a new office complex in Belval (Luxembourg).

AN EXTRAORDINARY DESIGN

The iconic towers are designed as sculptural elements whose shape elongates and morphs through 90 degrees as they rise up. The tower façades were designed in response to the sun, with projecting fin-like profiles that wrap around the building, shading the glazing from the sun. The aluminum cladding on the façades is set out by the unique shape of each of the floor plates and wraps around the structure of the towers.

The bases of the towers are surrounded by a series of low-level podium buildings that create a series of interconnected public spaces where a wide range of activities can take place. The design of the podium building massing has been inspired by the traditional Islamic architecture with narrow streets, courtyards, atria, and overhanging mezzanines.

A FLYING START

"We signed up for a fast-track Design & Build project where the first concrete had to be poured three months after the start date, so all the methods and engineering had to be prepared in parallel and well in advance to ensure a timely start of the civil works to ensure a continuous smooth, regular progress," recalls Koen De Rooy, Project Director. "Right from the start, we strived every day to improve our efficiency." For instance, a method with table lifting system and table formwork has been set up for the external slabs, while steel formwork was used for the columns. "This way, we managed to decrease the overall duration of each cycle to 5 working days per floor."

To make matters more complex, pandemic struck barely a month after the project start, disrupting the staff and work force mobilization. "Due to the flexibility, determination, resilience, and a huge sense of professionalism of our colleagues, we nevertheless managed to limit the impact," says Koen De Rooy. "We even completed the structural works on the towers in August 2021 – some two months prior to the Baseline!"

AND A FINAL SPRINT

Now that structural works are done, all eyes are set on the façade. The scope includes 120,000 m² of individually unique unitized glazing and aluminum panels on the towers, and 145,000 m² of ultra-high performance concrete panels for the podium buildings. "Overall, it's the largest façade project undertaken by our company and the most complex unitized system, and despite the worldwide stress on supply chains, we are proud to have reached today the 47th floor of the two towers," completes Bianca Pateet, Project Manager (note of the editor: these lines were written in March 2022).



"Every project has its challenges. With adequate teamwork and commitment, we can overcome every one of them."

BIANCA PATEET, PROJECT MANAGER.



"Our no-nonsense and proactive approach is appreciated by the Client. Although we need to safeguard all parties' interests in these unprecedented times of pandemic and inflation, the Client recognizes that we are a reliable partner."

KOEN DE ROOY, PROJECT DIRECTOR.

In parallel, MEP works are also ongoing. "One of our daily challenges is the logistics of getting equipment inside the buildings. We only have one entrance to each plot, and there are tram tracks outside the perimeter walls. We even had to install steel bridges to ensure continuous deliveries!" adds Bianca Pateet. "Trust and close coordination between all team members are paramount to stay efficient, day after day."

Going forward to the hard deadline of end 2022, there are other challenges to address, like the reduced working hours during Eid and during the summer months, although "this is something we can overcome: with proper planning and proper execution, we can face it all," explains Bianca. The project team is indeed using Building Information Management (BIM) to coordinate all disciplines, both from the company side as from the client side, together with 4D and 5D plans, laser scans, and as-built models. A formidably powerful tool to support excellence in execution, especially when faced with hard deadlines.

GOLDEN MEDAL

The impressive progress on this intense project has not been at the expense of safety: "in April 2022, we have celebrated 25 million manhours without Lost Time Incident (LTI). This is an achievement the whole team is extremely proud of," concludes Koen De Rooy.

219 m

HEIGHT OF THE TWO TOWERS BUILT BY THE MIC CONSTRUCT-MIDMAC JOINT VENTURE

50

NUMBER OF STORIES IN EACH OF THE TWO TOWERS BUILT BY THE JOINT VENTURE

4

STARS IN THE REGIONAL GLOBAL SUSTAINABILITY ASSESSMENT SYSTEM THAT THE TOWERS TARGET TO REACH

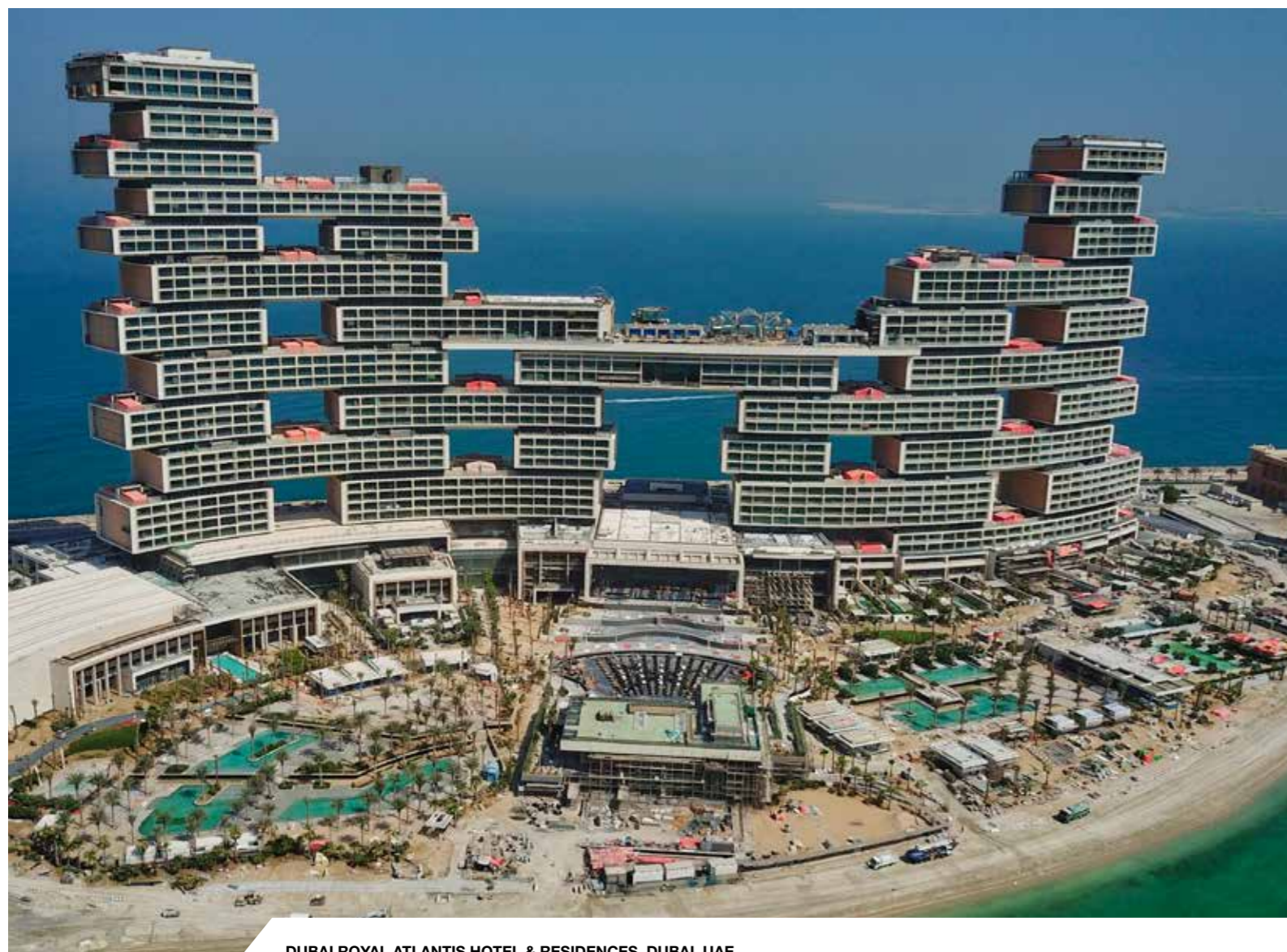
5

DAYS TO BUILD ONE FLOOR

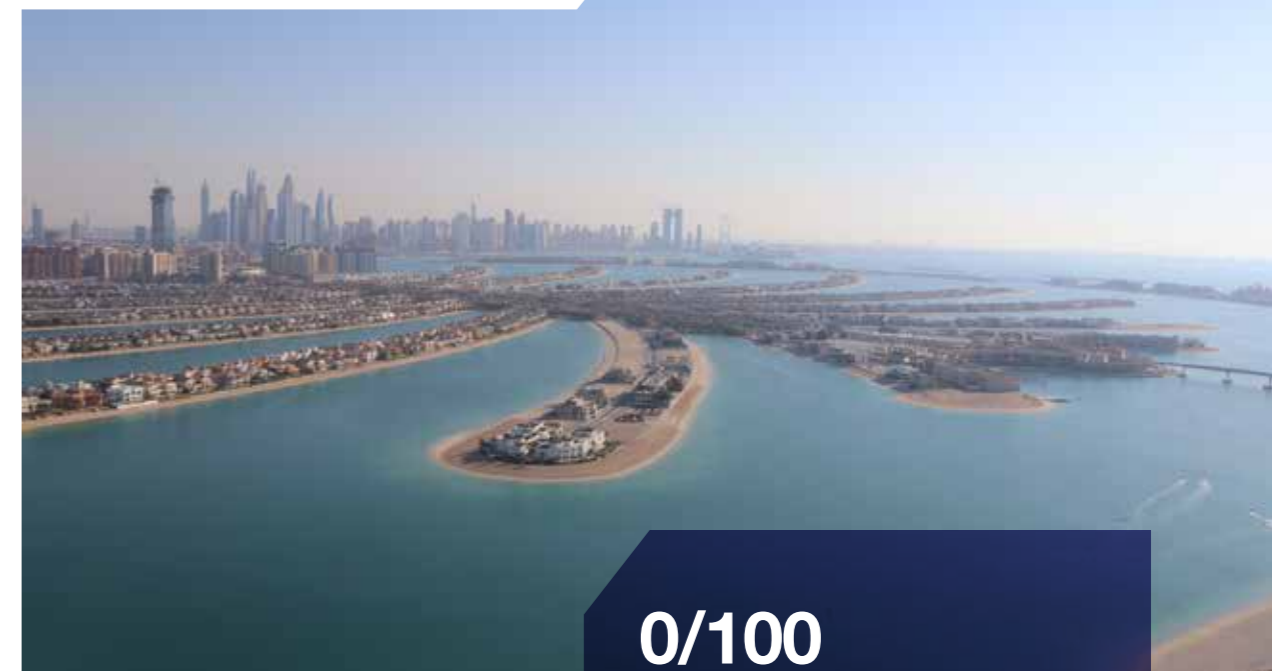


THE WORLD-CLASS ROYAL ATLANTIS HOTEL & RESIDENCES

IN SEPTEMBER 2022, THE ROYAL ATLANTIS HOTEL & RESIDENCES WILL BE DELIVERED TO THE CLIENT, ATLANTIS THE PALM 2 LLC. THROUGHOUT 2021, 8,000 WORKERS HAVE BEEN WORKING DAILY TO ENSURE THAT THE WORK IS COMPLETED ON TIME. THIS EXTRAORDINARY PROJECT OF ALMOST 400,000 M² WILL BE ONE OF DUBAI'S MOST UNIQUE BUILDINGS, BOTH IN TERMS OF ITS ARCHITECTURE AND THE QUALITY AND SOPHISTICATION OF ITS INTERIOR DESIGN. FROM THE FIRST DAY TO THE LAST, IT HAS BEEN A PARTICULARLY DEMANDING PROJECT, WHICH BESIX GROUP'S SUBSIDIARY SIX CONSTRUCT AND ITS SOUTH KOREAN PARTNER SSANGYONG BRILLIANTLY CARRIED OUT. THIS IS REFLECTED IN THE STUNNING QUALITY OF THE BUILDING, AS WELL AS THE ATTENTION THAT HAS CLEARLY BEEN PAID TO EVERY DETAIL AT EACH STAGE OF THE CONSTRUCTION, BOTH INSIDE AND OUT.



DUBAI ROYAL ATLANTIS HOTEL & RESIDENCES, DUBAI, UAE



0/100

0 LOST-TIME INCIDENTS,
100 MILLION SAFE WORKING HOURS

500

METERS LONG

185/175 meters

THE HEIGHT OF THE EAST
AND WEST END TOWERS

45,000 tonnes

OF STEEL REBAR

5,500 tonnes

OF STRUCTURAL STEEL

150,000 m²

OF MARBLE

130,000 m²

OF GLASS REINFORCED CONCRETE

A NEW ICON FOR DUBAI

Located on the outer crescent of the Palm Jumeirah, the Royal Atlantis Hotel & Residences offers spectacular views wherever the eye falls. The waters of the Arabian Gulf on one side, the Dubai coastline and skyline on the other. No building has ever better borne the name of Atlantis, the mythical island of grandeur mentioned by Plato and dedicated to Poseidon.

The architecture was designed by the prestigious New York firm Kohn Pedersen Fox Associates. The building, marked by a curvilinear design and cantilevered structures, is 500 meters long from end to end. At the western end, the hotel tower reaches a height of 185 meters and has 43 floors that will house 795 rooms and suites. At the east end, the 37-storey residential tower rises to 175 meters and includes 231 luxury residences, ranging from two to five bedrooms. These east and west wings both comprise three sub-towers and are connected by a 45-metre-long suspension bridge. At a height of 90 meters, it includes an infinity pool, entertainment, and relaxation areas. In addition, many of the residences have their own outdoor areas with private pools, not to mention the largest private beach in Dubai.

Inside the building, the furnishings perfectly reflect its architectural ambitions. The interiors of the residences, for example, were conceived by Parisian designer Sybille de Margerie, using materials such as leather, marble, metal, porcelain, and gold leaf. Everything has been designed for the comfort of residents and guests. Among the many services, the Royal Atlantis Hotel & Residences will offer 17 world-class restaurants with world renowned chefs.

A CHALLENGING CONSTRUCTION

“Such large-scale projects require a very special approach,” explains Operations Manager Yves De Rue, familiar with large projects carried out by BESIX Group in the Middle East, such as the Emirates Hotel tower in Dubai and the Cleveland Clinic in Abu Dhabi. “Even more so than on smaller projects, every detail, from the outset, has to be meticulously and perfectly executed. The multiplier effect of a mistake is like the building itself - enormous!”

At the beginning of 2021, in agreement with the client, Six Construct and Ssangyong took over the engineering studies and began extensive preparatory work in order to plan the final year of construction in detail, with the aim of excelling in the final sprint to delivery, and this effort has clearly paid off. “The work done by our teams in 2021 is to be commended. What has been achieved, in terms of volume and quality, is truly impressive,” continues Yves De Rue. In addition to engineering, construction methods were also strengthened in the most critical and risk-prone areas of the building. For example, planning was reviewed, with LEAN Planning being implemented in certain areas to reduce pressure and avoid delays. “We have done our best to ensure that our teams can work in a positive and safe environment, conducive to efficient and quality work.” And that's exactly what happened!



The last tower crane for the façade work was removed in September 2021. “Most of the work will be completed between February and July 2022. Final delivery is scheduled for September,” says Yves De Rue. Remaining work in 2022 includes, among other things, the addition of furniture, supplies and equipment, the completion of some MEP work, and the final touches to the project's stunning landscaping. At the end of July, the entire 'Residences' section will be completed, followed by the 'Hotel' section. The construction will then be followed by a two-year warranty period, which is longer than usual due to the size of the building.

LIVING UP TO HIGH AMBITIONS

The most striking thing about entering the Royal Atlantis is the extraordinary quality of the finished product. This is in line with the client's objective to bring to market a truly high-end hotel and residences, a new generation of luxury in Dubai. This is definitely the case. “Many of Six Construct's departments have demonstrated the full extent of their expertise on this challenging site. This is true for the operational teams, but also for the technical office, procurement and certainly the quality control teams,” concludes Yves De Rue.

Lifting the sky bridge

A major milestone in the project was the lifting of the 1,260 tons, 45-metre sky bridge by strand jacking. This was an extremely precise operation. It was first built on the roof of the main lobby, between the 4th and 8th floors, and then gradually lifted to its final position at a height of 93.5 meters. It then took another month of work to finally fix it to the existing structure and make all the connections!



“One of the great successes of the project is safety. The construction site has not experienced any lost-time incidents, which represents over 100 million safe working hours.”

YVES DE RUE, OPERATIONS MANAGER

When pools require creativity!



Residents and visitors to the hotel will have access to outdoor pools, including private pools for the hotel suites and residential flats. In terms of construction, installing a swimming pool is not that complicated. In the case of the Royal Atlantis, however, the installation of 80 of the building's pools was a real challenge, especially those that had to be installed on the sky courts, i.e. the terraces that have upper floors above them and therefore constitute an opening in the façade. As the pools were to be installed after the concrete work had been completed, it was obviously impossible to place them in their final position with tower cranes. The tower cranes could lift them, but not insert them into the openings, let alone place them in their exact location. “We had to find a solution quickly. The subcontractor in charge of the pools had not managed to do so. We took over and together with our colleagues, we had to find a solution”, says Faycal Amri, Technical Manager at Six Construct. The 80 high-quality and extremely delicate pools, made of a steel structure and wrapped in fiberglass and acrylic panels, weighed between 8 and 13 tons each and were up to 12 meters long.

“The solution we developed was to anchor a loading platform to the sky courts, thus cantilevered over the void, where the tower cranes could safely place the pools,” continues Faycal. In all, the loading platforms had to be fixed to 31 different sky courts. “On each sky court, we then created a system similar to a gantry crane using beams attached to the scaffolding. A system of chains and hoists would allow us to lift the pools, insert them into the sky courts, move them sideways and install them in their final location, to the last centimetre”. It took Six Construct only two weeks to design this customised loading platform and gantry crane solution, taking into account all the geometric, physical and site-related constraints. Two additional weeks were needed to manufacture the platforms so that operations could begin. A brilliantly executed operation. “It was a real team effort. And the fact that the solution we created together worked so well was extremely gratifying for us all. The ability to be creative at a critical moment is part of the collective success of a project. These are moments that bind a team together and make all its members proud,” ends Faycal.



Buildings

GRAND EGYPTIAN MUSEUM: THE EXCEPTIONAL TRANSPORT OF THE KHUFU SOLAR BOAT



TRANSPORT OF THE KHUFU SOLAR BOAT, CAIRO, EGYPT

IN THE SECOND HALF OF 2021, THE BESIX-ORASCOM CONSTRUCTION JOINT VENTURE STARTED THE PROGRESSIVE DELIVERY OF DIFFERENT AREAS OF THE GRAND EGYPTIAN MUSEUM COMPLEX. THE MUSEUM WILL OFFER VISITORS AN UNPRECEDENTED COLLECTION OF EGYPTIAN ARTEFACTS, INCLUDING THE 5,300 OBJECTS FROM THE TOMB OF THE YOUNG PHARAOH TUTANKHAMEN, MOST OF WHICH REMAIN UNKNOWN TO THE PUBLIC. THIS GRANDIOSE MUSEUM, WITH A BUILT AREA OF 185,000 M² AND AN EXHIBITION AREA OF 70,000 M², WILL BE THE LARGEST MUSEUM IN THE WORLD DEDICATED TO A SINGLE CIVILISATION. ITS ARCHITECTURE, IN PERFECT STRUCTURAL ALIGNMENT WITH THE PYRAMIDS OF GIZA, REQUIRED CONSTRUCTION TEAMS TO MEET CHALLENGES OF UNPRECEDENTED COMPLEXITY, INCLUDING GIGANTIC CANTILEVERS AND UNIQUE CEILING HEIGHTS.

IN AUGUST 2021, BESIX AND ORASCOM CONSTRUCTION TOOK ON ANOTHER CHALLENGE, OF A COMPLETELY DIFFERENT NATURE AND HIGHLY UNUSUAL FOR CONSTRUCTION COMPANIES. THEY TRANSPORTED THE WORLD'S OLDEST WOODEN SHIP, THE 4,500-YEAR-OLD KHUFU SOLAR BOAT, FROM THE PYRAMIDS OF GIZA TO THE GRAND EGYPTIAN MUSEUM. AN EXTRAORDINARY AND EXTREMELY DELICATE OPERATION, BRILLIANTLY COMPLETED BY THE JOINT VENTURE'S TEAM.

LIFTING OF THE KHUFU SOLAR BOAT, CAIRO, EGYPT



KING KHUFU'S SOLAR BOAT

Inherited from ancient Egypt, the Khufu Solar Boat is considered the oldest wooden ship in the world. Intended to accompany King Khufu into the afterlife, it was placed around 2,500 BC in a pit at the foot of the Great Pyramid. Discovered in 1954 by Egyptologist Kamal el-Mallakh, the ship has been on public display since 1985 at the Solar Boat Museum, just a few meters from where it was found. Made of Lebanese cedar, a rot-proof wood, the ship weighs 45 tonnes and is 43.6 metres long and 5.9 metres wide.

"The Khufu Solar Boat is a magnificent and truly priceless artefact. Our client, the Egyptian Ministry of Antiquities and the Supreme Council of Antiquities, has entrusted us with its transportation, to install it in a dedicated building within the Grand Egyptian Museum. This is a once-in-a-lifetime experience. And that was the case for each of the people in our team who contributed to the extremely thorough preparation and then the actual transport," says Christophe Ledur, Country Manager for BESIX Egypt.

A SPECIFIC BUILDING FOR THE SHIP

One of the first steps was the choice of an exhibition space for the Khufu Solar Boat. The client opted for a dedicated building on a plot of the Grand Egyptian Museum and entrusted its construction to BESIX and Orascom Construction. However, it was decided not to complete the building until the ship was installed. "In preparing for the transport operation, we determined that the best way to proceed was to lift the ship and bring it inside via the roof to install it very precisely, to the centimetre. Once inside, we would then complete the structural work around and over the ship, while obviously protecting it," explains Tomasz Szewczak, Project Engineer at BESIX, who was in charge of this operation.



THOROUGH PREPARATION & TESTING

No detail was overlooked. The ship was inspected from every angle and carefully housed in a tailor-made temporary steel cage, clad and illuminated for this exceptional event. An 8.5-kilometre route, considering the size of the convoy and the fact that the ship had to be transported horizontally, was determined and every part of it was analysed for ground stability and road surface quality. Upon exiting the old solar boat building, a perfectly flat ramp with a precise slope was constructed to create a safe and stable path to drive the convoy to the asphalt roads outside the pyramid complex. "A large number of elements had to be considered. For example, we also analysed visibility and wind gust variations in Giza... We simply had no second chance," adds Christophe Ledur.

In preparation for transport, a secure steel cage was built around the ship before any handling, bringing the total weight of the convoy to

100 tonnes. BESIX and Orascom Construction also relied on their subcontractor, Belgian company Sarens, to implement a temporary steel bridge system to park the transporter under the steel cage. The solution consisted of a twelve-axle self-propelled modular transporter that had to lift the cage and transport it out of the building. This transporter, once outside with the ship, was mounted on a second similar transporter, this double-deck system ensuring an even distribution of the loads.

Mid-June, the BESIX, Orascom Construction and Sarens teams organised a first test drive. The remote-controlled convoy, unladen, completed the route in real conditions. A success.

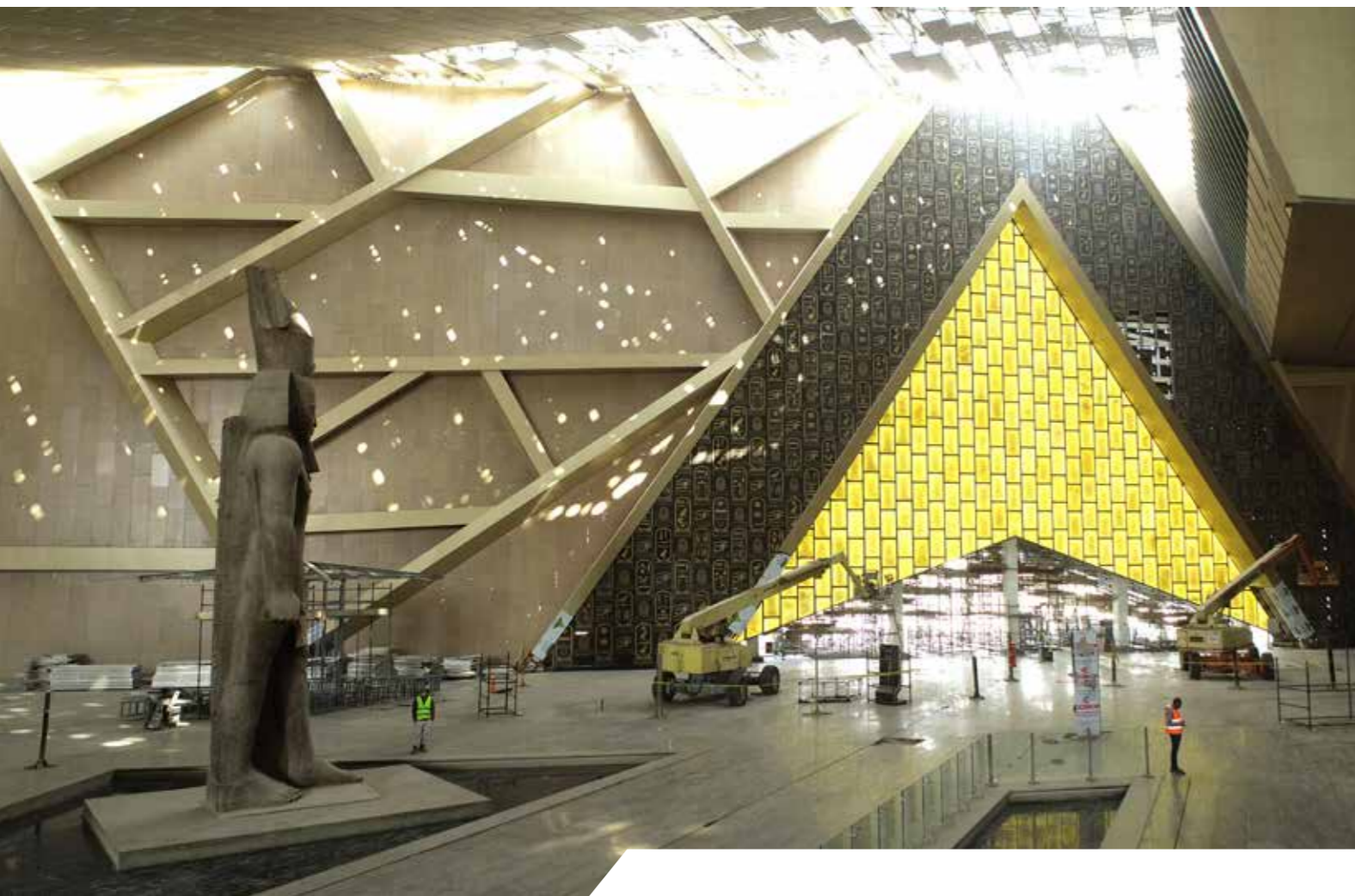
D-DAYS

The operation started on Thursday 5th August with the extraction of the Khufu Solar Boat. "The lifting went very well. A particularity was the small room for manoeuvre to get out of

the building, with only 20 centimetres on one side of the cage. Everything went as planned," Tomasz Szewczak continues.

The actual transport began on Friday 6th August, with the fully remote-controlled convoy travelling at 1 kilometre per hour. It left the Pyramids area via the narrow ramp that snaked between the Giza monuments, then joined and took the planned routes to the Grand Egyptian Museum, surrounded by lights and animations set up for the occasion. The last operation took place on Saturday 7th August. An 800-tonne crawler crane lifted the steel cage to a height of 30 metres and inserted it into the new building through the roof. It was then placed in the exact spot where future visitors will be able to admire it.

"It was an exceptional adventure, both on a human and technical level, which demanded flawless excellence from everyone involved. Each team member proved to be up to this extraordinary task and will undoubtedly remember it, at least until the day we too are transported to the other side by a solar boat, I presume..." Christophe Ledur concludes.



The Ramesses II experience

Building around an artefact was not a first for BESIX and Orascom Construction. In 2018, due to its height of 13 metres, a 3,200-year-old statue of Ramesses II was installed in the museum long before the structural work was completed. In the following years, the Entrance Courtyard was therefore built, in large part under the watchful eye of the Great Pharaoh!

The Grand Egyptian Museum

The museum is one of the largest human constructions in Egypt since the pyramids. It will feature tens of thousands of artefacts testifying to the greatness of Egyptian culture, including the golden mask of Tutankhamen.

In total, it will have required 330,000 m² of concrete, 10,500 tons of steel and 210,000 m² of stone, including marble and onyx. By 2021, the BESIX and Orascom Construction teams will have exceeded 100,000,000 man-hours to build it, all with a particularly high safety record.

The challenges of the site were numerous. In addition to the absence of recurring angles, a specificity linked to the alignment of the museum with the pyramids, the building includes ceiling heights of up to 30 metres, one of which is in a single piece of white concrete, cantilevers including a whole floor over a length of more than 20 metres, and stilettoes, 26-metre-high downward pointing triangles flanking the grand stairs. In addition to the impressive structure and finishings, there are more than 30 particularly demanding MEP and IT systems in line with the size and requirements of the building!

Besides the construction of the building, the client entrusted BESIX and Orascom Construction with the delivery of the exhibition galleries, as well as a conference centre and educational facilities. The progressive delivery of the galleries allowed the archaeologists of the Conservation Centre to start installing the exhibitions, an operation that started in 2021 and will continue throughout 2022.

Inspection of the artefact by representatives of the Grand Egyptian Museum Conservation Centre and the Ministry of Antiquities showed a perfectly intact vessel, the ultimate proof of the success of the operation. The structure of the building housing the Khufu Solar Boat was completed in the second half of 2021, with the stone and glass façade works to be completed in 2022.

"A large number of elements had to be considered. For example, we analysed visibility and wind gust variations in Giza... We simply had no second chance."

CHRISTOPHE LEDUR,
COUNTRY MANAGER
BESIX EGYPT





Buildings

OUTSTANDING QUATUOR: A SUSTAINABLE UPGRADE OF THE BRUSSELS NORTHERN DISTRICT

IN 2021, BESIX DELIVERED THE QUATUOR BUILDING TO ITS CLIENT BEFIMMO. THE COMPLEX CONSISTS OF FOUR ARCHITECTURALLY STUNNING TOWERS, UNITED BY A HUGE INNER GARDEN. QUATUOR IS DESIGNED TO BE PASSIVE AND CONFORM TO THE HIGHEST STANDARDS OF QUALITY, INNOVATION AND ENVIRONMENTAL PERFORMANCE. AT THE TIME OF ITS DELIVERY, QUATUOR WAS ALREADY PRE-LET TO PRESTIGIOUS TENANTS SUCH AS BEOBANK, TOURING, SILVERSQUARE, KONE AND BUY WAY PERSONAL FINANCE. WE TALK TO PROJECT DIRECTOR FABIAN SINAPI ABOUT THIS NEW BRUSSELS LANDMARK.

IN-HOUSE EXPERTISE

"I can look back on having built a successful project, but not without its own particular challenges: both technical ones and sustainability challenges", says Fabian. "The project is distinguished by the very high standards in terms of energy quality and sustainability, all in a technically complex environment. The challenges started right off the bat when we started the project." Quatuor replaced the "Noordbuilding", an office complex of 40,000 m². "Demolishing the Noordbuilding, removing its foundations and decontaminating the land was a complex and delicate procedure, all the more so in a dense urban environment. The solid expertise of our in-house civil engineering department and the use of Building Information Management (BIM) helped us to model coordinate all the complex data involved in the project."

Diversity as the path to success

"I see two main factors for the project's success: the near-perfect project preparation with the help of BIM and our inhouse engineering department and our talented, diverse team. The construction sector has a reputation of being a mostly male environment, which is why I was even more proud of the perfect gender parity of my site team, as well as the healthy balance between young engineers who are eager to learn and more experienced engineers who brought their valuable expertise. For me, a diverse team is the path to success, not to mention the impact it has on creating a motivating work environment."

FABIAN SINAPI, PROJECT DIRECTOR AT BESIX



// Project details

QUATUOR

Location
Brussels, Belgium

Client
Befimmo

Contract type
Build

Construction period
2018 – 2021

Contract value
130 million EUR

400

PILES

36,000 m³

CONCRETE

145,000 m²

FORMWORK

3,100 tonnes

PASSIVE REBAR

350 tonnes

ACTIVE REBAR

60,000 m²

OF OFFICES

BREAAAM OUTSTANDING

Once the demolition was finished, the teams could start building the four similar-looking towers of different heights, ranging from R+5 to R+18 floors. From the design phase to the construction phase, specific attention was paid to sustainability. "Thanks to the investments made by our client Befimmo, the design of Jaspers-Eyers and the expertise of the BESIX teams, Quatuor was the first office building in Belgium to be certified BREAAAM "Outstanding". It produces more than 25% of its primary energy on site. Over 1,400 solar panels account for 400,000 kwh/year, which is similar to the yearly energy consumption of 178 households. It re-uses more than 6 million liters of rain- and wastewater, which corresponds to 1 million toilet flushes. The 750,000 kwh of geothermal energy that is produced every year saves up to 80 tonnes of CO₂ per year. And during construction, we gave priority to the use of high-performance materials from Europe, which has contributed to effectively reducing its environmental footprint", explains Fabian. "We are certainly proud to have built a project of such environmental and architectural quality. We believe that Quatuor is an example to follow in terms of new buildings with passive standards. I would like to congratulate our teams and partners, and to thank our client, Befimmo, in particular, for its confidence and the very good collaboration throughout the construction of this outstanding project."



Buildings

BREATHING NEW LIFE INTO A HERITAGE-LISTED BUILDING

REHABILITATING A 70-YEAR-OLD LANDMARK AND TRANSFORMING IT INTO AN ULTRAMODERN OFFICE BUILDING, THAT WAS THE TASK BESIX NEDERLAND AND J.P. VAN EESTEREN RECEIVED LATE 2019 IN THE NETHERLANDS. ONLY 18 MONTHS LATER, THEY DELIVERED THE RENOVATED STATIONSPOSTGEBOUW, A COMBINATION OF GREAT RESPECT FOR HERITAGE AND NEW MODERN ELEMENTS.



STATIONSPOSTGEBOUW, THE HAGUE, THE NETHERLANDS



“This project is a good illustration of our capabilities in building renovation, a promising sector in Western Europe and shows that we can combine respect for heritage with high-quality renovation.”

RICK VERKLEIJ, PROJECT MANAGER
AT BESIX NEDERLAND

BACK TO THE ROOTS

Originally built between 1940 and 1949, the Stationspostgebouw has a rich history. With its strategic location next to the train station Hollands Spoor in The Hague, it first served as an important mail distribution center for PTT, the former Dutch public postal service. However, as it increasingly transported mail by road, the company decided to move out and a long period of vacancy followed. Until LIFE.NL and SENS real estate joined forces and decided to breathe new life into the heritage-listed building.

Now, the rehabilitated building has partly returned to its original destination, as it serves as the headquarters of Post NL, which is currently in charge of distributing the Dutch public mail. Apart from that, it also contains coworking spaces for Stationspost Offices and serves as a place to meet, create and inspire.

COMBINING OLD AND NEW

The aim of the project was to renovate the building while respecting its monumental character. Thanks to the historic nature of the building, extensive archives had been preserved which enabled the teams to really comprehend the original design and adapt the new one to it. “We had to take into account the existing constructive elements, while implementing a challenging new design. Together with the architect, we looked for an optimal solution, which we found in the combination of old and new elements,” explains Rick Verkleij, project manager at BESIX Nederland.

The biggest challenge was to add four intermediate floors within the double-height floors. “Here, the essential solution was the addition of new load-bearing elements to the original structure,” says Rick. “One of the old elements that we preserved are the so-called rotated columns.” These are hollow columns prefabricated at a given rotation speed, which results in a high load-bearing capacity, while effectively reducing the amount of concrete used. “Apart from that, we added new thin steel columns to reduce the additional load of the intermediate floors on the rotated columns,” explains Rick.

Thanks to the combination of lightweight construction methods and large voids in the new and existing floors, the total weight of the renovated Stationspostgebouw remained exactly the same as its original weight. Therefore, the foundations weren’t affected and existing stability elements could be left intact.

Lastly, the original outlook of the building remained and a second glass façade was added as a sort of second skin to insulate the building in an almost invisible manner. That way, the monumental character was preserved, while at the same time meeting high sustainability requirements. Energy is saved and noise pollution from road and train traffic is reduced, which in turn increases user comfort.



© Bas Czerwinski

A 70-YEAR OLD LANDMARK,
FULLY REHABILITATED IN THE HAGUE

A CITY WITHIN A CITY

Stationspostgebouw consists of nine floors in total that include meeting rooms and a restaurant on the ground floor. A spectacular atrium forms the heart of the building. Showpiece is the unique concrete arched roof at the top floor, which offers its users stunning views over the city of The Hague. Lastly, an underground bicycle parking was constructed with a capacity of 300 bicycles.

The building is the first phase of a larger project, Hollands Spoor Kwartier, which aims at creating a city within a city. In other words, it is to become a welcoming and green district for living, working and recreating. Diversity in nature, sustainability and technology are central and are also incorporated in the renovated building.

Project details

STATIONSPOST- GEBOUW

Location

The Hague, The Netherlands

Client

Life NL & SENS real estate

Construction Period

2019 – 2021

External partner

J.P. van Eesteren





CONSTRUCTING A NEW ICON IN AUSTRALIA'S RIVER CITY

THE BESIX WATPAC DESIGNED, AND CONSTRUCTED JUBILEE PLACE IS SETTING A NEW BENCHMARK FOR INNER-CITY MODERN WORKSPACES IN BRISBANE, AUSTRALIA, SEAMLESSLY COMBINING HERITAGE WITH INNOVATION, AND BUILDING EXCELLENCE.

// Project details

THE JUBILEE PLACE

Location

Fortitude Valley, Brisbane

Client

JGL Properties / Credit Suisse Asset Management

Contract type

Design and Construct

Contract Value

113 million Australian dollars



THE JUBILEE PLACE, BRISBANE, AUSTRALIA

UNIQUE EXOSKELETON STRUCTURE DESIGNED TO MINIMISE THE STRUCTURAL IMPACT ON UNDERGROUND TUNNELS AND HERITAGE LISTED HOTEL ONSITE

17,564 m²

NET LETTABLE AREA

RETAIL AT GROUND LEVEL
14 LEVELS ROOFTOP SKY GARDEN

101/108

BASEMENT PARKING SPOTS
AND BIKE RACKS

6 STAR GREEN STAR RATING

5 STAR NABERS RATING

5 STAR GOLD WELL BUILDING RATING



"I really consider this project as a landmark for the new BESIX Watpac. It's complex, it's logistically challenging, it's engineering-led, all the structure had to be optimised and all the movement during the erection had to be simulated. After all of this, none of the structural elements had to be re-machined so the engineering was really great."

JEAN-POL BOUHARMONT,
EXECUTIVE CHAIRMAN OF BESIX WATPAC

Strategically located in one of Brisbane's most vibrant commercial hubs, Jubilee Place integrates a classic, heritage listed, hospitality venue with modern sophistication to deliver a state-of-the-art mixed-use precinct.

The building's unique diagrid exoskeleton structure was designed to minimise the structural impact on the Brisbane's Clem Jones Tunnel that lies directly beneath the site. These angular columns also allow the building to cantilever over the heritage listed Jubilee Hotel to provide a canopy to a public plaza that links the hotel with the tower's recessed lower levels. This design solution minimises the ground stress impact on the tunnel when compared to a typical high-rise building with a core wall structure and deep pile foundations. Ultimately resulting in a light filled, open-plan internal workspace, this design is highly distinctive in the Australian commercial tower landscape.

The building also features a picturesque rooftop Sky Garden and restaurant on level 14 that capitalises on inner city vistas with surrounding landscaped seating areas. Offering basement parking for 101 cars, an end-of-trip-facility with 108 bike racks, 380 lockers and associated amenities, Jubilee Place is working to support alternative modes of transport to achieve a net zero emissions future.

The Jubilee Place project is targeting 6 Star Green Star Design and As Built, Gold WELL Building Standard Rating, 5 Star NABERS Energy Rating and a PCA A-Grade Building. The employment of the Environmentally Sustainable Design (ESD) solutions improves not only the impact of building construction but also the performance characteristics of the building to ultimately better the health of occupants and reduce the environmental impact. Final certification of these ESD items will be achieved within the DLP period after practical completion.

BUILDING AN EDUCATION PRECINCT REMOTELY IN A TIME OF COVID-19

IN 2021 BESIX WATPAC TEAM DELIVERED THE SIX STOREY, WURUN SENIOR CAMPUS ON TIME FOR SCHOOL TERM 1 2022 AND ON BUDGET IN THE GROWING INNER-CITY SUBURB OF FITZROY IN MELBOURNE AUSTRALIA, BY USING ITS ENGINEERING-LED APPROACH AND VIRTUAL COLLABORATION SOFTWARE.

Forming part of the Gasworks redevelopment in Fitzroy North, BESIX Watpac has delivered the state-of-the-art, Wurun Senior Campus with capacity for 650 students during one of the toughest construction environments in recent history. In response to the Covid-19 pandemic, the Australian and Victorian Government imposed tough new safety standards and social distancing procedures during 2020-21. However, BESIX Watpac was able to overcome these challenges to deliver its project on-time for school term 1 2022 and on-budget by implementing a range of new and innovative remote communication and tracker technologies.

The Wurun Senior Campus is now Victoria's newest and largest vertical school and includes five levels of learning spaces and facilities for different departments plus bicycle storage, offices, two stacked indoor sports courts, and an Amphitheatre with performing spaces. Additionally, tiered rooftop terraces provides students with outdoor recreation areas and a third sports court.

BESIX Watpac worked with the Victorian School Building Authority (VSBA) to create a solution that accommodates not only for a full range of current education practices, but also one that considers the future of combined virtual and in person learning. Additionally, during the tender negotiations a series of value engineering items were identified and upon award were implemented to achieve both cost savings for the client and an expedited delivery program. An example of these changes includes the adjustment from a concrete



Project details

WURUN SENIOR CAMPUS

- Location**
Fitzroy Gasworks, Melbourne, Victoria
- Client**
Victorian School Building Authority
- Contract type**
Design and Construct
- Construction Period**
2020 – 2021
- Contract value**
71.5 million Australian dollars

WURUN SENIOR CAMPUS, MELBOURNE, AUSTRALIA



structure to a composite steel and concrete structure and the elimination of gas from the building to achieve a more sustainable and safe solution.

Finally, the site has been parceled to allow for the construction of a potential future multilevel Sports Centre as part of a separate process that is yet to be identified. The design allows the school to be constructed and operated independently of the future Sports Centre, although service provision and possible connectivity with the future development has been considered and some provisions have been made accordingly.



Innovation

The engineering-led team saw the opportunity to change the structural design from a concrete structure to a composite steel and concrete design. This added a financial and program benefit and delivered value for money for the client.

This project used OpenSpace, a 360-degree photo software, throughout the design and construction process, allowing for remote collaboration and detailed documentation of project construction progress.



“Using OpenSpace has been a game changer for us. The way we’ve been able to complete the design and how the delivery team have been able to do the works under these (Covid-19) constraints has been amazing.”

MICHAJA RUTTEN, BESIX WATPAC PROJECT MANAGER



Infrastructure

RAINWATER DRAINAGE AND STORAGE TUNNEL AND PUMPING SYSTEM IN DUBAI

WATER IS THE ESSENCE OF LIFE. IT IS RARE AND PRECIOUS... AND UNTAMEABLE. IN DUBAI, IT WAS NOT UNCOMMON IN THE PAST TO SEE NEIGHBOURHOODS SHUT DOWN AND ALL TRAFFIC PARALYSED FOLLOWING SUDDEN VIOLENT RAINSTORMS. THE MUNICIPALITY OF DUBAI, WHICH HAS GREAT AMBITIONS TO MAKE DUBAI A SMARTER AND MORE SUSTAINABLE CITY, HAS THEREFORE DECIDED TO PROVIDE ITS CITY WITH A ROBUST RAINWATER STORAGE TUNNEL TO MANAGE THE CONSEQUENCES OF HEAVY RAINFALL ON ITS EXPANDING URBAN DEVELOPMENT. THIS REVOLUTIONARY TUNNEL, COMMISSIONED IN DECEMBER 2021, AND ITS SECONDARY NETWORK WILL EVENTUALLY DRAIN NEARLY 40% OF DUBAI'S OVERALL URBAN AREA.

BESIX-SIX CONSTRUCT, TOGETHER WITH ITS PARTNER PORR, DESIGNED AND BUILT THIS RAINWATER DRAINAGE AND WATER PUMPING SYSTEM. IT INCLUDES A TUNNEL 10 KILOMETRES LONG, 11 METERS IN DIAMETER AND DUG SOME 40 METERS BELOW SEA LEVEL. IT IS PUNCTUATED BY 4 ACCESS SHAFTS 22 METERS IN DIAMETER AND JUST AS MANY CONNECTION CHAMBERS. GEOGRAPHICALLY, IT BEGINS IN THE AREA OF THE WORLD EXPO SITE WITH A SECONDARY NETWORK OF MICRO-TUNNELS THREE KILOMETRES LONG WITH FIVE INTERMEDIATE CHAMBERS. IT ENDS 10 KILOMETRES FURTHER ON, IN THE SEA, AT THE PORT OF JEBEL ALI.

A LAB-LIKE DESIGN

The tunnel's hydraulic design, shafts and connecting chambers was first analysed in depth in the laboratory.

"Based on the design and its parameters provided by the client, we carried out 3D modelling on the computer and scale models in a laboratory specialising in hydraulics. We generated water and air displacements in the tunnel and shafts, with heavy or light turbulence and at different speeds. These tests meant that we were able to measure the effects of pressure, flow rate, flow variations, etc. on the different structures and ultimately gauge them – because the tunnel had to be able to absorb up to 6.5 million cubic meters of water. The modelling meant that we were able to design infrastructure improvements and achieve better operational results," explains Sébastien Reys, Project Manager at BESIX-Six Construct.

An example? The tunnel has been designed in such a way that water flows through it by gravity, thus eliminating the need for pumping sub-stations. A great way of saving of time and resources.

DESIGNED TO BE 'AS YOU GO'

"We used the sequential excavation principle, which is based on accurately monitoring the terrain to optimise the various excavation techniques depending on the type of soil encountered as the digging progresses. In short, it is the geology of the terrain that determines the 'as you go' methods and pace of work!" Sébastien explains. This method was also used to define and dimension the anchoring system for the bottom slabs (numbers, dimensions and geometry).

"We started digging using excavators with telescopic arms, working from the edges of the shaft. They dug down to about -8 metres." From there, the excavators were lowered to the bottom of the shaft. Excavation work continued up to -45 meters; the spoil was removed by winched container, at a rate of 10 cubic metres every six minutes. "Orchestrating the logistics of rotation 24 hours a day, 7 days a week was a constant challenge."

Once the shaft had been dug, work began on drilling the tunnel. "We started digging the first 60 metres of the tunnel sequentially using the NATM (New Austrian Tunnelling Methodology) principle in order to give enough space to the tunnel boring machine being used to drill the rest of the tunnel. After excavation, the walls were reinforced with shotcrete combined with wire mesh reinforcements and steel arches."

After 60 metres, the tunnel was long enough to have the famous tunnel boring machine assembled in the tunnel. The 100-metre tunnel boring machine began by digging into the rock with its cutting wheel at the front, at a planned rate of 20 metres every 24 hours. As the digging continued, the tunnel boring machine moved forward and laid prefabricated segments. Assembled in a ring, they formed the walls of the tunnel. "Each ring was made up of eight segments. We installed no fewer than 42,500 of them".

BALANCE SHEET

"Our colleagues are proud to have delivered this state-of-the-art infrastructure which is needed for the comfort of a growing residential and economic community." It was not an easy project; it was disrupted by the pandemic, unforeseen geological conditions, challenges of coordinating interfaces between civil engineering works and those of the tunnel boring machine, which are linear in nature and allow little flexibility.

"But the balance sheet is largely positive, this tunnel is state of the art and will serve the community for over 100 years. Not to mention our personal goal of zero accidents," Sébastien emphasises. "Underground work with deep access shafts are inherently sensitive areas. Risk analysis, regularly tested emergency procedures, a survival chamber on board the tunnel boring machine and frequent evacuation drills mean that we have done everything possible to make sure our employees are safe. In the end, we didn't have a single work-stoppage accident during the three years of construction the site underwent," says Sébastien proudly.

40%

TERRITORY OF THE CITY DRAINED BY THE TUNNEL AND ITS SECONDARY NETWORK

1 million m³

VOLUME OF SAND AND ROCK EXCAVATED DURING THE WORK

170,000 m³

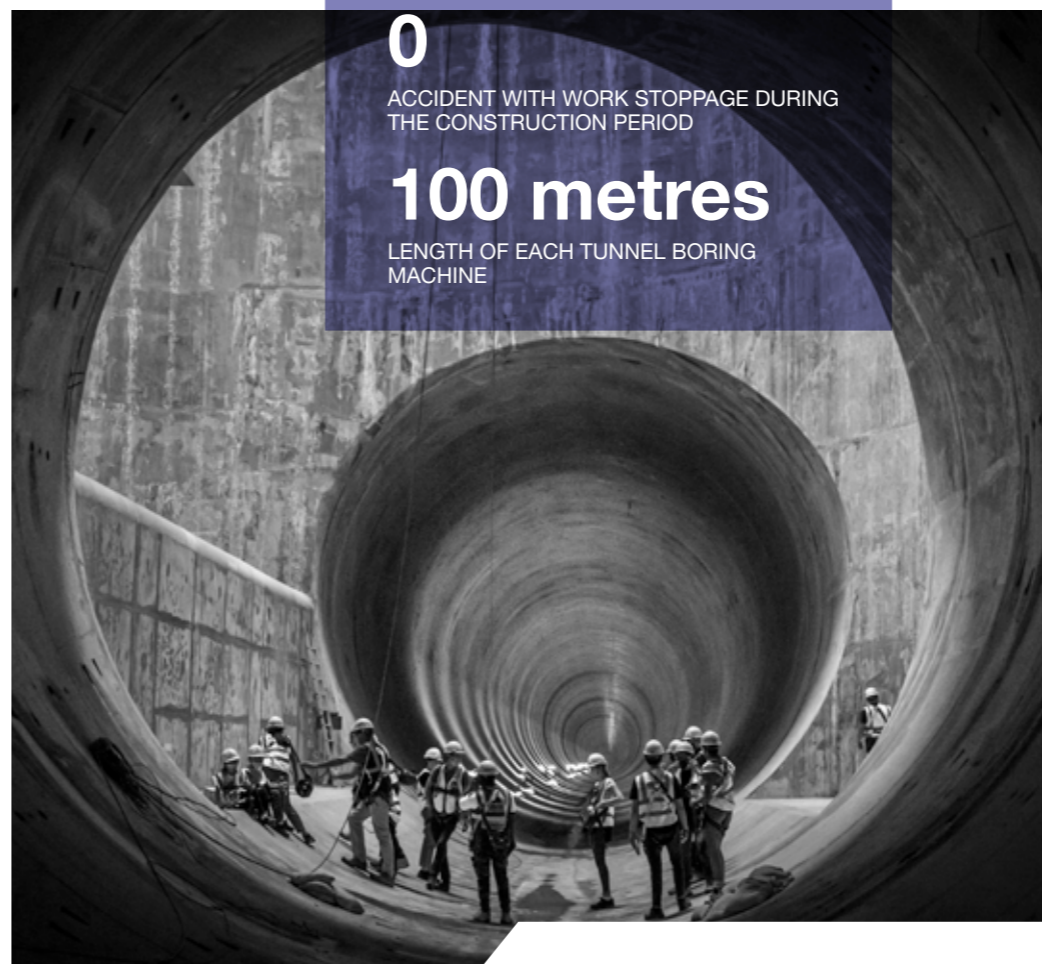
REINFORCED CONCRETE USED IN THE TUNNEL AND SHAFTS

0

ACCIDENT WITH WORK STOPPAGE DURING THE CONSTRUCTION PERIOD

100 metres

LENGTH OF EACH TUNNEL BORING MACHINE



// Project details

DEEP TUNNEL STORM WATER SYSTEM

Location
Dubai, UAE

Client
Dubai Municipality

Partner
PORR

Contract type
Design & Build

Construction period
2017 – 2020

Contract value
354 million US dollars



Infrastructure

BESIX PARTICIPATES IN THE GROWTH OF THE BRUSSELS REGIONAL EXPRESS NETWORK

IN 1834, BELGIUM WAS THE FIRST COUNTRY ON THE EUROPEAN CONTINENT TO START DEVELOPING A STEAM RAILWAY NETWORK. THE FIRST RAILWAY LINE, INAUGURATED IN 1835, COVERED THE 21 KILOMETRES BETWEEN BRUSSELS AND MECHELEN. SINCE THEN, THE BELGIAN RAIL NETWORK HAS GROWN CONSIDERABLY, WITH SOME 3,602 KILOMETRES IN SERVICE TODAY.

THE RER AS A SOLUTION TO MOBILITY PROBLEMS

The Brussels Regional Express Network (RER) is an additional rail network, still under development, which offers new possibilities for fast connections and increased frequency within a radius of 30 kilometres in and around Brussels.

As the capital of Europe, Brussels attracts huge numbers of commuters every day. Many national and European institutions are established there, and many companies have their headquarters there. Several hundred thousand individual motor vehicles therefore converge on the city every day, generating major problems of mobility and pollution.

However, a large proportion of these daily commuters live in the territory covered by the future RER. Its objective is therefore to respond to these growing problems that lead to the saturation of public space by improving travel to and within the city, in addition to existing public transport networks.

OPTIMISING THE EXISTING NETWORK

Most of the RER follows (or will follow) the route of existing railway lines. However, the increase in frequencies and users requires major infrastructure works – which is where BESIX has been involved for many years. “Infrabel, the company managing Belgium’s rail infrastructure, regularly puts out calls for tender for this work: BESIX responds to many of these. Sometimes we win, sometimes we lose”, Jean-François Rijs, project manager at BESIX tells us with a smile.

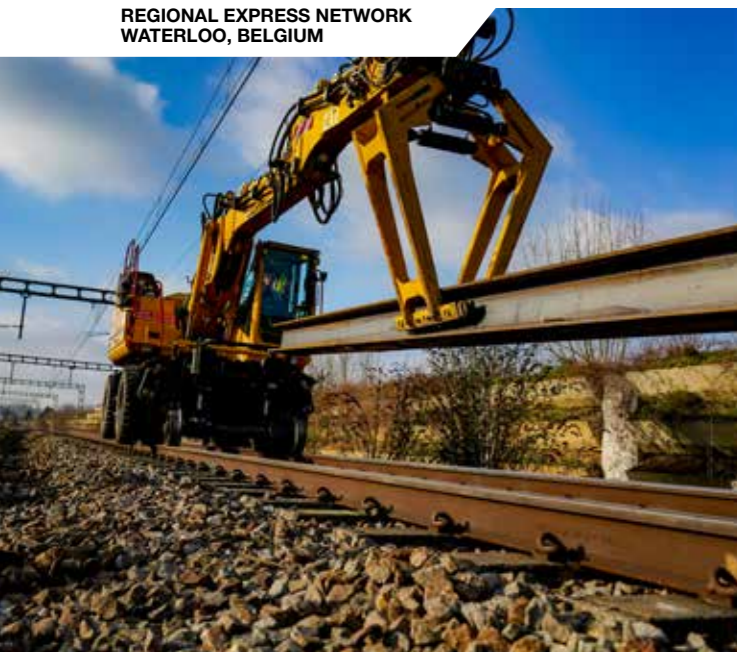
“Whether the job is to widen the lines from two to four tracks, to (re)build the road bridges spanning the widened tracks, to build additional stopping points or redevelop existing stations, or again to install sound barriers: we have all this expertise in house along with the appropriate subcontracting networks.” In addition to civil engineering, BESIX Group can also provide skills in deep foundations through subsidiary Franki Foundations, as well as railway equipment installation via subsidiary BESIX Unitec. “A one-stop shop approach that we try to play in our favour as much as possible”, Jean-François adds.

CLOSE-UP ON WATERLOO

Waterloo, a town of 30,000 inhabitants south of Brussels, is located on the busy Charleroi-Brussels railway line. Laid in 1843, this line has only two tracks and many sections are still limited to 60 km/h. The RER will in particular increase the speed on these sections, while the change to four tracks will allow the high-frequency RER trains on separate tracks.

Two lots were awarded by Infrabel to BESIX in 2018. “Our contracts were spread over a 15 km section of railway line, including widening of the track base to four tracks over a 3 km section, constructing 3 km of varied retaining structures, widening of a railway bridge, building a new corridor under the tracks, demolishing the old station blocking the new route, building the new Waterloo station and platforms, as well as numerous railway works related to the civil engineering work, like installing catenary gantries and building the corresponding foundations,” explains Jean-François. “Finally, various finishing works completed this project, like installing acoustic panels and the new platform equipment, and enhancing accessibility for passengers with reduced mobility.”

REGIONAL EXPRESS NETWORK
WATERLOO, BELGIUM



A 15 KM CONSTRUCTION SITE

“On this kind of project, you work at different points strung along the line: here widening a railway bridge over a road, further on pouring foundations for catenary gantries, and further down the line building reinforced trenches for the noise barriers. In short, you’re working on a spread-out and fragmented site, involving different interventions, each with precise and varied techniques. It’s a challenge because you have few opportunities to standardise your working methods, but it’s also an opportunity to put to use our wide range of our expertise.”

Mastery of these different technologies, in both civil engineering and equipment, is one of BESIX’s strengths. “Our schedule was spread over two and a half years, including one year working systematically at night, when rail traffic was minimal. Working in an urban environment also forced us to adapt our techniques to minimise nuisance to local residents.”

TENSIONS IN THE CHAIN

Despite BESIX’s ample experience in this type of civil engineering work, the project was nevertheless marked by a number of delays. The pandemic with its well-known effects seriously slowed down work in 2020-2021. Following that, tensions in the materials supply chain aggravated the situation. “We really felt how much supply chains were under pressure. For example, deliveries of steel were delayed. It’s like a lead weight that slows down the whole chain” Jean-François tells us again. “But that’s behind us now. Our civil engineering work is completed, it’s now up to the railway authority to manage the laying of ballast and tracks.”

LAST WORD

“Working in a railway environment is inherently a difficult operation, requiring constant attention. On each part of the construction site, we had colleagues whose sole task was to monitor the rail traffic, day and night, in close collaboration with our client, to ensure the safety of their colleagues working close to the tracks. We are extremely proud to have completed this three-year project without any accidents resulting in work stoppages. Safety first, all the time,” concludes Jean-François.



0

NUMBER OF ACCIDENTS RESULTING IN WORK STOPPAGE OVER THE ENTIRE DURATION OF THE PROJECT

1

WEEKEND WHEN THE LINE WAS INTENTIONALLY CUT FOR 56 HOURS TO ALLOW A NEW CORRIDOR TO BE PUSHED UNDER THE TRACKS

220

NUMBER OF NIGHTS DURING WHICH WORK TOOK PLACE SO AS NOT TO (EXCESSIVELY) DISRUPT RAIL TRAFFIC

20

DIFFERENT ENGINEERING STRUCTURES IN DESIGN & BUILD

8

DIFFERENT RETAINING TECHNIQUES USED

200

CATENARY GANTRIES

// Project details

BRUSSELS REGIONAL EXPRESS NETWORK

Location

Waterloo, Belgium

Client

Tuc Rail, Infrabel

Contract type

Design & Build (60%) / Build only (40%)

Construction period

2018 – 2021

Contract value

39 million euros for the two lots



Infrastructure

THEEMSWEGTRACÉ: ACCOMMODATING THE GROWTH OF RAIL TRANSPORT TO THE PORT OF ROTTERDAM

IMPROVING THE ACCESSIBILITY OF THE PORT OF ROTTERDAM TO THE EUROPEAN HINTERLAND, THAT WAS THE AIM OF THE NEW THEEMSWEGTRACÉ IN THE NETHERLANDS. THREE YEARS OF HARD WORK AND GREAT TEAMWORK LATER, CAPACITY HAS BEEN MORE THAN DOUBLED AND THREE MONTHS AFTER IT WAS PUT IN USE, ALREADY 10,000 TRAINS HAD RUN OVER THE NEW RAILWAY LINE. MISSION ACCOMPLISHED!

In the port of Rotterdam, all sorts of traffic come together, including car, train and maritime traffic. This frequently results in a number of obstacles throughout the port, for example at the Caland Bridge which gives access to the Britanniëhaven. Before, that vertical lift bridge had to open multiple times a day for freight ships to sail through, which meant that all traffic on the bridge, including train traffic, was interrupted each time a ship had to pass. As rail freight transport is expected to only grow in the coming years, this point was increasingly becoming a bottleneck.

To solve this bottleneck and to increase the port's capacity, a new railroute was created with the Theemswegtracé, a four-kilometre long elevated railway viaduct, including two metal arch bridges. To realise this ambitious infrastructure, the client, Port of Rotterdam Authority, called in the help of the SaVe consortium, consisting of BESIX Nederland, Mobilis, Dura Vermeer, Hollandia and Iemants.

Thanks to the new line, trains are no longer obstructed by shipping, which leads to a better traffic flow between the port of Rotterdam and the European hinterland. Capacity has more than doubled, with now 230 trains instead of 90 trains being able to pass every day. On top of that, time is saved and CO₂ emissions and noise pollution are reduced.



TEAMWORK MAKES THE DREAMWORK

In only three years' time, the partners rerouted the existing railway line and built a whole new one. "That is indeed a fast pace," acknowledges Dieter Behaeghel, project manager at BESIX Nederland. "Especially if you take into account the different challenges we had to tackle." The Theemswegtracé is located right in the middle of the port of Rotterdam, an environment that is in constant motion day and night. Especially in terms of planning the works, this was challenging. Not only did the surrounding companies have to be accessible at all times, the partners also had to take into account the different sorts of traffic coming together, such as train, car and maritime traffic. Coordination with all stakeholders, e.g. ProRail, Rijkswaterstaat, the harbour master and lock keepers, was thus key.

Apart from the many stakeholders, the partners also had the challenge of building over and near public infrastructure and vulnerable environmental elements, such as the petrochemical industry and a complex network of cables and pipelines. However, thanks to the good relationship between the partners, as well as with the client, works went well and the project was delivered on time.

"Our aim was to always start the works safely and well prepared. We created a BIM model for the whole project in 4D, in which we combined 3D with planning. Through this, we could detect problems in advance, for example with crane set-ups and the transportation of large construction elements," continues Dieter. The combination of the right technical knowhow and BIM expertise of the partners guaranteed the success of the project.

Covid-19 also tried to throw a spanner in the works. Just before the first arched bridge was planned to be brought in its final position, which was one of the biggest technical highlights of the project, the crisis broke out. This resulted in great uncertainties and up until one week, it wasn't sure if the operation could go through. But again, thanks to the great teamwork between the teams and partners, this hurdle was overcome as well.

Project details

THEEMSWEG-TRACÉ

Location
Rotterdam, The Netherlands

Client
Port of Rotterdam Authority

Contract type
Design & Build

Construction Period
2018 – 2021

Total contract value
162 million euros



"We are very proud of the Theemswegtracé and had a pleasure working together with both the partners of the SaVe consortium, as well as with the client Port of Rotterdam. The SaVe consortium stands for *Samen Verbinden (Connecting Together)* and that's exactly what we did. Connecting together goes hand in hand with great teamwork and respect for the relationship. Together, we formed a great team and despite the outbreak of the coronavirus, we managed to successfully bring this project to an end."

DIETER BEHAEGHEL,
PROJECT MANAGER AT BESIX NEDERLAND



Infrastructure

POWERING UP CAMEROON

FOR MANY YEARS, CAMEROON'S NATIONAL ELECTRICITY SUPPLY WAS NOTORIOUSLY UNRELIABLE. REGULAR POWER CUTS WERE A PART OF DAILY LIFE FOR MANY CAMEROONIANS. SINCE 2010 THE COUNTRY HAS BEEN HEAVILY INVESTING TO REMEDY THIS. WITH AN ESTIMATED 23,000 MW HYDROELECTRIC PRODUCTION CAPACITY, CORRESPONDING TO THE SECOND LARGEST HYDROELECTRIC POTENTIAL IN AFRICA, HYDROELECTRIC INDUSTRY IS AT THE HEART OF THEIR DEVELOPMENTS. IN A REMOTE REGION, ABOUT 65 KM NORTH OF THE CAPITAL CITY YAOUNDÉ, BESIX HAS BEEN WORKING ON THE NACHTIGAL HYDROPOWER PLANT, IN COLLABORATION WITH TWO PARTNERS: NGE CONTRACTING (FR) AND SGTM (MA), SINCE IT WAS AWARDED THE CONTRACT IN 2018. ONCE FINISHED, THE 420 MW PRODUCED BY THE PLANT WILL ACCOUNT FOR 30% OF THE TOTAL INSTALLED POWER CAPACITY IN CAMEROON.

Project details

NACHTIGAL HYDROPOWER PLANT

Location
Nachtigal, Cameroon

Client
Nachtigal Hydro Power Company (NHPC)

JV Partner
NGE Contracting and SGTM

Contract type
Design & Build

Construction period
2018 – 2024

DAMS, AN ARTIFICIAL CANAL, AND A POWERHOUSE

The Nachtigal hydropower plant comprises two roller compacted concrete dams, of 1.3 km and 0.5 km respectively, a 3.4 km long and 25 m deep artificial canal and a powerhouse with seven 60 MW turbines to generate power. The two dams funnel the flow of the Sanaga River into the canal. The canal brings the water from the upstream side of the Nachtigal rapids downstream to the powerhouse where the combined level difference will generate electrical energy. Afterwards, an 800 m long tailrace channel sends the water back into the Senega river. The client, Nachtigal Hydropower company (NHPC) exists of EDF, the International Finance Corporation, Stoa Infrastructure and Energy, Africa 50 and the Government of Cameroon, who all funded the project. "The project is one of the biggest public-private partnerships in Africa," explains Brecht Indekeu, Technical Manager at Nachtigal.



DAM AND HYDROELECTRIC POWER PLANT, NACHTIGAL, CAMEROON



SETTING UP CAMP ALONG THE SANAGA RIVER

Located in the middle of the jungle on the Sanaga River, setting up the project site, living quarters and site installations was an enormous challenge. "The first phase of this project was doing the mining works and rock excavation works to free up space on the project site. The surface area is massive. Its 18 km² correspond to 2,500 football fields. Up until today, drone pictures have been extremely helpful to us to keep track of the entire site, because of the sheer size of it", explains Brecht. The location of the site is equally challenging. "A big part of the project is situated right in the middle of an active river, which imposes two main constraints. First off, there is the seasonality of the river that must be considered. Cameroon has dry and rainy seasons. During the dry season, the water that flows through the river is approximately 700 m³ per second, which is about 17 times the river Scheldt, but during the rainy season, it shoots up to 2,000, even 3,000 m³ per second! Secondly, we had an ecological constraint. We had to maintain a flow of 40 m³ per second in the left branch of the river to assure the continued existence of algae on the rapid rocks. To do this, we left a hole in the side of the main dam during the first construction phase, while constructing phase 2 of the dam."

WORKING AROUND THE RAINY SEASON

To build the second phase of the dam, the site team built coffer dams, allowing them to pump the construction area dry to do the concrete works. "A temporary diversion is needed to be able to close the final river arm and construct the last part of the dam. Once the dam is finished, we will close off the diversion and the water will only be able to flow through the radial gates, over the labyrinth spillway of the dam or into the canal, right up to the powerhouse water intake." From the powerhouse intake, the team constructed formworks where a hydraulic transition is made between a square and a round surface. The round surface connects to the penstocks, which are steel tubes with a diameter of 5.6 m going down the slope and guiding the water into the powerhouse equipped with the turbines. "The powerhouse is not just built on a surface, but buried inside it. We had to do 1.3 million cubic metres of mining to make room," clarifies Brecht. "All this mining meant we had tonnes of raw material available to us. We reuse it by installing a crusher plant on site. This plant produces aggregates for concrete production, roller compacted concrete production and the asphalt for the waterproofing of the canal. In addition to the crusher plant, we also have three concrete batching plants, two asphalt plants, a cut and bend workshop and carpentry on site. This is possible because the site is large enough to be able to stock materials on site. This has saved us both time and money that would otherwise be lost on transport and external materials. This lower dependency on external transport also proved its value when global transport was halted due to the Covid-19 pandemic."

Working through Covid-19

While working in such a remote region seems like an advantage during the Covid-19 pandemic, Nachtigal experienced its own set of challenges. During times when national lockdowns were enforced, the site kept its staff grounded within site boundaries. "We lived together for months on end. That can be tough, but luckily the terrain is huge, allowing us to find ways to entertain ourselves by running or even playing golf. More challenging were the logistic constraints because air traffic shut down, and the travel bans which made it impossible for Moroccan colleagues or European teams with specific expertise to come to site. We also rely heavily on special imported materials that are needed during the dams' construction, which meant that we faced great challenges at times when maritime transport options were limited or inexistent. Thankfully BESIX has enough expertise in-house to find adequate solutions to move the project forward during these challenging times."



Marine Works

IMPRESSIVE QUAY WALL COMPLETES LARGEST DOCK OF PORT OF ZEEBRUGGE

A QUAY WALL OF 1,071 M, A DIAPHRAGM WALL OF 35,000 M² AND 80,000 M³ OF CONCRETE... THESE ARE SOME OF THE IMPRESSIVE NUMBERS THAT APPLY TO THE NEW QUAY WALL THAT BESIX BUILT WITH ITS SUBSIDIARY FRANKI FOUNDATIONS FOR THE PORT OF ZEEBRUGGE. A TECHNICAL FEAT, BUT ONE THAT'S RIGHT UP THE COMPANIES' ALLEY.



© Vlaamse Overheid - Patrick Van Hopplinus

MISSING LINK

In the light of an increase in vehicle handling in 2019, the Zeebrugge Port Authority decided to build additional infrastructure in the inner port. More specifically, they wanted to extend the Bastenaken quay and connect it to the reverse quay at the dock's end. To realise this 1,071 m long extension, they called in the help of BESIX and Franki Foundations.

BESIX and Franki Foundations are both part of BESIX Group and have already gained an extensive experience in marine works. On top of that, they are no strangers to the port of Zeebrugge. "BESIX helped to rebuild the port in the aftermath of the Second World War and constructed breakwaters, quays, jetties, storage areas and the Pierre Vandamme lock. More recently, over the last 10 years, we built the OCHZ quay wall and the Hanze Terminal," says Jan Bauwens, project director at BESIX. Franki Foundations as well already has a number of quay walls to its name in the port.



"This quay is without doubt the result of the good collaboration between BESIX and Franki Foundations. The companies are part of the same Group and because of the open culture on site, we have been able to make the right choices and bring this project to a successful end. Let's get on with the next 1,000 m of quay!"

JAN BAUWENS, PROJECT DIRECTOR AT BESIX

The new extension was the last missing piece to complete the Southern Canal dock, which is now the largest dock of the port. With this realisation, BESIX Group once more contributes to the port's status of the largest vehicle handling port in the world.

TECHNICAL FEAT

Although the partners were already widely experienced, building a quay wall like this one always poses a number of challenges. Especially the nature of the soil, consisting of a dense layer of sand with many obstacles, was a challenge. Because of this, the use of heavier equipment was required and quite a lot of technical adaptations had to be made to get through that layer of soil.

Furthermore, the high water level forced the teams to raise the platform to build the diaphragm wall. Normally, water is drained to build the wall, but that wasn't an option here as the ground water level of the nearby nature reserve, the Dudzeelse Polder, had to be preserved. As a result, the diaphragm wall became 3.5 m deeper than a traditional one would be and now reaches a depth of 33 m.

// Project details

QUAY 1,071

Location
Zeebrugge, Belgium

Client
Maatschappij van de Brugse Zeehaven

Type of contract
Build

Construction period
2019 – 2020

Contract value
23 million euros



Industry

FLYING HIGH IN ADELAIDE

BESIX WATPAC HAS DELIVERED A SLICK NEW AIRPORT EXPERIENCE FOR ADELAIDE VISITORS AND COMMENCED WORK ON A NEW EXHIBITION SPACE FOR ONE OF THE MOST IMPORTANT PIECES OF AUSTRALIAN PIONEERING AVIATION HISTORY.

The Adelaide Airport Terminal Expansion (TEX) project upgrade works involved the expansion of the international inbound passenger processing and baggage claim facility, international arrivals duty free and passenger and immigration facilities, retail tenancies and the international gate lounge and duty-free areas.

BESIX Watpac also delivered a new retail concourse with passenger facilities and amenities, international airline lounges, landside works and airside fencing, civil works, landscaping and construction of entry roadways.

This project was a living and breathing alliance-style contract delivered in close collaboration between BESIX Watpac and Adelaide Airport Limited. This partnership approach was crucial in managing works within the live environment of a major airport and resulted in no impact on public spaces or the flight program.

It was also the key element in the project being delivered three months ahead of schedule and under the project budget. Our strong culture of safety embedded on site was demonstrated by our zero lost time injury record across an almost three-and-a-half-year program. The project has provided a boost

to the local economy with 75 per cent local participation - a testament to the company's strong local networks and commitment to engage local contractors.

Delivering on time and under budget, has been a key factor in securing ongoing works at the site and BESIX Watpac is now in the preliminary stages of constructing a stunning new exhibition space at Adelaide Airport for the historic Vickers Vimy, the first aircraft to complete the journey from England to Australia.

The Vickers Vimy is still considered a remarkable aircraft for its time, powered by twin Rolls Royce engines, the open cockpit Vimy completed the 17,910 kilometre journey from the UK to Australia at an average speed of 137 kph. After more than two decades of service, the airplane was retired for display in the Adelaide Airport.

The new exhibition space currently under construction will see the Vimy relocated from a standalone building at the Adelaide Airport to a climate-controlled location in the new terminal. The plane will be moved a total of 2.1 km into the new terminal and is expected to be relocated later in 2022.



“The extension of our contract to include the Vickers Vimy exhibition space is an extremely important project for the preservation of a remarkable piece of Australian aviation history and it's a great way for BESIX Watpac to complete the Adelaide Airport Terminal expansion.”

AL CROSBY,
BESIX WATPAC MANAGER SOUTH AUSTRALIA

Project details

ADELAIDE AIRPORT TERMINAL EXPANSION

Location
Adelaide, Australia

Client
Adelaide Airport Limited

Contract type
Design & Construct

Construction Period
2018 – 2022

Total contract value
200 million Australian dollars





Concessions & Assets

A PIONEERING PPP IN THE MIDDLE EAST

IN JUNE 2021, BESIX AND ITS PARTNERS CLOSED THE FINANCING OF THE WARSAN (DUBAI) WASTE-TO-ENERGY PROJECT, AN IMPORTANT MILESTONE, INCLUDING FOR THE UAE, AS IT SETS A PRECEDENT FOR LARGE PPPS BY DUBAI MUNICIPALITY. THE PROJECT IS ALSO A KEY ELEMENT OF BOTH DUBAI'S 2050 CLEAN ENERGY STRATEGY AND ITS GOAL OF ZERO WASTE TO LANDFILL BY 2030. WITH DUBAI WASTE-TO-ENERGY, BESIX HAS DEMONSTRATED ITS ABILITY TO SUPPORT PUBLIC AUTHORITIES FROM A TO Z IN THE REALISATION OF THEIR STRATEGIC AMBITIONS: THE GROUP PARTICIPATED IN THE CONCEPTUALISATION, DESIGN, AND FINANCING OF THE PLANT, IS NOW BUILDING IT, AND WILL CO-MANAGE ITS OPERATIONS AND MAINTENANCE FOR 35 YEARS. WHEN COMPLETED, THE PROJECT WILL BE ONE OF THE WORLD'S LARGEST AND MOST TECHNOLOGICALLY ADVANCED WASTE-TO-ENERGY FACILITIES.

THE PROJECT RATIONALE

The plant is designed to process 1.9 million tons of municipal waste per year, producing approximately 200 MW of electricity through incineration. This electricity will be delivered by the project developers' consortium to Dubai Municipality, which will use part of it for its neighboring wastewater treatment plant and the rest to Dubai Electricity and Water Authority via a dedicated power purchase agreement to feed into the national grid.

The operations and maintenance of the plant are subject to a 35-year O&M contract with a company jointly owned by BESIX and Hitachi Zosen Inova (HZI) that combines their proven track record in managing state-of-the-art industrial facilities.

INCEPTION

The project started in 2017 as a tender from Dubai Municipality for the design and construction of a waste-to-energy plant. "Together with HZI, BESIX has accompanied Dubai Municipality from the outset in the conceptualization of the whole project, which has allowed us to tailor it to the exact needs of our client. This has been an extremely effective collaborative effort, which has ultimately led to this major concession contract," explains Benoit Vadani, Vice President Business Development for BESIX Middle East. The same companies then carried out the complete design and engineering of the plant. In addition to BESIX and HZI, Itochu, Tech Group, Dubai Holding and DUBAL Holding joined the project as developers.

FINANCING

Project Finance International, a global reference, awarded the project the title of 'Deal of the Year 2021' for the Middle East and Africa. Total debt amounts to 927 million dollars, of which about half is provided by Japan Bank for International Cooperation (JBIC) and the rest by commercial banks including Standard Chartered, Société Générale, KfW IPEX, Crédit Agricole, Siemens Bank, Sumitomo Mitsui Banking Corp., and Mizuho Bank. Nippon Export Investment Insurance (NEXI) provided a 380 million dollars loan insurance. "The financing is an outstanding success. Despite the lack of physical meetings due to Covid-19, and with stakeholders spread across Europe, the UAE and Japan, we have established a remarkably constructive way of working. Together, we have made possible a

concession project from scratch, setting a precedent and a broad documentation for ambitious PPPs, including in other sectors," explains Peter Lembrechts, Head of Concessions & Assets for BESIX Middle East.

A POSITIVE IMPACT ON CONSTRUCTION

The construction, carried out under an EPC contract by BESIX and HZI, started in November 2020 and has continued at a steady pace throughout 2021. This large-scale site requires up to 2,500 people simultaneously and 16 tower cranes, including the world's largest. The facility will consist of five processing lines that will be delivered progressively in 2023 and 2024. At the end of 2021, the construction was ahead of schedule.

"Being involved at all stages of the project, in its design, but also in the development of how it will be operated in the long term, has a direct impact on the efficiency of construction. We are now benefiting from this full involvement and the resulting overall coherence, which has also enabled us to prepare the work in particular depth," explains Peter Lembrechts.

SUSTAINABILITY

In addition to meeting UAE regulations, the project meets international benchmarks, including World Bank and IFC environmental, health and safety standards. "The environmental compliance of the plant is particularly high. In terms of emissions, it follows the European Directive 2010/75/EU, which is the world's most stringent standard in this area," says Patrice Thomas, Head of Business & Project Support.

Over its lifetime, the project will result in a total net reduction in emissions of 64.9 million tons of CO₂ equivalent compared to a scenario of continued landfill disposal and equivalent electricity generation from fossil fuel sources. "As we closed the financing, the UAE and over 100 countries at the COP26 committed to reducing their greenhouse gas emissions by at least 30% over this decade. In the United Arab Emirates, our project will make a significant contribution," Patrice Thomas continues. The project will divert 50% of Dubai's municipal waste from landfill to generate electricity, which in turn is not generated by fossil fuels.

35 years

O&M CONTRACT DURATION

927 mio USD

TOTAL DEBT

1.9 mio tonnes

MUNICIPAL WASTE PROCESSED/YEAR

200 MW

ELECTRICITY GENERATION

64.9 mio tonnes

NET REDUCTION IN CO₂ EQUIVALENT LANDFILL EMISSIONS

50 %

REDUCTION OF WASTE DISPOSAL IN LANDFILLS



WARSAN WASTE-TO-ENERGY PROJECT, DUBAI, UAE

FIRST-CLASS TECHNOLOGIES

A key element is the technology used, which is advanced and innovative in some areas. For example, the plant is a zero-liquid project, which means that it will not produce industrial water effluent. Its water supply will come from a nearby wastewater treatment plant, which avoids the use of fresh water, while discharged water will be recycled within the plant itself. Metals will also be recovered from the incineration process, and residues from the flue gas treatment process will be recovered and safely disposed of.

"The Dubai Waste-to-Energy project serves multiple objectives of Dubai and the UAE. In terms of implementation and financing, it sets a precedent that will play a direct role in the development of major PPPs in the country and other Waste-to-Energy PPPs in the wider region. It is also an environmentally exemplary plant, contributing to the decarbonization of the economy, both through the technologies it uses and by replacing landfill and the use of fossil resources to generate electricity. Finally, it is a model of effective collaboration between private companies and the public sector. BESIX is extremely proud to be one of its key players from the beginning ...and for the next 39 years!" concludes Peter Lembrechts.

A growing portfolio of PPPs

The Waste-to-Energy project adds to BESIX's rapidly growing portfolio of environmental PPPs in the Middle East. This includes infrastructure for municipal wastewater management, treatment and valorisation, notably in Ajman via Ajman Sewerage and SAFI, and in Abu Dhabi with the ISTEP2 venture. In addition to these projects, BESIX is actively involved in the region's first Refuse Derived Fuel installation in Umm Al Quwain, a sewage sludge treatment unit for the production of sustainable energy in Ajman and a unit for the transformation of landfill gas into sustainable energy in Dubai. More recently, BESIX has also started tendering for social infrastructure PPP projects in the region (e.g. schools, hospitals).



Real Estate

ESPRIT COURBEVOIE, A NEW DISTRICT IN LOUVAIN-LA-NEUVE CONCEIVED WITH A STRONG SOCIAL AND SUSTAINABLE APPROACH



// Key features

Category: New Development

Project Type: Residential + Offices

Location: Louvain-la-Neuve, Belgium

Total area: 60,000 m²

Number of units: 505 residential units and 1 office building

Parking: 860 parking spaces

Other: 500 m² retail area and 8,500 m² offices

Delivery date: from Q2 2020 to Q2 2025

Final owner:

- Apartments: Private owners
- Office building: Befimmo

Developers: BESIX RED (50 %) and TP Bâtiment (50 %)

Contractors: BESIX Group (Entreprises Jacques Delens) and Thomas & Piron Bâtiment

Architects: Montois & Partners, Syntaxe, R2D2, CERAU, Atelier de l'Arbre d'Or

ESPRIT COURBEVOIE, LOUVAIN-LA-NEUVE, BELGIUM

WITH THE DEVELOPMENT OF THE 60,000 M² RESIDENTIAL AND OFFICE PROJECT ESPRIT COURBEVOIE IN LOUVAIN-LA-NEUVE, BESIX RED CONSOLIDATES ITS POSITION IN THE WALLOON REAL ESTATE MARKET.

CO-DEVELOPED WITH PARTNER TP BÂTIMENT, ESPRIT COURBEVOIE OFFERS A DIVERSE RANGE OF 500 APARTMENTS FOR APPROXIMATELY 1,250 NEW RESIDENTS, AND A 8,500 M² OFFICE BUILDING ACQUIRED BY BEFIMMO IN 2021. A LARGE 1,5 HECTARE-PUBLIC PARK COMPLETES THIS NEW DISTRICT AND CONNECTS IT TO THE ENTIRE CITY.

WELLBEING, SENSE OF COMMUNITY, SOCIAL AND GENERATIONAL DIVERSITY, SOFT MOBILITY AND STRONG ENVIRONMENTAL AND TECHNICAL PERFORMANCES ARE PART OF ESPRIT COURBEVOIE'S DNA.



"Beyond its environmental qualities, Esprit Courbevoie has a significant social impact. It revitalises the Louvain-la-Neuve station area, reconnects several districts of the city with its footbridges and brings together diverse profiles of residents, workers and users."

GABRIEL UZGEN, CEO BESIX RED

AN ENTIRELY NEW HUMAN-SCALE NEIGHBOURHOOD IN LOUVAIN-LA-NEUVE

Esprit Courbevoie consists of the creation of an entire new district in the heart of Louvain-la-Neuve in Walloon Brabant. Mainly known for its university, Louvain-la-Neuve has evolved over the years into a dynamic city going beyond its academic roots thanks to various attractions such as the shopping complex l'Esplanade, the Aula Magna Auditorium, theatres, museums, sport facilities, the Science Park and its lake.

The *Esprit Courbevoie*-site is located on top of the roof slab of the Regional Express Network (RER) car park of the city's train station, which became consequently the floor slab of the project.

Consisting of three phases, *Esprit Courbevoie* features ten buildings providing a mix of housing ranging from studios for students and young professionals to three-bedroom apartments and spacious penthouses aimed at families and seniors. The district offers a 1.5 hectare park equipped with footpaths, several ponds and a small bridge. The project is completed with spaces for retail & services on the ground floors and an office building.

AN ATTRACTIVE OFFICE PROJECT FOR BEFIMMO

The 8,500 m² office building that can welcome nearly 900 workers has been bought by Befimmo, a Belgian real-estate investment trust, in late 2021. The quality of the building and its environment have already attracted Silversquare, an affiliate company of Befimmo specialised in co-working, and the rest of the space will be rented to N-SIDE, an innovative software consulting company in advanced analytics.

"In the philosophy of ICÔNE in Luxembourg, we believe that well-designed and well-conceived offices, respecting the new hybrid way of working and following ESG criteria will always find tenants", says Gabriel Uzgen, CEO BESIX RED.

The BREEAM Very Good-certified building will be delivered at the end of 2023.



ENVIRONMENTAL PERFORMANCES AND SOCIAL DIMENSION

Esprit Courbevoie features one passive residential building while all other buildings deliver top energy performances and include thermal as well as solar panels. All the apartments meet the EPB-2019 requirements.

"Beyond its environmental qualities, *Esprit Courbevoie* has a significant social impact. It revitalises the Louvain-la-Neuve station area, reconnects several districts of the city with its footbridges and brings together diverse profiles of residents, workers and users. As real estate developers, it is our responsibility to turn words into deeds when it comes to ESG practices within our projects", concludes Gabriel Uzgen.

Esprit Courbevoie is a commercial success, as the first phase of the project is completely sold, and the second phase is already 50% sold. The last two buildings of the third phase are now being designed and will be followed by a permit application.



Real Estate

DUUO: A NEW LIVING EXPERIENCE IN THE HEART OF LISBON



DUUO, LISBON, PORTUGAL



AS PART OF ITS PAN-EUROPEAN DIVERSIFICATION STRATEGY, BESIX RED CONTINUES TO SEIZE OPPORTUNITIES IN CITIES CHARACTERISED BY A STRONG SOCIO-ECONOMIC DYNAMISM SUCH AS LISBON.

IN THE FIRST HALF OF 2021, AFTER OBTAINING THE ARCHITECTURAL LICENSE, THE DEVELOPER LAUNCHED THE COMMERCIALISATION OF DUUO, ITS FIRST RESIDENTIAL PROJECT IN THE COUNTRY.

Key features

- Category:** New Development
- Project Type:** Residential
- Location:** Lisbon, Portugal
- Total area:** 33,900 m²
- Number of units:** 280 residential units
- Parking:** 420 parking spaces
- Other:** 1,140 m² retail
- Delivery date:** Q4 2024
- Final owner:** Private owners
- Developer:** BESIX RED (50 %) and Compagnie du Bois Sauvage (50 %)
- Architect:** Nuno Leónidas Arquitectos



DUUO, A COMMERCIAL SUCCESS ON THE DOMESTIC MARKET

The commercialisation of *DUUO* Phase I was launched in May and encountered a great commercial success. At the end of December 2021, 90 % of the *DUUO* apartments were already pre-reserved. In only 48 hours' time, over 50 % of units at *DUUO* were reserved.

"We are very pleased to see that the majority of *DUUO* buyers are Portuguese and mostly Lisboets. From a real estate development perspective, and especially since the financial crisis, Lisbon has been lacking new and quality housing affordable for Portuguese people. Our strategy in Lisbon has always been to target the city ring where we could find opportunities to develop projects for the middle to upper-middle domestic market. Offering the local market qualitative real estate products focused on wellbeing is an important aspect of our ESG commitment", adds Nicolas Goffin.

It is from their local office at Avenida da Liberdade in Lisbon that Nicolas Goffin and his team manage BESIX RED's activities in Portugal. He adds: "For *DUUO*, we surrounded ourselves with leading local partners and advisors to share expertise and co-create a project that fits in its environment and brings value to the people of Lisbon. Our long-term goal is to become an integral part of Lisbon's economic landscape and be recognised as a local player".

A LASTING RELATIONSHIP WITH FINANCIAL PARTNER COMPAGNIE DU BOIS SAUVAGE

DUUO consolidates the developer's presence in Europe and is also its second project jointly developed with stock exchange-listed partner *La Compagnie du Bois Sauvage*.

"Following Oxygen in Brussels, *DUUO* is our second project managed in close collaboration with *La Compagnie du Bois Sauvage*, and this time, outside of Belgian territory. It reflects the solid confidence our partner has in our team and expertise, not only within but also outside Belgian borders", explains Gabriel Uzgen, CEO BESIX RED.

The construction for *DUUO* Phase I is expected to start in March this year for an estimated duration of 24 months. The construction of Phase II is foreseen for the fourth quarter of 2022 and the overall *DUUO*-project will be delivered by the end of 2024.

DUUO is a 33,900 m² premium residential condominium in the city of Lisbon. Developed in partnership with its listed financial partner *La Compagnie du Bois Sauvage* and designed in collaboration with Nuno Leónidas Arquitectos, *DUUO* is to become one of BESIX RED's reference projects featuring high-quality architecture and a true living experience for its residents while contributing to the revitalisation of the Praça de Espanha-district.

DUUO: A PLACE TO LIVE

"*DUUO* goes way beyond a residential development, it is a true living experience. The wellbeing of our clients is always a major focus in our developments, whether they are residential, offices or retail", emphasizes Gabriel Uzgen, CEO BESIX RED.

In addition to its strong concept, *DUUO* is strategically located between Praça de Espanha and the University of Lisbon in the Avenidas Novas neighbourhood - close to the city's most famous parks, hospitals, art and cultural venues and easily connected to the airport as well as to the historic city centre.

Nicolas Goffin, Country Director at BESIX RED, explains: "In recent years, the City of Lisbon has heavily invested in transforming Praça de Espanha into a family-oriented and connected green district with a five-hectare park, bicycle paths, new traffic routes and leisure areas. With *DUUO*, we intend to participate in the transformation and revitalisation of the larger neighbourhood".

The 33,900 m² project comprises 280 residential units spread over two condominiums of 140 apartments each which will be developed in two different phases. Designed by the prestigious Portuguese architects Nuno Leónidas Arquitectos, the two *DUUO*-buildings are characterised by their U-shaped structure. *DUUO* offers a diverse typology of spacious and bright apartments with large balconies serving as the extension of the living space. The heart of the complex, an outdoor swimming pool surrounded by a landscaped garden, adds a human and collective dimension to the concept. Additional amenities and services available at *DUUO* include a gym, a polyvalent room where the residents can work and organise private events, a smart delivery box service and cycle storage. Underground parking spaces equipped with preinstallation of electric charging stations and retail spaces in both properties complement the program.

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Contracting



QUATUOR, BRUSSELS, BELGIUM

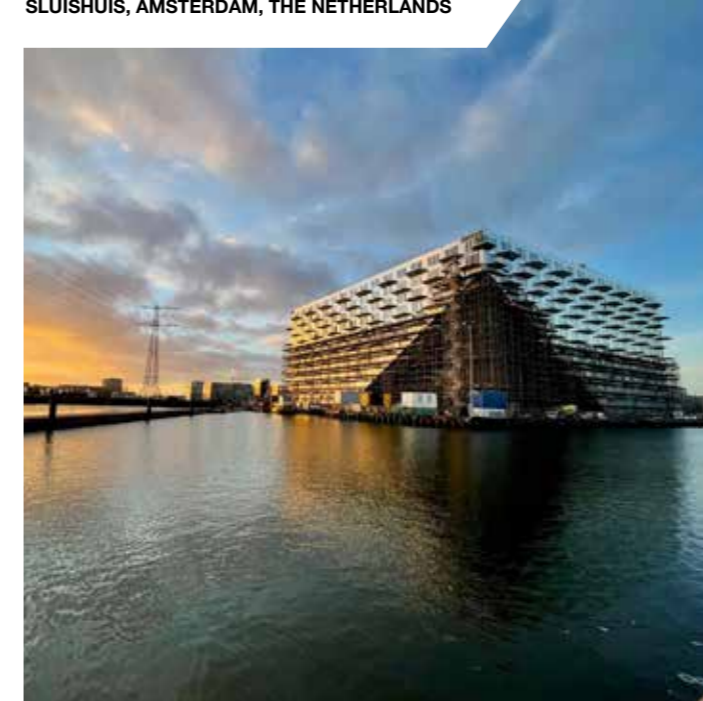
EUROPE

In **Belgium** and the **Grand Duchy of Luxembourg**, BESIX continued the construction of its many ongoing projects in 2021. A number of these will be delivered in 2022. This is the case for the new Antwerp police offices and the Annie Cordy tunnel, the longest tunnel in Belgium, two projects for which BESIX will also manage maintenance for 25 years. The company will also complete the three Befimmo buildings in Liège's Paradis Express eco-district, the Diepenbeek infrastructure for the Hasselt-Maastricht rail link, and industrial buildings within the Belgian nuclear facilities.

Remarkable projects were also delivered in 2021. These include the Quatuor towers for Befimmo and the new headquarters of BNP Paribas Fortis, both in Brussels, as well as the Massenhoven Bridge over the Albert Canal in south-east Antwerp. In the electromechanical field, the provisional acceptance of the work on the third lock of the Viesville-Goselies-Marchienne project, on the Charleroi-Brussels canal, and the start of execution of the Mamer wastewater treatment plant in Luxembourg were significant milestones.

New contracts won in 2021 have or will start and reach cruising speed in 2022. In the building sector, the company is constructing the Liv De Molens real estate complex in Deinze, a project for 3D Real Estate, Alinso's Polytoeren south of Ghent and four buildings for Matexi in Liège's Paradis Express eco-district. New infrastructures include the renovation of the Henneaulaan bridge on the Brussels ring road and the Huccorgne viaduct on the E42 motorway, as well as the design of the Oosterweel Right Bank project in Antwerp, the largest infrastructure project in Belgium. In the environmental sector, BESIX was commissioned by Hyoffwind, a joint venture between Fluxys and Virya Energy (Colruyt), to design and build, together with John Cockerill, a pioneering green hydrogen production facility in Zeebrugge, and to build, together with Group subsidiary BESIX Unitec, the 'De Gavers' water production facility near Kortrijk.

SLUISHUIS, AMSTERDAM, THE NETHERLANDS



The outlook for 2022 is positive. New large-scale public tenders are expected to come onto the market as part of the economic recovery plans, in particular in the infrastructure sector. New developments are also expected in major tenders that BESIX is following. This is the case with the A201 interchange, linking Brussels Airport to the capital's ring road, or the Brussels North Metro, a significant extension of the city's public transport system. In the environmental field, BESIX is closely following tenders for the design and construction of a waste-to-energy plant, and for the design, construction, financing, and maintenance of a sludge-to-energy plant, both in the north of the country. In addition to public projects such as the new National Defence headquarters, BESIX participates in tenders for private real estate developers in several cities, both for renovations and for the design and construction of new buildings. Lastly, contracts for which BESIX was previously selected as preferred bidder are expected to be finalised in 2022. These include the new headquarters of the national railway company, the Ghent ring road, and a sustainable land-based salmon farm in Ostend.



“The outlook for 2022 is positive. New large-scale public tenders are expected to come onto the market as part of the economic recovery plans, in particular in the infrastructure sector.”

In 2021, **BESIX France** has reached important milestones on each of its construction sites. These include the structural completion of both the Neuilly clinic and the Deloitte University EMEA buildings, in the Paris region. Projects were also delivered, including the French Pavilion at the Dubai World Expo, for which BESIX France managed the contract and design, and a first building of the Nice Airport Promenade development.

One of the highlights of the year was the start of work on the Saint-Denis Pleyel station, one of the largest stations of the Grand Paris Express rail network. The station, which will accommodate 250,000 passengers a day, will also serve the main venues for the 2024 Olympic Games.

Following a competitive tender and thanks to exceptional preparatory work combining the cutting-edge expertise available within BESIX Group, Unibail-Rodamco-Westfield has awarded BESIX France the design and construction of the Tour Triangle. This is the first skyscraper to be built in the 21st century in inner Paris and will be the city's third tallest building. Preparatory works have started in 2021.

In 2022, BESIX France will continue to implement its 2020-2024 strategy. This strategy focuses on projects where the company has clear added value, in particular hospitals, large complex buildings, and the Grand Paris Express infrastructure. BESIX France will also continue its diversification efforts, notably in the maritime and industrial sectors. Lastly, the company has started and will continue to work in depth, with BESIX Group's dedicated departments, to perfect its engineering and procurement strategy.

In **the Netherlands**, BESIX NL delivered outstanding projects in 2021. These include the completely renovated Stationspostgebouw in The Hague and the Terraced Tower in Rotterdam, a skyscraper with particularly demanding engineering. Infrastructure deliveries include the Theemswegtracé, a four-kilometer-long railway viaduct in the Port of Rotterdam, and the temporary Suurhoff bridge. Other projects of the Dutch branch of BESIX have progressed well, including the A16, the world's first energy-neutral motorway, as well as the Sluishuis building in Amsterdam and the Grotius Towers in The Hague, both of which reached their peak in 2021 and will be completed in 2022.

AIRPORT PROMENADE, NICE, FRANCE



GROTIUS TOWER, THE HAGUE, THE NETHERLANDS

BESIX NL has also won a few new contracts for which construction has started. These include the De Persgroep headquarters in Amsterdam, one of the world's largest buildings with a hybrid-timber structure, the POST Rotterdam project, comprising the renovation of a historic building and the construction of a skyscraper, and a water softening installation in Culemborg.

In 2022, BESIX NL will strengthen its teams with a focus on operational excellence. In terms of tenders, the company will primarily diversify the type of projects in its portfolio and will aim for projects requiring a multidisciplinary approach, which is a traditional strength of BESIX Group. It should be noted that two infrastructure contracts previously awarded to BESIX NL, the A15 motorway and the GOL project for the development of the A59, are still subject to political decisions due to problems relating to the legislation on nitrogen and PFAS.

Finally, in **Italy**, work on the Valfabbrica infrastructure project started in early 2021. The site will reach important milestones in 2022 with the installation of the bridge and viaduct decks. Excavation of the two tunnels, 1545 metres and 874 metres long respectively, will also begin over the year.

MIDDLE EAST

BESIX-Six Construct has been active in the **Gulf Cooperation Council (GCC)** area since 1965. In recent years, the region has experienced a slowdown in the construction market and a year-on-year decline in the number of contracts awarded. This downward trend follows the uncertainties that arose before and during the pandemic. As a result, a significant number of contractors and subcontractors have been facing great difficulties, with only a few managing to maintain a sufficient level of activity.

BESIX-Six Construct, which focuses on selected clients, mainly government-related entities, and on key sectors, including marine works, the environment (including renewable energy), infrastructure, and special buildings, has managed to maintain its level of activity by targeting very specific projects.

The market is in a period of transformation. The UAE is aiming to attract investments in several new sectors to diversify its

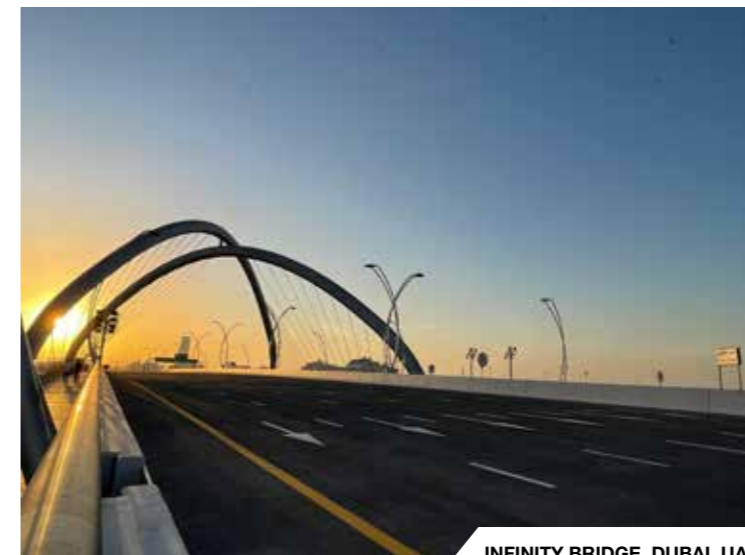
economy away from oil. Now that the Government benefits from a modern infrastructure network, priorities have shifted to scientific research, logistics, healthcare, food security, manufacturing, advanced technologies, and renewable energy, resulting in cancelled tenders, postponed projects, and redirected budgets.

In addition, given the region's current reliance on oil revenues for public expenditure, governments are increasingly inclined to fill the funding gap by procuring projects on a Build-Operate-Transfer (BOT) or Public-Private Partnership (PPP) basis.

It is anticipated that by 2022, notable infrastructure and social services projects, such as metros, motorways, schools, and hospitals, will begin to be procured under these models. BESIX-Six Construct has positioned itself with other global partners to take advantage of this new trend and meet the challenges of 2022, with a particular focus on Abu Dhabi.

In 2021, BESIX-Six Construct was able to expand its portfolio and relationships with key government clients in the region and secure the contract to build the Guggenheim Abu Dhabi Museum. Meanwhile, it has achieved significant milestones and successfully delivered key projects, mainly in Dubai, such as the Deep Storm Water Tunnel, the Shindagha Bridge, and the Belgian and French Pavilions. Progress on the strategic Dubai Waste-to-Energy project is on track after a successful and long-awaited financial close in the second quarter of 2021.

BELGIAN PAVILION AT EXPO 2020, DUBAI, UAE



INFINITY BRIDGE, DUBAI, UAE



“BESIX-Six Construct has positioned itself with other global partners to take advantage of this new trend and meet the challenges of 2022, with a particular focus on Abu Dhabi.”

INTERNATIONAL

The International Business Unit is responsible for all BESIX Group projects outside Western Europe, the Middle East, and Australia-New Zealand. By the end of 2021, it had 14 projects in 10 countries, and was continuing to expand by focusing on its two main areas of expertise, which are marine works, and complex projects and high-rise buildings.

In recent years, in the marine works sector, BESIX has been able to rely on its state-of-the-art expertise to sign several contracts and execute key projects. These include the Canada LNG Berth on the Canadian west coast, the development of the Poti Greenfield Container Terminal for APM Terminals, in Georgia, the Mozambique LNG Project, and the Shipping channel through the Vistula Split, in Poland. Both projects in Poland and Canada will be delivered to their respective clients in 2022.

In the field of complex projects and high-rise buildings, BESIX has started the construction of two new projects in Ivory Coast in 2021 with the Tour F skyscraper and the Abidjan Exhibition Centre. These construction sites add to the world-class projects already underway. These include the Grand Egyptian Museum in Cairo, the Mohammed VI

Tower in Morocco, the new Riga Central Station in Latvia, the construction of the Nachtigal dam and hydroelectric power station in Cameroon, and the development of two prestigious resorts in Montenegro. In 2022, BESIX will deliver the Canada LNG berth, the Mamulah Hotel Resort in Montenegro, and the Shipping Channel in Poland. Last but not least, although the opening date of the Grand Egyptian Museum has not yet been announced, works will be completed in the second half of the year, which will be an exceptional milestone both for Egypt, and for BESIX and its partner Orascom Construction.

In 2021, the international market remained deeply affected by the Covid-19 crisis and the lack of investment in the Oil & Gas industry. Investment decisions for projects in this sector are clearly taking much longer than before the Covid-19 crisis. In addition, as everywhere else in the world, the financial returns from projects are affected by the rising costs of both raw materials, logistics and transport.

In 2022, BESIX will continue with its opportunistic approach in Africa, Europe and Asia and will try to penetrate the South American market to carry out marine works. The company is particularly well positioned for two new marine projects: one in Brazil and the other in Tanzania. In addition, special attention is now given to projects that provide sustainable solutions for countries, such as hydropower plants, water treatment facilities, and environmentally friendly transport infrastructure.



MOHAMMED VI TOWER, RABAT, MOROCCO



SHIPPING CHANNEL, VISTULA SPIT, POLAND

KANGAROO POINT, BRISBANE, AUSTRALIA



AUSTRALIAN CATHOLIC UNIVERSITY, MELBOURNE, AUSTRALIA

AUSTRALIA

2021 has seen BESIX Watpac strengthen its reputation as an engineering-led, multidisciplinary contractor, securing a strong pipeline of strategic projects across marine facilities, bridges, secure facilities, data centres, health centres, laboratories, transport facilities, stadiums, and complex commercial buildings. The company expanded further into Victoria and New South Wales and entered New Zealand for the first time with Christchurch City Council engaging the BESIX Watpac-led Kōtui team to deliver the Canterbury Multi-Use Arena stadium.

Central to BESIX Watpac's growth has been the development of its engineering capabilities in collaboration with in-house specialists from Brussels and Dubai. The company has also embraced innovative technologies with solutions such as 360-degree project visualization software to support de-risking projects, adding further value for clients.

Throughout 2021, Covid-19 forced state-based construction sector closures, a historic rise in skills shortages and significant delays in awarding projects. Within this challenging environment, BESIX Watpac has continued to diversify and win notable projects such as the new Kangaroo Point Green Bridge in the heart of Brisbane, the Barangaroo Station in Sydney's CBD, GMHBA Stadium in Victoria and the upgrade of the HMAS Cairns naval base.

Growth in the business made it necessary to strengthen the company's leadership team. Jean-Pol Bouharmont was promoted to Executive Chairman of the Board of Directors of BESIX Watpac and, following a ten-year tenure as CFO, Mark Baker was appointed CEO. To ensure delivery and operational excellence, Nick Luzar has also been appointed as Chief Operating Officer, bringing 25 years of industry experience to the role.

BESIX Watpac has continued to remain proudly focused on the communities in which it operates. In 2021, approximately 80% of total construction hours were dedicated to local participation. 500 jobs were created for Indigenous Australians and 2,000 pathways were established for apprentices.

Since the Federal Government announced a record \$56.9 billion in public funding over the next four years, Australia has remained a highly competitive market. With a strong order book in place, BESIX Watpac will continue to build a strong pipeline of projects in targeted sectors and regions to ensure profitability and success.

In the longer term, a comprehensive strategy has been put in place to ensure that BESIX Watpac is well-poised to capitalise upon the huge opportunities offered by the upcoming 2032 Olympic and Paralympic Games in Brisbane.

Lastly, BESIX Watpac will remain focused on building sustainability strategies, developing gender equality in the workplace and, most importantly, ensuring the wellbeing and safety of our employees.

Concessions & Assets

Business Review

In Europe, tendering activity in 2021 was fully focused on Belgium, as the Netherlands now seem to have completed the major infrastructure program that was started more than 10 years ago, and in which BESIX was highly successful. The Public-Private Partnership projects Coen Tunnel, Limmel Flood Barrier, Beatrix Lock and A6 Almere highway are now all well into their operations period. The A16 'De Groene Boog' highway is under construction, and the ViA 15 'Gelre-Groen' highway awaits a positive outcome from the ongoing nitrogen regulation debates in the Netherlands before moving on to financial close.

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**TOM NEYRINCK, GENERAL MANAGER
CONCESSIONS & ASSETS**



In Belgium, the Post X LPA police station project in Antwerp, of which BESIX acquired all shares in 2020, is perfectly on schedule to reach availability date by the last quarter of 2022. In 2021, BESIX, together with its partners, was awarded preferred bidder status on the major R4WO ring road project in Ghent. Once it has reached contractual and financial close, this project will involve multiple entities within the group (i.e. BESIX Flanders, BESIX Infra, Van den Berg, BESIX Concessions & Assets) throughout its exceptionally long construction and operations & maintenance period.

In the Middle East, the consortium comprising BESIX, Hitachi Zosen Inova, Dubai Holding, DUBAL Holding, Itochu Corporation and Tech Group achieved financial close for the landmark 1.2 billion dollar Warsan Waste-to-Energy project in Dubai. When fully operational, it will have the capacity to process 1.9 million tonnes of municipal waste per year and generate 200 MW of electricity. BESIX also continued to tender and prepare for future Public-Private Partnership projects in Dubai and Abu Dhabi, but also outside the UAE. The projects are mostly availability payment based, but a few will be awarded as concessions – carrying price and volume risk but also upside.

With the continuing Covid-19 pandemic, the hospitality assets in Belgium, Poland and Switzerland, in which BESIX is a co-developer and investor, were again hit hard by the issues facing corporate and touristic travel. However, for the second year in a row, the hard work performed by local hotel management teams who have always been looking for new sources of revenues, and intelligent cost-cutting achievements with no adverse impact on the guests' overall experience, contributed to a very limited impact of the crisis on cash flows.



WASTE-TO-ENERGY, DUBAI, UAE



DE GROENE BOOG, ROTTERDAM, THE NETHERLANDS

One-stop shop solutions

BESIX Concessions & Assets (C&A) creates and offers tailor-made solutions covering the complete scope and lifecycle of infrastructural, environmental or building projects. For Public-Private Partnerships, DBFM (Design Build Finance Maintain) and BOOT (Build Own Operate Transfer) projects, BESIX C&A has the capacity to completely align with its clients' visions and expectations. BESIX C&A provides customised technical, commercial and financing schemes to meet the client's long-term needs, helping them to optimise an asset's total lifecycle cost.

More than ever, the market demands solutions that provide not only an asset but a total service: Design, Build, Finance, Operate and Maintain. Through its international network and track record, BESIX C&A can arrange competitive funding by bringing financial parties and investors together and seeking the optimal financial structure over the economic lifetime of a project. BESIX C&A can provide such solicited added value, offering a broad multidisciplinary range of solutions along the entire value chain and, where appropriate, inject its own capital to finance initial investments.

BESIX C&A skills nicely add to the BESIX Group's strong engineering, design and planning skills. The Group's strong balance sheet allows them to aim for sizeable equity stakes in the financing part of the projects, and for a strong presence in the joint ventures that will carry out the EPC (Engineering, Procurement and Construction) and O&M (Operation & Maintenance) works. From buildings, to infrastructure, to civil works, to road surfacing, to environmental projects, BESIX can do it all. BESIX's worldwide footprint allows for participation in PPP tenders in its three home markets (Benelux-France, GCC countries and Australia), but also in other emerging countries that consider Public-Private Partnerships as a true value-for-money proposition for the longer term.

Milestones 2021

BELGIUM

After acquiring, in 2020, all shares in the SPV of the Post X LPA project in Antwerp, for which it already was the sole EPC contractor, BESIX quickly resumed construction of the Police Headquarters. In a very visible location overlooking Antwerp's ever busy ring road motorway, the works are well on track and availability is foreseen for the end of 2020. Project teams have already started preparing for the operations & maintenance period of 25 years that will commence upon reaching availability. The building, consisting of 14 layers of which 10 are above ground, represents a total surface of 78,000 m² of offices, interrogation rooms, covered parking spaces for police intervention vehicles, as well as all necessary training and sports facilities.

Tendering activity was successful in 2021 with preferred bidder status awarded to BESIX and its consortium partners of the R4WO ring road in Ghent, which was the country's largest infrastructure Public-Private Partnership tender since 2010. Other active tenders include those for the first section of the full remodelling of the Brussels Ring Road, as well as for the first large environmental Public-Private Partnership project being tendered for a sludge treatment plant by Aquafin (the public wastewater collection and treatment authority in Flanders, Belgium). BESIX is also actively working on BOOT tenders and bilateral opportunities for private industrial clients: industrial wastewater treatment, datacentres, food industry, green hydrogen,...

MIDDLE EAST AND AUSTRALIA

In the UAE, BESIX, together with Dubai Holding, DUBAL, Itochu corporation, Tech Group and Hitachi Zosen Innova signed the Concessions Agreement with Dubai Municipality for the Warsan Waste-to-Energy project in Dubai. Project delivery is foreseen for 2024. The highly challenging contractual and financial set-up of the project was such that Project Finance International (PFI), a leading global reference in the field of industrial project finance, awarded the project the Deal of the Year 2021 award for the Middle East & Africa region. The 1.2 billion dollar financing is made up of sponsor's equity together with several tranches of debt, provided by a lending group comprising the Japan Bank for International Cooperation (JBIC) alongside seven international banks, both European and Japanese. Part of the debt is also covered by loan insurance from the Japanese export credit agency Nippon Export and Investment Insurance (NEXI).

Besides managing BESIX's other operational assets in the region, mostly in municipal wastewater treatment, the local C&A Team remains focused on new tenders in the UAE and other GCC countries in the fields of education, healthcare, power generation, water treatment and solid waste solutions.

In Australia, BESIX Watpac continued to participate in Public-Private Partnership tenders not only as D&C Contractor, but also as a partner in the equity of the project. Several bids were submitted in the fields of education, mixed housing and healthcare, with project award decisions sometimes still pending.

// Outlook 2022 and beyond

In 2022 the BESIX C&A Europe's tendering activities will continue to be mainly in Belgium, where a solid pipeline of large infrastructure projects continues to bring good prospects for further growth. Out of Brussels, C&A will also continue to actively consider new sectors, as well as Private-to-Private DBFMO opportunities, for which the team was reinforced by creation of 'C&A New Ventures'. The goal is to develop new types of assets such as datacentres, smart energy solutions, heat networks, geothermal energy, green hydrogen production, ... As for the existing portfolio, the team looks forward to the end of construction and start of operations of POST X LPA, with the local Antwerp police starting to move into the building by the end of the year, achieving financial close for the ViA 15 highway project in the Netherlands, and working towards contract close for the R4WO ring road in Ghent.

In the GCC, with construction of the huge Warsan Waste-to-Energy project in Dubai now progressing well, tendering activity is expected to remain high. Geographical focus will be somewhat less on solely the UAE, with interesting prospects in Bahrain, Qatar and Oman, and a huge pipeline of projects in Saudi Arabia, which will be considered very diligently.

In Australia, BESIX C&A will continue to support BESIX Watpac in moving up the Public-Private Partnership value chain, from being a mere contractor to an active participant in SPVs through equity stakes. Other countries worldwide, where BESIX is already active or where good partners are searching for collaboration, also provide PPP and DBFMO opportunities that will be considered on a selective basis.

LOCAL POLICE HEADQUARTERS, ANTWERP, BELGIUM



Real Estate

BESIX RED, A RECORD YEAR IN 2021 THANKS TO A UNITED AND EFFICIENT TEAM

IMPACTED BY A SLOWDOWN IN THE PROCESS OF OBTAINING PERMITS AND URBAN PLANNING AUTHORISATIONS RELATED TO THE PERSISTENT PANDEMIC, BESIX REAL ESTATE DEVELOPMENT CLOSES THE YEAR WITH A TURNOVER OF 161.6 MILLION EUROS, A NET RESULT OF 22.6 MILLION EUROS, A SOLID RETURN ON EQUITY OF 22.3 %, AND A STRONG PIPELINE OF 36 PROJECTS UNDER DEVELOPMENT IN 19 PAN-EUROPEAN CITIES.



VIRIDIS, BRUSSELS

“Despite the difficulties related to the continuing health crisis, the slowdown in the permitting process and increasing construction costs, we have achieved excellent results in 2021, both from a geographical and sectoral perspective. These results testify to the cohesion and experience of our team.”

GABRIEL UZGEN,
CEO BESIX RED



The developer also took the opportunity to set the stage for its ESG commitments with a view to establishing in 2022 tangible and ambitious Key Performance Indicators for the future.

Finishing the year on a high note

The end of 2021, particularly, was marked by significant milestones across Europe for the real estate developer, including:

Belgium

PATRIZIA has concluded the largest single-asset multifamily deal ever seen on the Belgian investment market. PATRIZIA has acquired all the shares of Evenepoel Properties S.A., which is developing the Viridis project, for its Pan-European flagship residential fund Living Cities. Viridis is a 17,500 m² project in the Reyers district of Brussels comprising 115 residential units, retail and office space.

SLUSHUIS, AMSTERDAM



“This transaction - unique in its size for a new development in Belgium - demonstrates that the Belgian residential rental market has reached maturity for foreign institutional investors. This transaction also illustrates BESIX RED’s ability to develop real estate projects particularly relevant for ESG funds” comments Gabriel Uzgen.

Befimmo has finalised the acquisition of Esprit Courbevoie’s office building in Louvain-la-Neuve. The 8,500 m² office building, under construction, is already entirely rented to Silversquare, an affiliate company of Befimmo specialised in co-working, and to N-SIDE, an innovative software consulting company in advanced analytics.

SO Stockel, a new 27,000 m² residential micro-district in the heart of Woluwe-Saint-Lambert, obtained its enforceable permit, after an ongoing appeal had been rejected.

The City of Namur has issued a favourable opinion on the PRU (Plan de Remembrement Urbain, i.e. Land Reparcelling Plan) for the nearly 46,3000 m² mixed-use project Le Côté Verre at the Square Leopold.

Luxembourg

AG Real Estate, on behalf of its parent company AG Insurance, has finalised the signature of the contract to acquire 100% of the shares of B-9 S.A., owner of the ICÔNE office building in Belval. This emblematic and sustainable office project is already fully occupied by Société Générale Luxembourg for a 15-year lease even before its delivery.

Also in the Grand Duchy and in line with its policy of supporting major accounts, BESIX RED has signed a project management contract with the Ginion Group to support them in the development of the new Luxembourgish Ferrari headquarters.

Beyond the borders of Belgium and Luxembourg, BESIX RED continues its strategy of geographical diversification.

In **The Netherlands**, BESIX RED has acquired a second site in Amsterdam in partnership with ICN Development. The site foresees the development of a project comprising 37,500 m² of residential and 4,500 m² of office & retail.

In **France**, BESIX RED signed its second project. This upcoming 8,000 m² office concept, located in the Lille Metropolitan area, will place the well-being and health of its users at the centre of the experience. It will also be characterised by its innovation and exemplary environmental approach.

In **Portugal**, the developer increased its stake to 75% in Campus Oriente S.A., which owns Parque Oriente, a mixed-used project of approximately 38,800 m² comprising residential, office and retail space as well as F&B outlets in the prime area of Parque Das Nações in Lisbon.

“Our strategy is to consolidate our presence in the 19 cities and 5 countries where we are present today, while remaining open to new opportunities in dynamic markets with potential, but above all where there is a real desire to act from the public authorities” adds Gabriel Uzgen.

Commercial and operational results

In 2021, BESIX RED’s turnover was driven by the transactions on the Viridis project with PATRIZIA in Brussels, and ICÔNE with AG Real Estate in Luxembourg.

It was also supported by the sale of the Esprit Courbevoie office building to Befimmo and the sale of 100 residential units (Les Promenades d’Uccle and SO Stockel in Brussels, Esprit Courbevoie in Louvain-la-Neuve, Meadow in Herent and Sluishuis in Amsterdam).

In 2021, BESIX RED also reached an important milestone in Portugal with the commercialisation of the first phase of DUJO, its first residential project in the country. Developed in collaboration with the investment holding company Compagnie Du Bois Sauvage and designed by the Portuguese architectural firm Nuno Leónidas Arquitectos, DUJO is a high-end residential concept of 34,000 m² with 280 apartments, located in the heart of the popular Avenidas Novas district in Lisbon. The project has been a commercial success: in only 48 hours, more than 50% of the apartments were already reserved.

In 2021, BESIX RED delivered the following residential projects:

- Meadow (Herent): the second phase of this residential project in the village of Herent, near Leuven, corresponding to 64 apartments and covering 6,570 m² was successfully delivered. This phase is entirely sold.
- SO Stockel (Woluwe-Saint-Lambert): 65 out of 138 apartments and one commercial unit, totalling 7,079 m² out of 13,844 m², were delivered. All of the apartments were sold before the deliveries even started.

Construction work has progressed for:

- Meadow (Herent): the third phase of this residential project comprises of 8,218 m² with 68 apartments. This phase is already 40% sold.
- Esprit Courbevoie (Louvain-la-Neuve): plots 706 and 708 (22,165 m² residential) and plot 707 (8,500 m² offices) of this new district are under construction.
- Les Promenades d'Uccle (Brussels): at the end of October, the construction of the houses M19-M31 (2,700 m²) was launched. Besides, the construction of 69 apartments totalling 7,450 m² was continued.
- Sluishuis (Amsterdam): this ambitious residential project of 39,500 m² comprising 442 units, a two-story underground carpark below water-level, houseboat lots, berths for pleasure crafts, catering facilities, as well as commercial areas in the new district of IJburg is set to be delivered during Summer 2022.
- ICÔNE (Belval): this landmark project includes nearly 17,300 m² of office space and an additional 1,500 m² of shops and restaurants. Its delivery is expected for January 2023.

BESIX RED has also made progress in the development of programmes for the introduction of permits for significant and large-scale projects such as:

- Belgium: Cours Saint Michel in Etterbeek, Matisse in Evere, Meyvaert in Ghent, Gelatines in Hasselt, Le Côté Verre and Le Cocq in Namur and Croisée des Champs in Gembloux.
- Luxembourg: Faiencerie, Kayl and Walferdange.
- Portugal: Parque Oriente.

ICÔNE, LUXEMBOURG



Recognitions

The Cosmopolitan project consisted of the renovation of an obsolete office building into a residential tower with 158 apartments and 1,500 m² of office space in the heart of Brussels. A reference project for BESIX RED and finalist at the MIPIM Awards 2020, the project was awarded once more, this time with the International Prize for the transformation of offices into housing (special mention) by the Maison de l'Architecture d'Ile de France and the Greater Paris Investment Agency.

Congratulations to Casa Ferrero and the Ferrero International team for being awarded 'Office Space of the Year 2021' and 'Best Healthy Office' at the annual Paperjam-CBRE Luxembourg Office Space contest.

"Casa Ferrero is a unique and tailor-made office concept where it feels good to work and live. It has been conceived with the wellbeing of Ferrero's employees and the company's Italian heritage at heart" says Pierre Govare, Project Director at Ferrero Group World Headquarters.

Finally, Gabriel Uzgen was appointed Chair of the Urban Land Institute Belgium & Luxembourg for a voluntary two-year term. ULI is a recognised global non-profit organisation that provides leadership in the responsible use of land. This appointment shows the trust ULI has in BESIX RED to move things forward for an industry facing key challenges and priorities, especially ESG.

// Outlook 2022

BESIX RED's growth prospects look positive with several transactions on the agenda and the acquisition of promising projects in several European cities. The developer has a solid pipeline, corresponding to more than 1.8 billion euros in market value.

"We are positive about our growth prospects. However, we remain attentive to the current socio-geopolitical context and the impact it could have on the real estate market" concludes Gabriel Uzgen.

ESPRIT COURBEVOIE, LOUVAIN-LA-NEUVE



// Investor Relations focus

Interview with Bernard Van Essche, Pan European Investment Advisory Director at BESIX RED and Rami Badr, Partner at Orion Capital Managers.

What's BESIX RED role as 'Investor advisor'?

Bernard Van Essche: As a Pan-European real estate actor with an ambition to pursue our growth, co-developing projects with investment partners is a priority. Our objective is to build such partnerships as early as possible in our real estate developments.

With an experience of more than 30 years and a deep understanding of real estate-related risks, we are able to identify very specific opportunities for every investment partner, across Europe and through different types of activities such as residential, offices, retail and services, including hotels. These frameworks offer win-win operations with significant ROI, to all potential partners.

Who do you target?

Bernard Van Essche: Whether in terms of development types, development size or geography, we cover a broad spectrum of activities. When it comes to geography, we can identify opportunities in the 5 countries where we operate today but also in high-potential cities.

Therefore, we can build partnerships with big investment funds, family offices, institutional investors or under club deals of different partners.

What differentiates BESIX RED as a partner?

Rami Badr: BESIX RED has a deep knowledge of both the investment market and real estate development, which is the perfect combination to support Orion's ambitions.

In addition to being highly reactive and flexible, their team is very friendly, which my team and I really appreciate.

What are Orion's ambitions and targets in terms of real estate investment for the future?

Rami Badr: We look forward to bringing to the market, through ground field development or refurbishment, the new generation of high-class assets complying with the highest ESG standards and users' needs. And obviously we intend to do this together with BESIX RED.

Diversification

Flamant

www.flamant.com

FLAMANT CREATES INSPIRING INTERIOR COLLECTIONS THAT CAN TURN EVERY HOUSE INTO A WELCOMING HOME. FLAMANT'S COLLECTIONS ADDRESS ALL ASPECTS OF HOME DESIGN, FROM FURNITURE AND DECORATIVE ITEMS TO TEXTILES, WALLPAPER, AND ITS OWN RANGE OF FLAMANT PAINTS. WITH 8 COMPANY-RUN STORES IN BELGIUM AND FRANCE, A WIDE NETWORK OF PARTNER SHOPS ON EVERY CONTINENT AND AN EASILY ACCESSIBLE ONLINE SHOP, FLAMANT OFFERS ITS PRODUCTS WORLDWIDE. THE MANAGEMENT FOCUSES MAINLY ON THREE BUSINESS ACTIVITIES: RETAIL, WHOLESALE AND FRANCHISE, AND E-COMMERCE.

Due to the ongoing Covid-19 crisis, 2021 was a challenging year for Flamant. Varying restrictions and the customers' reluctance to shop physically put a great deal of pressure on the stores. Nevertheless, the company recorded a 20.5% increase in order intake in retail and e-commerce compared to 2019. E-commerce declined slightly compared to the stellar results of 2020, but remained very strong with a spectacular increase of 339.3% compared to pre-Covid levels. While many competitors in the interior decoration sector struggled with stock problems due to a shortage of raw materials and logistical obstacles, Flamant remained strong with a large stock and short delivery times.

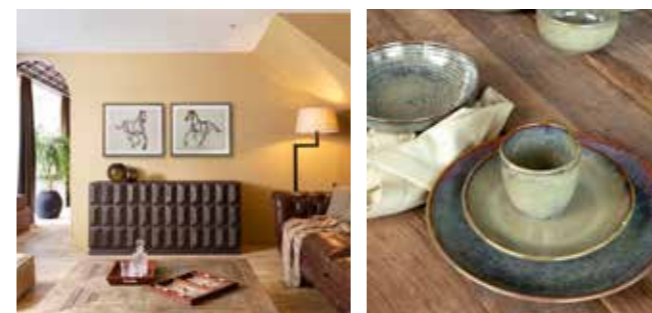
In addition, 'Flamant at Home', the professional service for home interior advice, was also very successful. The public's renewed interest in the home environment was noticeable in 2021: teleworking creates a continued demand for creative home office solutions and increases the average time spent at home. In 2022, Flamant will continue to focus on personalised services such as 'Flamant at Home', a revamped e-commerce environment, and stronger customer loyalty through improved customer service, creative workshops and an increased focus on the shopping experience.

On the corporate level, Flamant made a strong turnaround in 2021 thanks to thorough optimisation at different levels, helping the company to revive its profitability.

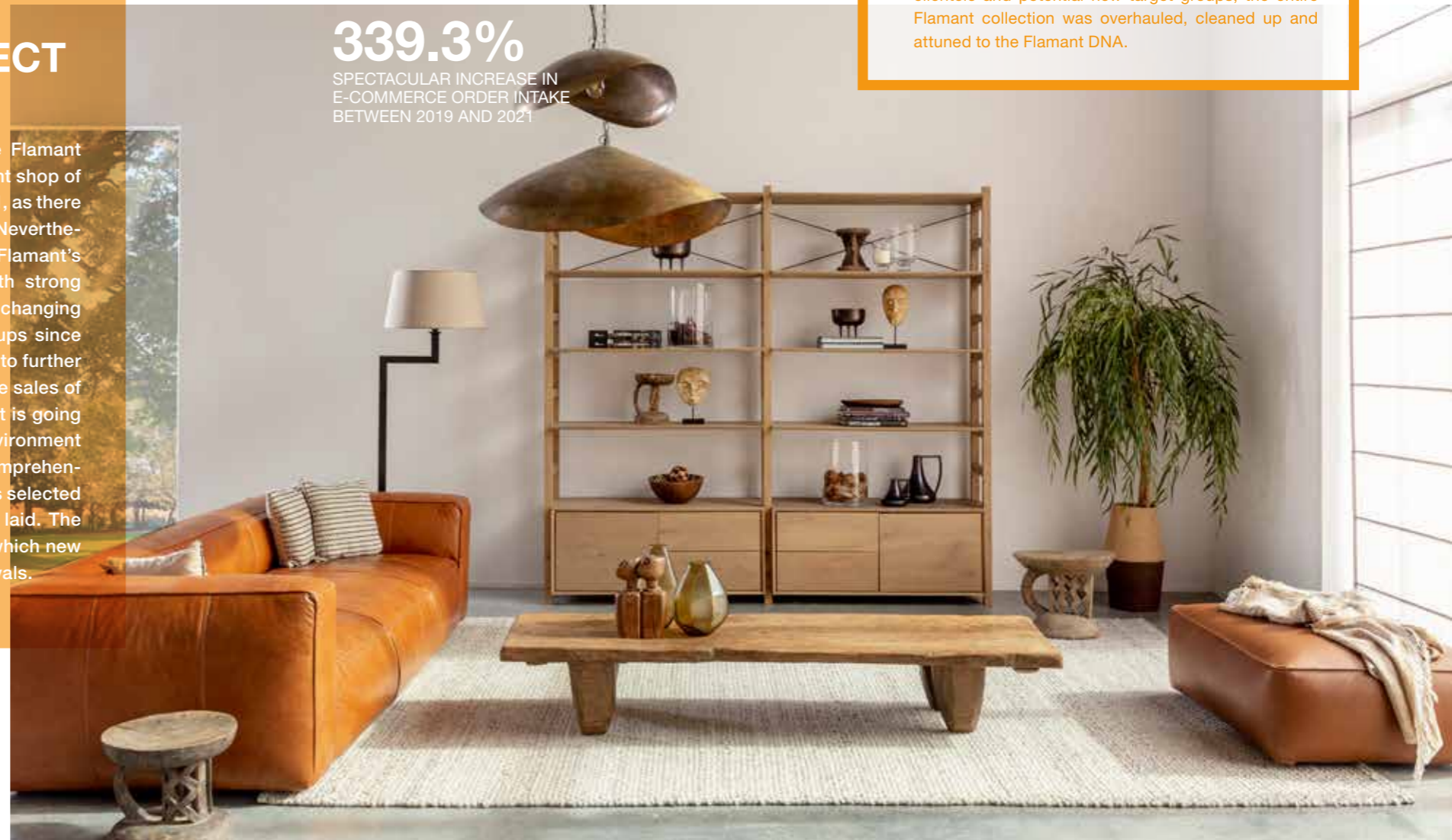
FLAGSHIP PROJECT

E-commerce success

The coronavirus pandemic turned the Flamant online shop into the best-selling Flamant shop of 2020. Results were slightly lower in 2021, as there were fewer and shorter lockdowns. Nevertheless, the online shop remained one of Flamant's biggest shops in 2021, thanks to both strong marketing support in SEA & SMA and changing consumer behaviour in our target groups since the start of the Covid-19 crisis. In order to further respond to increased demand for online sales of furniture and interior products, Flamant is going all out to make its e-commerce environment more user-friendly, faster, and more comprehensive. In 2021, a professional partner was selected and the foundations for the plan were laid. The launch is planned for May 2022, after which new features will be rolled out at fixed intervals.



339.3%
SPECTACULAR INCREASE IN
E-COMMERCE ORDER INTAKE
BETWEEN 2019 AND 2021



Milestones in 2021

Optimisation: Responding to the decline in in-store sales and the ongoing coronavirus pandemic, Flamant optimised the organisation at all levels, from purchasing processes to logistics. The result is a lean and mean business system, with increased efficiency at the corporate level and a special commitment to customer satisfaction thanks to an improved Customer Service framework.

Franchise success: After its successful first participation in the Paris Franchise Expo in September 2021 and the great success of franchisee Flamant Amman in Jordan, Flamant wants to continue to focus on new franchise partnerships and further expansion of its distribution channels in 2022.

E-commerce investment: In 2021, the groundwork was laid for the renewed e-commerce environment. This modified online shop with improved visibility and user-friendliness should provide an answer to the great demand for online sales in the coming years.

Company DNA: In order to appeal to both the existing clientele and potential new target groups, the entire Flamant collection was overhauled, cleaned up and attuned to the Flamant DNA.

06 /

REGIONAL & SPECIALISED ENTITIES IN EUROPE

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VANDEUREN III-IV, IXELLES, BELGIUM

FOUNDED IN BRUSSELS IN 1967, ENTREPRISES JACQUES DELENS IS A GENERAL CONSTRUCTION AND PROPERTY DEVELOPMENT COMPANY, WITH ITS OPERATIONS CONCENTRATED IN THE BRUSSELS REGION, IN WALLOON BRABANT AND FLEMISH BRABANT. FOR OVER 50 YEARS, IT HAS SPECIALISED IN CONSTRUCTION, IN THE RESTORATION OF LISTED BUILDINGS, SOME OF THEM ROOTED IN THE COLLECTIVE MEMORY, AND IN THE RENOVATION OF BUILDINGS OF ALL TYPES AND SIZES.

With its three construction entities (Jacques Delens, Sud Construct and Corebat), Jacques Delens operates in both public and private markets, including the renovation and modernisation of care units, office development and renovation, and the construction of urban housing.

A positive state of mind has taken hold, supported by the enthusiasm of a new generation and the skills of the older ones.

In 2021, Entreprises Jacques Delens successfully carried out a number of complex building projects, fully meeting its clients' expectations.

Following the changeability of 2020, the main objective in 2021 was to stabilise results and build up a high-quality order book.

The desired balance was achieved, thanks to the remarkable work of the company's staff and the confidence of its partners, thereby enabling the company to look to the future with serenity.

 www.jacquesdelens.be



// Flagship project

VANDEUREN III-IV

Location: Ixelles (Brussels), Belgium

Work started: August 2021

Duration: 950 days

Description: Complete renovation of the Vandeuren social housing site. The buildings are being renovated and restructured, the number of housing units reduced from 160 to 132 and new equipment added. The project, which is being undertaken in the very restrictive and tight-packed context of a social housing neighbourhood ('cité'), incorporates the principles of circular economy. The project also won the 'Be Exemplary' award in 2019.

The innovative aspect of the approach lies in the maximum use of the existing structures, the planting of the courtyards to give occupants places to relax, and the recycling of materials in the reconstruction.

In this way the following items will be dismantled for reincorporation into the project: the old bricks will be used for various masonry works and the gabions; the structural wood will be dismantled and reinstalled after treatment; and cement tiles, bluestone sills and bluestone fireplace mantels will also be reused.

// Projects signed in 2021

ULB SOLBOSCH CAMPUS

Ixelles (Brussels), Belgium

Extension of two buildings, one for student housing and the other (structural work only) for a polyclinic. The former also includes adding a floor to the existing building. An underground car park will be provided under the buildings.

GRANDE HAIE

Etterbeek (Brussels), Belgium

For client Log'iris, Jacques Delens is renovating an ensemble of 50 social housing units. The contract comprises all the usual major renovation tasks, in particular demolition, closed structural work, completion, and finishing work and special technologies.

HAUTE ECOLE GALILÉE

Brussels, Belgium

Extension and reconfiguration of the Galileo site, including construction of a new building and renovation of existing buildings.

CRÈCHE COURTE ECHELLE

Schaerbeek (Brussels), Belgium

Conversion of an existing building into a crèche for 60 children.



RAILWAY MAINTENANCE WORKSHOP, DUDELANGE, GRAND DUCHY OF LUXEMBOURG

FOR MORE THAN 40 YEARS, LUX TP HAS BEEN CARRYING OUT CONSTRUCTION PROJECTS OF ALL SIZES FOR ITS CLIENTS IN LUXEMBOURG, AS WELL AS BELGIUM AND FRANCE.

THIS SUCCESS IS THE RESULT OF THE EXEMPLARY COMMITMENT OF ITS MORE THAN 300 LOYAL EMPLOYEES WHO EXCEL IN THE SUPERVISION OF THEIR CLIENTS' PROJECTS.

As in previous years, Lux TP continued in 2021 its strategy of diversification and flexibility. Its 2021 portfolio consisted of buildings, civil engineering works, roads, railways (including platforms and equipment), along with metal structures and cladding, as well as equipment for wastewater treatment plants.

Despite the difficult context linked to the shortage of materials and exploding prices of supplies, Lux TP has successfully achieved its objectives in terms of both timeline and quality, to the full satisfaction of its clients.



// Flagship project

RAILWAY MAINTENANCE WORKSHOP

12,000 / **600**
M³ OF EARTHWORKS / TONNES OF STEEL

Location: Dudelange, Grand Duchy of Luxembourg

Period: June 2019 – May 2021

Client: CFL Technics

Description: Lux TP carried out this 7,000 m² project consisting of two buildings: a railway wagon and locomotive workshop, and an office building. The 6,900 m² workshop is equipped with three 10-tonne and one 20-tonne overhead cranes. It also has two wagon maintenance lines with two pits; a locomotive maintenance and washing line, also with a pit; a spare parts storage area; and technical rooms.

The administrative building, in turn, has a floor area of 830 m². The ground floor consists of staff premises with cloakrooms and canteen catering for up to 50 people, while the first floor houses offices and a meeting room for 20 people.

Finally, in the adjoining secure traffic centre, 300 secure parking spaces are available for terminal users, along with a car wash, fast food shop, sanitary facilities, a fitness room, and laundry service.

// Projects signed in 2021

CACTUS HYPERMARKET AT LALLANGE

Esch-sur-Alzette
(Grand Duchy of Luxembourg)
Structural work and roof framework for the new hypermarket.

PLACE GUILLAUME II

Luxembourg city centre
(Grand Duchy of Luxembourg)
Redevelopment of the city square.

INTEGRATED SENIORS' CARE CENTRE (CIPA)

Mamer (Grand Duchy of Luxembourg)
Structural work and exterior refurbishment.

CLERVE VIADUCT

Clervaux (Grand Duchy of Luxembourg)
Construction of the OA 822 flyover ('Transversale').



CAR-T 'COLD SHELL', ZWIJNAARDE



BORGERWIJK, SINT-KATELIJNEWAVER

RESEARCH
INSTITUTE,
ZAVENTEM

GROEP VANHOUT IS A MULTIDISCIPLINARY CONSTRUCTION GROUP THAT EXCELS IN CREATING SUSTAINABLE SOLUTIONS FOR A BETTER WORLD, CREATING LIVING ENVIRONMENTS IN WHICH PEOPLE CAN WORK, AND THEN COME HOME AND RELAX. THE DIFFERENT COMPANIES AND CONSTRUCTION TEAMS UNDERTAKE A BROAD RANGE OF CONSTRUCTION AND DEVELOPMENT PROJECTS, INCLUDING OFFICES, PUBLIC BUILDINGS, RESIDENTIAL PROJECTS, SCHOOLS, HEALTHCARE INFRASTRUCTURE, AND SWIMMING POOLS.

2021 was a difficult year for Groep Vanhout. The sharp rise in raw material prices and the various Covid-19 pandemic measures placed pressure on the profitability of its activities. The traditional contracting market remains hyper competitive, with pricing and risks not always correctly balanced. One of the key priorities is attracting and retaining the right profiles in a market where the war for talent is raging.

Nevertheless, Groep Vanhout looks back with pride on a number of important achievements. The Vanhout Projects team is developing and carrying out attractive residential projects in Flanders, and is making a significant contribution to the global margin of Groep Vanhout. With its participation in BuildUp, Groep Vanhout is taking a strategic step in the offsite construction market. ComTIS Ventilation

has joined the ComTIS Group, focusing on the installation, maintenance, and cleaning of ventilation ducts. Vanhout is constructing the KULeuven Living Lab, a circular, modular building using bio-based building materials. Isopearls sets up a completely new factory for producing its EPS pearls. During an intense strategy journey, nine strategic areas were defined on which the Group intends to focus in the coming years. Operational Excellence, Sustainability, and Innovation are already among them.

 www.vanhout.be



// Flagship project

RESEARCH INSTITUTE

12,600,000

EUR (EXCL. VAT)

8,000

M² (ABOVE GROUND)

5,400

M² (UNDERGROUND)

Location: Sint-Stevens-Woluwe (Zaventem), Belgium

Duration: February 2021 - May 2022

Description: For the Belgian Building Research Institute (BBRI), Vanhout is building a new research centre, with offices, labs, and a warehouse. By sustainably renovating an existing office building, this future-oriented pilot project seeks to set new standards for comfort and energy performance, circular economy, and greening of the urban environment. A special feature is the covering of the existing patio with a shed roof to create a new atrium and the application of a new contemporary façade system with mini-gardens as a façade element.

// Projects signed in 2021

SIMAC OFFICE BUILDING

Haasrode, Belgium

Construction of the headquarters building for technology company Simac ICT Belgium at the Haasrode Research Park near Leuven. The building has a particularly ecological design and is designed as a BEN (Almost Energy Neutral) building. It will house 140 employees, with a total surface area of approximately 6,000 m².

CAR-T 'COLD SHELL'

Zwijnaarde, Belgium

Construction of a new production facility and warehouse for CAR-T cell-therapy cancer treatment, on behalf of a global player in the pharmaceutical sector. The building covers a surface area of 25,000 m².

RESIDENTIE OLIVIA

Lier, Belgium

New residential project, consisting of 50 apartments, 19 assisted living apartments and a meeting room, on the Krugerlaan in Lier. The client is B-Development.

BORGERWIJK LOTS 2 & 3

Sint-Katelijne-Waver, Belgium

Construction of 33 'life-proof living' housing units, 18 assisted living apartments and 23 social apartments. This is the second phase in the redevelopment of the Borgerstein site.



GRAND MANÈGE, NAMUR



KING ALBERT II INSTITUTE, BRUSSELS

SOCOGETRA HEADQUARTERS,
MARCHE-EN-FAMENNE

WUST IS A GENERAL CONSTRUCTION COMPANY OPERATING IN WALLONIA AND THE GRAND DUCHY OF LUXEMBOURG. IT BUILDS RESIDENTIAL COMPLEXES, OFFICE BUILDINGS, INDUSTRIAL HALLS AND COMMERCIAL AREAS, BUILDINGS FOR EDUCATION, HEALTH CARE AND PERSONAL ASSISTANCE, AS WELL AS SPORTS AND LEISURE FACILITIES. IT ALSO UNDERTAKES RENOVATION AND RESTORATION WORK, AND PROVIDES SERVICES TO INDUSTRIES. WUST RELIES ON ITS SUBSIDIARIES AND DEPARTMENT OF REAL ESTATE DEVELOPMENT TO COMPLETE ITS SERVICE OFFER.

2021 was very much a year of transition, particularly with the economic climate affected by the public health crisis. Supply difficulties, labour shortages and ever tougher competition all put a brake on sale growth. As such, Wust's results were in line with 2020: positive but below target.

Large-scale projects were completed, including the mozzarella production plant for Solarec in Baudour, the Grand Manège project in Namur, and the renovation of wing 400 at the Clinique Saint-Pierre in Ottignies. Major projects at hand include Legiapark in Liège, AXS in Namur, and the Socogetra headquarters at Marche-en-Famenne.

The strong order book and new areas of development that Wust has now entered allow us to approach 2022 with enthusiasm. The Group's positioning in large-scale projects, the strengthening of synergies between its Walloon entities, and the increase in activities in the western part of Wallonia are all bearing fruit.



// Flagship project

LE GRAND MANÈGE

Location: Namur, Belgium

Period: 2018 - May 2021

Description: Wust, in a joint venture with Cobelba, completed the Grand Manège project in Namur.

The project, carried out in 'Bouwteam' mode, involved the complete renovation of this emblematic site in Namur's city centre. The Grand Manège now houses performance halls (including one with 800 seats), offices, a catering area, and the Music Conservatory.

A key focus of attention was special technologies, particularly the acoustics – sound quality in the concert hall and also the soundproofing of various classrooms. The site team was confronted with major unforeseen challenges, but its professionalism enabled it to meet them brilliantly.

// Projects signed in 2021

SOCOGETRA HEADQUARTERS

Marche-en-Famenne, Belgium

Construction of the new Socogetra headquarters on the Wex site in Marche-en-Famenne.

Architect: Plan9 Architects Office.

SPA-FRANCORCHAMPS MOTOR RACING CIRCUIT

Francorchamps, Belgium

Construction work on the Raidillon grandstand at the Spa-Francorchamps circuit. This project is carried out in a joint venture with Serbi.

Architects: artau architectures and Luc Nelles Architects

PARADIS EXPRESS

Liège, Belgium

Construction of four residential buildings, shops and a crèche for the developer Matexi. This project is undertaken in a joint venture with BESIX.

Architects: A2M, Greish and Jaspers-Eyers Architects

KING ALBERT II INSTITUTE

Brussels, Belgium

Construction of the new institute for the Cliniques Universitaires Saint-Luc, combining oncology and haematology practices.

Architects: Modulo architects and GAF architects



REDEVELOPMENT OF THE PROVINCIAL TRUNK ROAD (N29), BEKKEVOORT AND KORTENAKEN

REDEVELOPMENT OF JOZEF VERVAENESTRAAT AND ADJACENT ROADS, GHENT



BESIX INFRA POSSESSES STRONG EXPERTISE IN ROADBUILDING AND COMPLEX SEWAGE SYSTEMS. AS A CONTRACTOR FOR ROADBUILDING, SEWERAGE WORKS, ENVIRONMENTAL REMEDIATION, AND THE CONSTRUCTION OF PUBLIC SPACES, BESIX INFRA IS AT THE TOP OF THE PUBLIC AND PRIVATE INFRASTRUCTURE MARKET IN BELGIUM.

The Bilzen and Burcht facilities have their own concrete and recycling sites. Our subsidiaries Belasco and BESIX Infra Nederland have in-house asphalt production plants at Bilzen, Ghent, Puurs and Roermond, enabling them to operate efficiently in Flanders, Brussels, and the southern Netherlands.

In 2021, BESIX Infra continued its strategy of expanding its services, in terms of both content and region. At the end of January, the acquisition of the activities of Strabag BV in the Netherlands, including the asphalt plant in Roermond, was completed. These activities continue under BESIX Infra Nederland. This acquisition enables BESIX Infra to expand its operations into the southern Netherlands.

Since August, BENOR-certified road concrete has been produced in the Bilzen concrete plant. This represents an attractive added value in the BESIX Infra product range.

After a trial period, the BESIX Infra site in Bilzen was designated in September by the building products certification agency COPRO as an interim storage location for receiving tarred asphalt for thermal cleaning. This makes BESIX Infra Bilzen one of only 9 certified intermediate storage depots.

With the appointment of a full-time instructor, the BESIX Infra Academy is running at full capacity. In 2021, 39 new workers received training at the Academy and 11 more experienced workers received specific training on site. This internal vocational training enables sites to deliver the highest quality work via better trained workers.

Undeniably, the Covid pandemic continues to have a major impact on the way we work. Thanks to our employees' resilience, we have always found solutions to the problems arising and have succeeded in performing the job "as normally as possible".

 www.besixinfra.com



// Flagship project

REDEVELOPMENT OF THE PROVINCIAL TRUNK ROAD (N29)

Client: Flanders Roads and Traffic Agency

Location: Bekkevoort and Kortenaeken, Belgium

Period: September 2020 - November 2021

Description: In both municipalities major works were carried out, with the entire trunk road broken up (all the way down to its foundations) over a length of 4 km in the project zone. Following the earthmoving, sewerage and other utility works, rainwater and wastewater will now be drained off separately. Below the intersection, the Begijnenbeek can now flow more smoothly through a new, wide conduit.

During the renovation works, major attention was paid to increasing the safety of soft road users by building separate bicycle paths, ensuring the safety of zebra crossings and bicycle crossings with traffic islands and lights at busy intersections, and constructing raised bus stops for great traveller comfort. Lastly, the trunk road was re-asphalted over a length of 6 km, thereby increasing driving comfort and reducing noise nuisance for local residents.

// Projects signed in 2021

ROAD AND SEWERAGE WORKS Sint-Niklaas, Belgium

Client: City of Sint-Niklaas

This project involves the construction of a separate sewerage system, building an underground buffer on the rainwater drainage system, and the refurbishment of several streets in the area.

REDEVELOPMENT OF JOZEF VERVAENESTRAAT AND ADJACENT ROADS Ghent, Belgium

Client: De Lijn

Redeveloping the carriageway with the construction of tram tracks. Laying a separate sewerage system, including a 1,000 mm diameter sewerage underpass under the E17 slip roads.

ROAD AND SEWERAGE WORKS IN WIJNSTRAAT Riemst, Belgium

Client: Fluvius

Demolition of existing roads. Construction of a separate sewerage system, new roads, and footpaths.



A16 DE GROENE BOOG,
ROTTERDAM, THE NETHERLANDS

TOUR TRIANGLE, PARIS, FRANCE

FRANKI FOUNDATIONS HAS SPECIALISED IN DEEP FOUNDATIONS FOR MORE THAN A CENTURY, DELIVERING OVER 500 PROJECTS EACH YEAR IN VARIOUS SECTORS: OFFICE BUILDINGS, HOUSING AND INFRASTRUCTURE WORKS, AS WELL AS PROJECTS IN INDUSTRIAL ENVIRONMENTS LIKE PETROCHEMICAL PLANTS, THE NUCLEAR SECTOR, AND HIGH VOLTAGE LINES.

Proud of its Belgian roots, the Group also has several foreign subsidiaries: Atlas Foundations in France, Franki Grondtechnieken in the Netherlands, and Franki Foundations UK and Martello Piling in the United Kingdom.

Franki Foundations experienced divergent activity in its various markets in 2021. Despite the postponement of several infrastructure projects in Belgium and the Netherlands, major projects which started in 2020, like De Groene Boog and Constitution, kept the momentum going. Industry, which remains a privileged partner, also demonstrated excellence, with numerous petrochemical projects in Antwerp and Rotterdam, as well as in the logistics sector.

For France and the United Kingdom, 2021 was a difficult year. The French market was suffering due to the pausing of work on the Greater Paris metro network, which has not been sufficiently offset by the current market. Fortunately, the confirmation in Autumn 2021

of the start of construction of the Triangle Tower in Paris allows company to look forward to 2022 with optimism.

In the United Kingdom, the combination of Covid-19 and Brexit has weighed on the labour market and caused major supply shortages. These two factors have been intensified by the start of the high-speed railway line (HS2) project, which is absorbing large quantities of labour and materials. It will be necessary to remain watchful of these elements in 2022.

In terms of order intake, 2021 was a good year for all the markets where the Group operates. However, the start-up of large-scale operations, particularly for major infrastructure projects in Antwerp and the Netherlands, as well as the earmarking of major production capacities for them, remain subject to numerous uncertainties due to permits, appeals and other environmental issues.



www.ffgb.be

// Flagship project

FOUNDATIONS ON THE 'GROENE BOOG'

14 DRILLING RIGS AT THE PEAK OF THE PROJECT

200,000 TRUCKS OF SAND

Location: Rotterdam, The Netherlands

Period: 2020 - 2021

Description: The 'Groene Boog' is an 11 km extension of the A16 motorway along the northeast periphery of Rotterdam which aims to improve mobility in this part of The Netherlands.

Franki Grondtechnieken has partnered with Voorbij Funderingstechniek to settle the foundations of this huge project. The works include 8,850 grout-injected screw combi-piles, 2,500 precast piles, 75,000 m² of sheet piles, 665 micropiles (60 m long), and 750 anchors.

In order to minimise disturbances to the neighbourhood, Franki Grondtechnieken is using pile drilling techniques wherever possible, as well as noise reduction equipment. To strengthen the surface of the soil, especially the weak top layers, about 1,400 dragline mats will be used. Preparation and logistics are definitely key elements in this mission!

// Projects signed in 2021

SCHELDT TUNNEL (COTU)

Antwerp, Belgium

Franki Foundations will partner with Soetaert to carry out various deep foundation activities on the COTU (Scheldt tunnel) construction site in Antwerp. This site, which is part of the Oosterweel (completion of Antwerp ring road) project, will see the construction of more than 20,000 m² of diaphragm walls, anchors and piles. Since part of the work will be done off-site, Franki Foundations will also build sealing walls for a temporary quay in Zeebrugge.

TRIANGLE TOWER (TOUR TRIANGLE)

Paris, France

Atlas Foundations will build the foundations of the Triangle Tower, which will have an innovative and futuristic architecture. The project, located in a hyper-urban environment near the Parc des Expositions, will require several techniques, including diaphragm walls, barrettes and micro-pile retaining walling. The Atlas Foundations teams will carry out this project in partnership with SPIE Foundations.

NESTE

Rotterdam, The Netherlands

Franki Grondtechnieken will support the Capacity Growth Project of Neste to increase the production capacity of its renewable products in Europe. Approximately 1,600 driven piles, 2,000 screwed piles and more than 3,000 rigid inclusions will be needed for this huge project.

1-3 BROADGATE

London, United Kingdom

After completing low headroom piling ahead of schedule in 2021, Franki Foundations UK will be back on this project for a 9-week programme of 900 and 1,050mm secant piles, to be executed with a SR-75 Franki rig in Central London.



RENEWAL OF THE N4 THROUGH TENNEVILLE



RAILWAY BRIDGE, THUIN



WITH ALMOST 75 YEARS OF EXPERIENCE, THE SOCOGETRA GROUP OCCUPIES AN ESSENTIAL PLACE AMONG BELGIUM'S CONSTRUCTION PLAYERS. SOCOGETRA HAS CLASS 8 CERTIFICATION – THE HIGHEST CATEGORY IN BELGIUM – ENABLING IT TO TENDER FOR AND CARRY OUT CONTRACTS OF ANY SIZE.

Socogetra's operations are divided into four main activities: road works, railway works, civil engineering, and buildings. Through its subsidiaries, Socogetra owns various factories and entities producing construction and coating materials: Famenne Enrobés, Enrobage Stockem, Enrobés des Trois Frontières, Emubel, GNB Béton and Vialines; along with quarries: the Carrière des Limites and the Carrières de Grès Réunies. The Hainaut-based subsidiary BAGETRA rounds off these activities in the fields of civil engineering and industrial buildings.

Despite the ongoing health crisis in 2021, the Socogetra Group ended the year above budget in terms of both volume and profitability, producing its best-ever annual results. Employees were totally invested in their tasks and objectives, responding to the various challenges, technical or otherwise, when presented with them. The company demonstrated again its ability to adapt to clients' changing demands and needs, and to provide technical support even in the

most complex cases. The order book has also reached a record high, offering excellent prospects for 2022, 2023 and even 2024.

After more than 15 years of waiting, 2021 saw the completion of the Group's new headquarters. This head office will also accommodate the employees of its subsidiaries and shared services, along with colleagues from BESIX Group's other branches of activity which are growing in Wallonia, such as Van den Berg. This head office will showcase Socogetra's key businesses, like wastewater treatment, and also reflect the quality and rigour of the work that the company and its subsidiaries deliver to their clients, both public and private.

Once again, the teams have demonstrated perfect cohesion, mutual support and courage. Unity makes strength!

 www.socogetra.com



// Flagship project

RENEWAL OF THE N4 THROUGH TENNEVILLE

4.4 KM
OF FIBRE OPTIC
SHEATHING

250
NEW DRAINS

Customer: Wallonia Public Service Mobility & Infrastructures and Municipality of Tenneville

Budget: 13.5 million euros

Period: April 2019 - December 2021

Description: This project consisted of the rehabilitation of and safety improvements on the N4 as it passes through Tenneville (4.4 km), while maintaining traffic in both directions for the total duration of the works. The works undertaken by Socogetra include the replacement of the temporary carriageway narrow with a larger central island; resurfacing along the entire length of the section; the rehabilitation of the sewerage network; the revision of the runoff water collection system; and the renewal of the municipal water distribution network.

// Projects signed in 2021

LINE 162 FOR TUC RAIL AND INFRABEL

Grupont-Hatrival, Belgium

Reinforcement and sealing of six bridges and complex rock face earthworks.

WASTEWATER TREATMENT PLANT FOR THE AIDE INTERMUNICIPAL COMPANY

Visé, Belgium

Construction of a wastewater treatment plant with specific activated sludge treatment technology.

ANS STATION FOR TUC RAIL

Ans, Belgium

Construction of a pedestrian footbridge at Ans station linking it to the new car park. This makes the station accessible to persons with reduced mobility.

E25-E411 MOTORWAYS FOR SPW AND SOFICO

Resurfacing and maintenance.

CIVIL ENGINEERING WORKS FOR APERAM

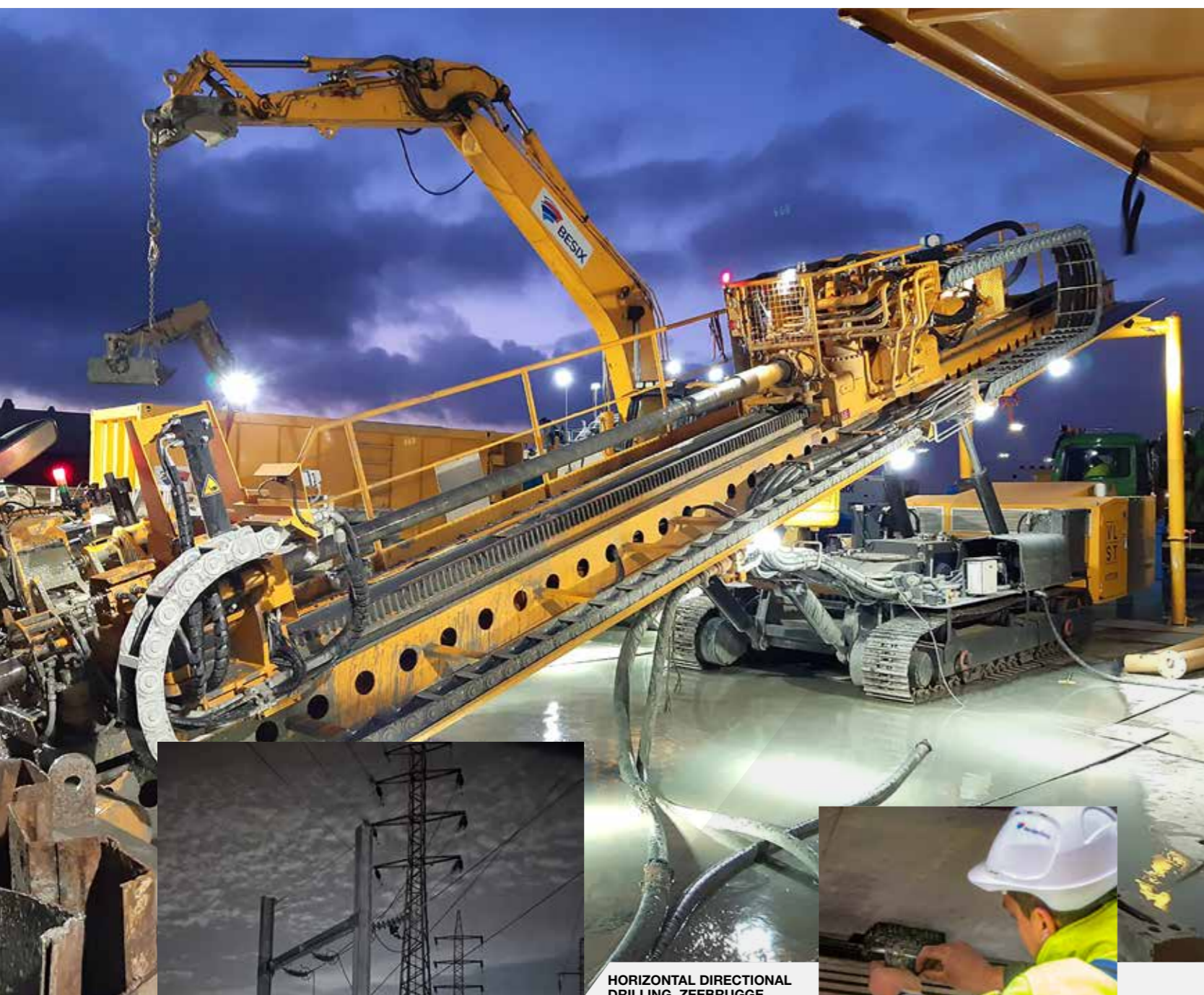
Châtelet, Belgium

Civil engineering works for the new 'Coil Conveying System' line and modifications of the existing civil engineering for the 'Down Coiler' line.

BRIDGE ON LINE 130A FOR INFRABEL

Thuin, Belgium

Complete renewal, consisting of the installation of a new 420T bridge on the 130A railway line between Charleroi and France.



VOLTAGE SWITCH, GENK

HORIZONTAL DIRECTIONAL DRILLING, ZEEBRUGGE



FIBER TO THE HOME, FLANDERS AND BRUSSELS

BESIX UNITEC (FORMERLY VAN DEN BERG), TOGETHER WITH ITS SUBSIDIARIES AGIDENS INFRA AUTOMATION, BESIX CONNECT, LUCAN AND APPERMONT, OFFERS HIGH-QUALITY INFRASTRUCTURE SOLUTIONS TO ITS CLIENTS.

On 1 January 2021, Van den Berg established its new subsidiary BESIX Connect, following the merger of Larabo and Uniconnect, that Van den Berg acquired in 2017 and 2018 respectively.

At the same time, Van den Berg has continued its strategy of expanding its services with several interesting acquisitions.

In April 2021, Lucan BV from Wommelgem became a Van den Berg subsidiary. Lucan specialises in interconnections and installing house connections for utility companies. Its expertise and the projects it undertakes complement Van den Berg's activities, thereby strengthening its position in the utility lines installation market.

Another highly strategic acquisition was Agidens Infra Automation (AIA) in September. AIA leads the market in automation, remote control, interconnectivity, and intelligent energy

management for infrastructure projects like locks, movable bridges, tunnels, weirs, and pumping stations. By combining the services of both companies, the company offers its clients considerable added value.

In the past year, Van den Berg took full advantage of the 'relaunch funds' that are investing in projects related to digitisation and developing the technical infrastructure for tomorrow's digital society. Together with its subsidiaries, it is involved in multi-year projects like 'Fiber To The Home', the ETCS rail project and the roll-out of digital meters in Flanders. In addition, significant steps were taken in 2021 to expand a position in Wallonia.

Since beginning 2022, Van den Berg operates under the new name of BESIX Unitec.

 www.besixunitec.com



// Flagship project

FIBER TO THE HOME

58,000

HOME CONNECTIONS
IN 2021

25

EUR MILLION
TURNOVER

Location: Flanders and Brussels, Belgium

Description: 'Fiber To The Home (FTTH) is a major project for Van den Berg. Fifthnet (JV of Van den Berg, Circet and Verbraeken) is one of the consortia that are installing the fibre optic network for Proximus. In 2021, Van den Berg operated in 14 Flemish cities and Brussels, placing 58,000 home passes or customer connections. In the past year, Van den Berg also expanded its FTTH activities to new market players, such as Fiberklaar. In December 2021, Van den Berg undertook in Sint-Niklaas the very first customer connection in Belgium for this company. A great achievement! In the future, FTTH will continue to operate at cruising speed with the further expansion of the fibre network for Proximus, signing up new municipalities for Fiberklaar and expanding the activities to Wallonia.

// Projects signed in 2021

RENOVATION OF ANTWERP NORTH-SOUTH RAILWAY TUNNEL

Antwerp, Belgium

The Van den Berg – Agidens Infra Automation consortium is responsible for the replacement, integration and expansion of the security installations of the four-kilometre-long rail tunnel between the Antwerp-Berchem and Antwerp-Dam stations. The project consists of a 3-year Design & Build phase and a 17-year maintenance contract.

HORIZONTAL DIRECTIONAL DRILLING

Zeebrugge, Belgium

Complex horizontal directional drilling over a length of 667 m under the Verbindingsdok in Zeebrugge at a depth of 47 m for the construction of the largest movable bridge in Europe. Drilling at such depth and length is a rare occurrence in the country.

HIGH- TO LOW-VOLTAGE SWITCH

Steel (Genk), Belgium

Construction of a new 150 kV GIS (gas-insulated switchgear) station in which a new 150 kV GIS installation will be built with associated new relay room containing around 80 LV cabinets. The project also includes the associated cable works and the construction of two 70 kV fields.

07 /

BESIX FINANCE



TOGETHER

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Comments on the financial performance

2021 HAS BEEN A RECOVERY YEAR IN WHICH BESIX WAS ABLE TO DELIVER SOLID GROWTH AND INCREASE PROFITABILITY. THE GROUP CAN RELY ON A DIVERSIFIED ACTIVITY WITH AN ORDERBOOK REACHING A HISTORICALLY HIGH FIGURE. ITS STRONG BALANCE SHEET AND CASH POSITION ALSO IMPROVED DURING THE YEAR.

BESIX closed the year 2021 with a turnover of 2.96 billion euros, one of the highest in the last twenty years. This confirms a certain recovery after a challenging year 2020, notably marked by the Covid-19 pandemic.

BESIX has also generated an operating profit (EBITDA) of 102 million euros, an increase of 82% compared to the results of 2020. The group's net result amounts to 27.1 million euros.

The company ended the year with a record backlog of 4.88 billion euros, compared to 4.2 billion in 2020.

The orderbook shows a good diversification in terms of geography and activity. Belgium accounts for 30.8% of orders, the Middle East for 15.2%, and Australia for 16.3%, while the rest of the world counts for 11.0%.

Building construction accounts for the largest portion of the order book with 59.2%, followed by Infrastructure with 18.7%, and Roads & Utilities with 10.1%.

BESIX's diversification strategy has once again proven its relevance: the public-private partnerships in the field of water and waste in the Middle East, the entities specialising in infrastructure and services to communities in Western Europe and the real estate development subsidiary have all achieved very good results.

Acquisitions in 2021 were very limited, consisting of mainly Agidens Infra Automation and a stake in i.LECO.

No divestments took place in 2021.

PERFORMANCE BY ACTIVITY AND BUSINESS UNIT

CONTRACTING

BESIX Group's Contracting business generated a revenue of 2,747 million euros.

In Europe, despite some remaining effects of the Covid-19 pandemic, the deal flow of large public infrastructure works and private market was impressive.

The regional contractors contributed to 17.2% of the contracting turnover. The specialized contractors (roads, utilities, piling, etc.) have contributed to 20.0% of the contracting turnover, and have highly contributed to the profitability of the group.

In Australia, BESIX Watpac posted a revenue of 544 million euros, despite a significant negative effect of the pandemic.

The Middle East contracting activities resulted in a turnover of 348 million euros, while the orderbook has increased by 39% during the year 2021.

REAL ESTATE DEVELOPMENT

BESIX Real Estate Development closed 2021 with a turnover of 162 million euros and an excellent return on equity of 22.3%.

2021 was marked by the sale of the project Icone Belval in Luxembourg.

BESIX RED currently has more than a million square meters in development across 19 cities in 5 countries.

CONCESSIONS & ASSETS

Through equity stakes in 14 BOOT projects (waste water treatment plants, waste to energy plants, ...) and in a building material production company, Concessions & Assets was again a high contributor to the profitability of BESIX Group.

The hospitality projects showed a strong recovery compared to the previous year.

BALANCE SHEET

At the end of 2021 the balance sheet totalled 3.2 billion euros, coming from 2.8 billion euros last year. The total equity stands at 686 million euros, compared to 623 million in the previous year. This means that the solvency ratio is at 21.2%, well above the sector average.

EVOLUTION OF NET CASH POSITION

BESIX Group's consolidated net cash position amounted to 218 million euros at the end of 2021 compared with 163 million euros at the end of 2020 (excluding IFRS 16 and non-recourse debt).

AUDITOR'S REPORT

The auditor Mazars Bedrijfsrevisoren - Réviseurs d'Entreprises has issued an unqualified opinion on the statutory and consolidated financial statements as of December 31, 2021.

FINANCIAL STATEMENTS

The statutory and consolidated financial statements, together with the report of the board of directors and the audit report, will be filed with the Belgian National Bank as prescribed by governing law. Interested persons can obtain a copy of these documents on demand at the company's address.



PARADIS EXPRESS, LIÈGE, BELGIUM

CONSOLIDATED BALANCE SHEET

(in EUR '000)	31/12/2021	31/12/2020
ASSETS		
NON-CURRENT ASSETS	733,981	663,278
Intangible assets	47,959	59,859
Goodwill	28,354	29,196
Tangible assets	289,451	276,322
Investments in associates	110,686	81,930
Receivables	220,837	176,671
Other assets	13,880	12,017
Deferred income tax assets	22,814	27,283
CURRENT ASSETS	2,487,945	2,166,585
Inventories	28,875	31,895
Construction contracts in progress	390,755	332,264
Real estate held for sale	300,297	253,927
Trade receivables	771,441	717,031
Other receivables and other assets	431,760	309,608
Cash and cash equivalents	564,817	521,860
TOTAL ASSETS	3,221,926	2,829,863
EQUITY AND LIABILITIES		
EQUITY		
SHAREHOLDERS EQUITY	683,670	622,635
Capital	32,000	32,000
Retained earnings	647,673	615,903
Hedge reserves	-18,917	-26,813
Translation differences	22,914	1,545
MINORITY INTEREST	2,164	2,068
TOTAL EQUITY	685,834	624,703
LIABILITIES		
NON-CURRENT LIABILITIES	535,175	488,478
Borrowings	363,278	336,973
Provisions	85,124	75,343
Other liabilities	67,801	56,620
Deferred income tax liabilities	18,972	19,542
CURRENT LIABILITIES	2,000,917	1,716,682
Borrowings and bank overdraft	272,133	232,782
Trade payables	964,709	826,722
Advances received on contracts	211,581	134,212
Billing in excess on construction contracts	251,278	237,577
Current income taxes payable	16,574	32,009
Provisions	67,152	56,985
Other liabilities	217,490	196,395
TOTAL EQUITY AND LIABILITIES	3,221,926	2,829,863

CONSOLIDATED INCOME STATEMENT

(in EUR '000)	2021	2020
SALES	2,963,169	2,759,590
COST OF SALES	-2,749,867	-2,594,338
of which depreciation	-63,800	-59,982
of which provisions	-37,029	10,864
GROSS PROFIT	213,302	165,252
GENERAL & ADMINISTRATIVE EXPENSES	-208,697	-191,473
of which depreciation	-24,226	-15,129
of which provisions	32	1,167
OTHER INCOME / EXPENSES	9,085	6,831
OPERATING PROFIT	13,690	-19,390
Financial income	14,572	17,882
Financial charges	-17,255	-15,935
Results from associates	28,086	19,572
PROFIT / (LOSS) BEFORE TAXES	39,093	2,129
INCOME TAXES EXPENSE	-11,858	-11,818
of which current taxes	-13,048	-13,466
of which deferred taxes	1,190	1,648
CONSOLIDATED PROFIT / (LOSS)	27,235	-9,689
Minority interest	-182	-78
GROUP CONSOLIDATED PROFIT / (LOSS)	27,053	-9,767

CONSOLIDATED CASH FLOW STATEMENT

(in EUR '000)	2021	2020
Operating result	13,690	-19,390
Adjustments for:		
Depreciation	88,026	75,111
Result on disposal of (in)tangible assets	-7,779	-6,396
Result on disposal of other long term assets	-1,484	0
Result on disposal of investment in associates	-379	-444
Provisions	36,997	-12,032
Allowances	-1,153	594
OPERATING CASH FLOW BEFORE CHANGES IN WORKING CAPITAL	127,918	37,443
Income taxes paid (net)	-12,244	-5,775
Changes in working capital	-106,002	-81,061
CASH FLOW FROM OPERATING ACTIVITIES	9,672	-49,393
TRANSLATION DIFFERENCE CASH AND CASH EQUIVALENTS FOR ENTITIES REPORTING IN FOREIGN CURRENCY	19,101	-20,041
Purchase of intangible assets	-487	-8,383
Purchase of tangible assets	-70,717	-60,338
Purchase of other long term assets	-36	-7
Acquisition and capital increase / (decrease) investment in associates	-19,781	-2,430
Proceeds from sale of intangible assets	0	0
Proceeds from sale of tangible assets	14,313	8,441
Proceeds from sale of other long term assets	1,497	468
Proceeds from sale of investment in associates	618	47
Dividends received from investment in associates	25,148	28,559
(Acquisitions)/Disposal of subsidiaries – net of cash	-10,668	1,126
NET CASH FROM INVESTING ACTIVITIES	-60,113	-32,517
CASH FLOW FROM FINANCING ACTIVITIES		
Proceeds / (repayments) of borrowings	81,831	22,846
(Proceeds) / repayments of long term receivables	-2,586	-5,319
Interest paid (net)	-4,732	-8,669
Fair Market Value - Cash and Cash equivalent	0	0
Change in consolidation methods	0	68
Dividends paid to Group shareholders	0	-20,000
Dividends paid to minority interests	-216	-320
NET CASH FROM FINANCING ACTIVITIES	74,297	-11,394
(DECREASE)/INCREASE IN CASH & CASH EQUIVALENTS	42,957	-113,345
MOVEMENTS IN CASH & CASH EQUIVALENTS		
Cash at beginning of the year	521,860	635,205
(Decrease)/Increase	42,957	-113,345
Cash at the end of the year	564,817	521,860



DUBAI UPTOWN TOWER, DUBAI, UAE

