

02

Creating
the highest
value for all
stakeholders

BESIX Strategy	14
Value Creation Model	16
Value Engineering	18
Innovative and Sustainable Technologies	22
BESIX Group’s Commitment to Sustainability & ESG	26



BESIX Strategy

Meeting tomorrow’s challenges

Purpose

Excel in creating **sustainable solutions** for a better world.

Mission

Thrive as a sustainable and **highly integrated full-service provider**, with construction at its heart, by offering its clients, in the various markets it operates, value-adding and pioneering solutions and by excelling in delivery, thanks to all group capabilities and trusted partnerships.

Strategic framework

BESIX is a people-first organisation that values unity, improved governance, and a lean organisational structure. As a contractor at heart, BESIX has successfully diversified in the past into exciting new ventures such as Real Estate, Concessions, Operations & Maintenance - and continues to do so. With a focus on sustainability and innovation, the group is always on the lookout for new diversifications that align with its core competencies.



Strengths

Committed staff members

At BESIX, employees are more than just a team – they are a community of passionate professionals united by a strong culture of excellence. With a deep sense of commitment, responsibility, and an insatiable appetite for challenge, BESIX employees deliver exceptional results for their customers, both as a team and as individuals. What sets BESIX teams apart is their unwavering entrepreneurial vibe, which drives everything they do. From start to finish, they put their heart and soul into every project, ensuring that clients receive the very best.

In-house engineering

The BESIX in-house design office is what sets the group apart from the competition. The in-house office leverages its technical expertise, vast experience, and innovative solutions to support clients in developing and executing their most complex infrastructure and sustainable projects. The in-house design office is committed to offering global solutions with exceptional added value from the initial tendering phase, to planning phase, to project completion. Its experts work tirelessly to deliver results that exceed expectations, deliver true value to clients, and build a sustainable future.

One-stop shop over the value chain

BESIX is a full-fledged services company that operates on the whole value chain. While construction is still its core business, the group’s Concessions & Assets, Real Estate Development, and Specialised activities have grown steadily. BESIX can rely on a vast and diversified expertise to take on projects from financing to design and construction to long-term maintenance. Through leveraging this diversified expertise, business lines are able to offer bespoke one-stop shop solutions that are tailored to meet the unique needs of their clients, while also remaining their primary point of contact throughout the entire process.

A targeted and sustainable international presence

BESIX Group has opted for a deliberate and sustainable strategy with a focus on establishing a strong international presence on five continents, in addition to its already extensive coverage in Belgium. By pursuing opportunities that align with its risk management requirements, the company is able to diversify its operations while maintaining a long-term perspective in these various geographical areas.

Corporate values

Values are essential to guide the behaviours and decisions of employees within BESIX Group. Here are the corporate values that the group promotes and prioritises.

Unity

This value underscores the significance of cultivating a sense of unity and cooperation among all employees. It urges colleagues to collaborate towards a common objective, supporting each other in reaching that goal. By fostering an inclusive culture and mutual respect, employees are encouraged to embrace unity and work together for shared success.

Passion

This value ignites a drive for employees to dare and accomplish great, sometimes unprecedented, feats. It nurtures an environment of enthusiasm and commitment, motivating staff members to take pride in their work and pursue excellence in all endeavours. Additionally, it cultivates inspiration and motivation, propelling innovation and progress within the group.

Respect

With over 86 nationalities and a diverse workforce, BESIX Group values and respects the contributions of each individual. This core value emphasises the importance of acting with integrity and professionalism consistently, showcasing a strong commitment to ethical conduct and responsible business practices.

Co-creation

BESIX Group boasts colleagues with exceptional expertise in their respective fields. By sharing and combining this knowledge, remarkable solutions are devised for clients’ projects, as evidenced by BESIX’s global accomplishments. This value encourages a culture of collaboration, illustrating that, in terms of expertise, one plus one amounts to much more than two!

Excellence

BESIX’s success stems from its teams’ expertise and their unwavering pursuit of quality, performance, and client satisfaction. Cultivating and transferring this level of excellence is the essence of interpersonal connections within the group. It serves as the foundation for intergenerational unity and a prerequisite for nurturing and developing talent.

Behaviours

BESIX Group has identified six behaviours that are intrinsically linked to its corporate culture and therefore expected of each of its employees.

Be Inclusive

Inclusion is a core principle, intrinsically tied to the value of respect. It guarantees fairness, equal opportunities, and an open-minded approach towards all colleagues, regardless of their backgrounds, beliefs, or lifestyles.

Eagerness

BESIX’s long-term success in its industry and beyond hinges on its eagerness to seek innovative ways of increasing efficiency and embracing new ventures and business opportunities.

Take Ownership

Employees are empowered to take action, encouraged to assume responsibility, and utilise their talents to their full potential. This is directly connected to the entrepreneurial spirit that underpins BESIX’s century-long spirit.

Trust

In line with its entrepreneurial nature, the group’s business units and entities maintain a high degree of autonomy and employees enjoy substantial empowerment. Trust is a fundamental aspect of BESIX’s operations, acting as an extension of respect and achievable through well-defined expectations and objectives.

Engaged Teams

Every BESIX employee is part of a team, with clear shared and individual objectives, and has opportunities to grow according to their potential and personal motivations. Training, progression, and internal mobility are available to all and highly encouraged.

Resolve Together

United by a strong entrepreneurial spirit, BESIX’s team members are known for their unwavering commitment to providing solutions, utilising the remarkable internal resources at their disposal. Both collectively and individually, they draw upon their successes and learn from setbacks, harnessing these experiences to achieve outstanding outcomes for their clients.

Value Creation Model

What began 114 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 business model that set it apart from its competitors. 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 draws on its business model 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.

A dedicated partner, from construction to concessions

Always highly regarded as a valued construction partner, BESIX Group 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, Real Estate Development, and Specialised activities have been growing steadily. BESIX Group can rely on a vast and diversified expertise to take on projects from financing to design and construction to long-term operations and maintenance.

Macro trends

The world in which BESIX operates and the construction sector are undergoing profound changes, influencing its business model.



Technological evolution

Digitalisation, artificial intelligence, parametric design, smart building, etc.



Environmental emergency

Energy efficiency, energy transition, circularity of materials, etc.



Competitive landscape

Risk sharing, stressed supply chain, skilled labour shortage, building material price hikes, etc.



Demographic growth and urban densification

Growing demand for affordable housing, modular construction, etc.

Stakeholders



Clients, partners, subcontractors, and suppliers



Institutions and regulatory bodies



Employees, future hires, academics, and students



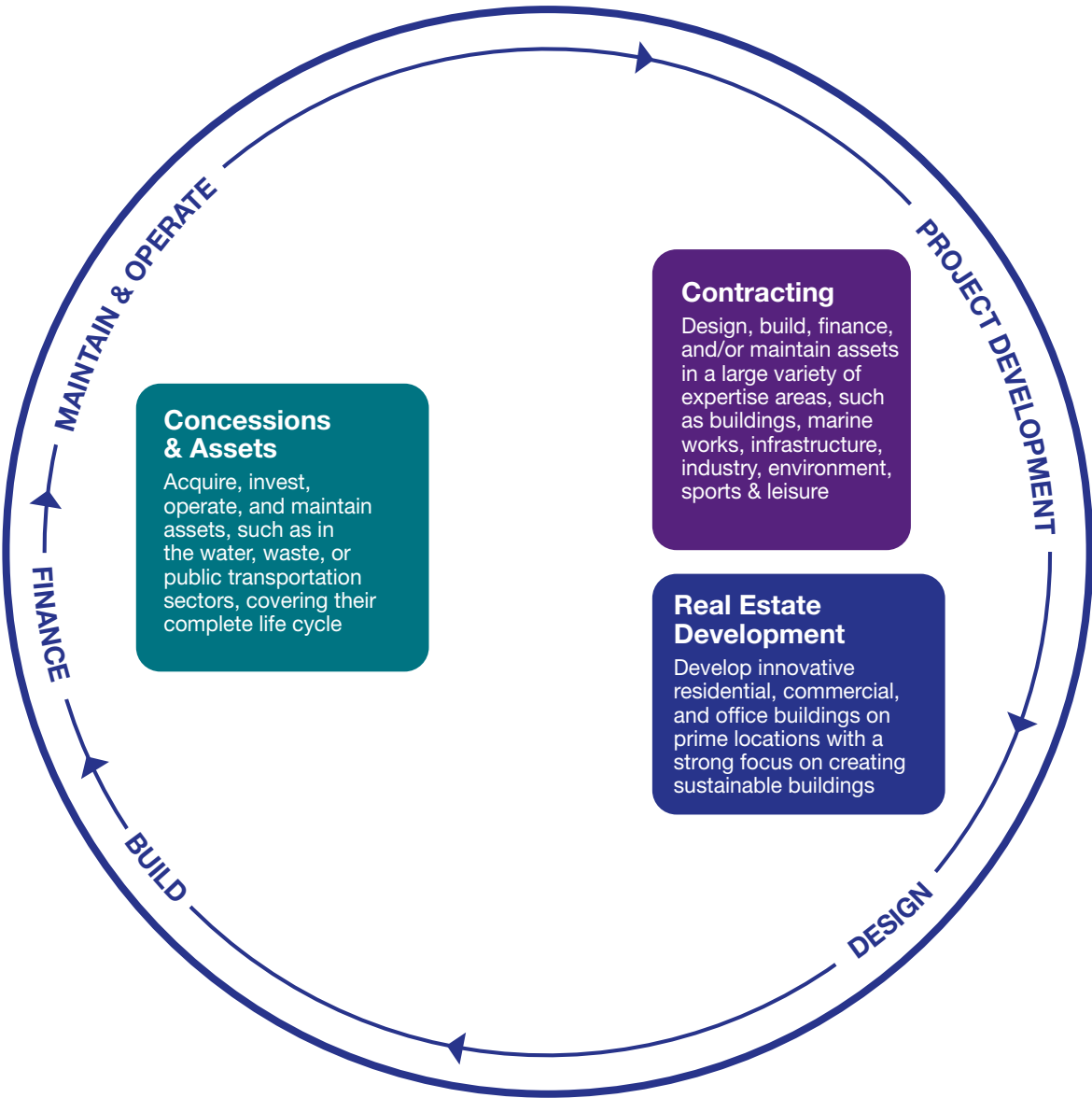
Investors, shareholders, and financial institutions



Social partners, unions, and employee representatives



Environmental and societal actors, NGOs, federations, and think tanks



Resources

Human and intellectual capital

- 12,063 employees
- BESIX Academy devoted to internal training
- 100 % of staff members have access to training

Industrial capital

- More than 1,000 project sites in 25+ countries
- Several industrial sites (steel and rebar workshops, quarries, asphalt and ready-mix concrete plants, bitumen production plants)
- 300 million euros worth of equipment and machinery to cater to complex marine and infrastructure works

Real estate capital

- Portfolio of 3.9 billion euros in market value
- Totalling 1+ million m² under development

Procurement capital

- Majority of suppliers signatories of the Code of Conduct for Responsible & Sustainable Procurement
- 2+ billion euros procured annually at Group level
- 40,000+ suppliers across the globe

Financial capital

- Stable shareholding structure based on a historical reference shareholder base

Social & environmental capital

- Leading the way in certification and labels
- Level 5 on the CO₂ ladder for BESIX Europe and 11 affiliates or subsidiaries
- EcoVadis Gold Medal
- ISO 9001:2015, ISO 14001:2015, ISO 19650-2: 2018 and ISO 45001: 2018
- IOSH Managing Safety and Working Safely Licence
- International Framework Agreement on Fair Labour Standards

Value creation

Human and intellectual value

- 1,000 recruitments in 2022
- Top Employer in Belgium for 4th year in a row

Read more on pp. 40-59

Environmentally responsible projects

- BESIX's sustainability experts accompany the design, procurement, and execution of assets to achieve certification levels such as BREEAM, LEED, Passive Buildings, etc.
- BESIX is building one of the largest hybrid-timber office buildings in the world in The Netherlands
- BESIX is progressively electrifying its fleet; in 2022 an electric crawler crane has worked unplugged for 10 hours on end without intermediate charging on an infrastructure project in The Netherlands

Read more on pp. 30-39

Financial contribution

- 3,338 million euros of revenues
- 40 million euros of net result
- 5,259 million euros in order book

Read more on pp. 148-154

Innovation

- 7 ongoing partnerships with start-ups in current PropTech portfolio
- Will secure participation in a European PropTech VC fund by summer 2023
- Several academic partnerships with leading universities

Read more on pp. 22-25

BESIX Foundation

- 360 solidarity projects funded in 13 years
- 13,000+ volunteers involved over the last decade
- Projects mainly funded in Belgium and Africa
- Projects funded around construction, education, and environment

Read more on pp. 56-59

Value Engineering

Cutting-edge expertise for a client-centred approach

BESIX Engineering is the exclusive in-house design office of BESIX Group. It enables BESIX Group to offer its clients tailor-made solutions and optimisation for their projects, whilst also maintaining a strong reactive business model. The quality of the services developed by BESIX Engineering relies on more than 150 engineers in Brussels, Dubai, and Brisbane, who are experts in their respective fields. Over the years, thanks to the active contribution of BESIX Engineering, BESIX Group has conceived and constructed first-class port terminals, cutting-edge civil engineering works, and complex high-rise buildings.

“You see how the added value of our in-house design office is significant. Our dedicated team of engineers and technical experts ensures that projects are completed to the required standards, that innovative and cost-effective solutions are developed, and that efficiency is constantly improved by leveraging on the latest technology – not only when a project runs like clockwork, but also when there is a potential thorn in our side. In a nutshell: our in-house design office is an essential part of our operations and ensures the success of our clients’ projects.

Fabian Boucher, Director of BESIX Engineering

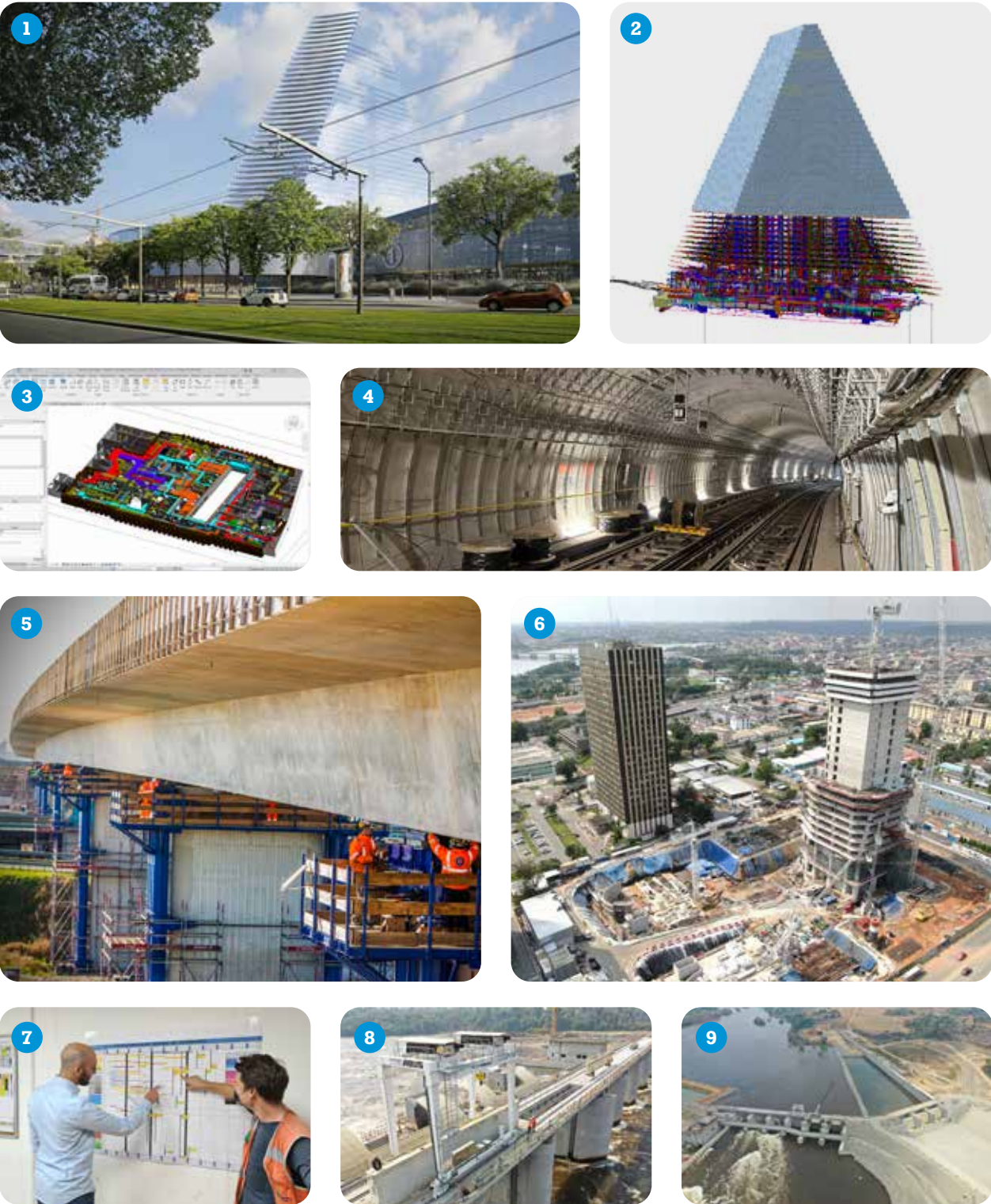
Strong competitive edge

The integration of a design office within a construction company, rare in the sector, is a considerable asset for BESIX’s clients. “Our in-house Engineering department plays a crucial role in our success and that of our clients”, explains Fabian Boucher, Director of BESIX Engineering. “It guarantees an optimal complementarity and cooperation between the design and construction teams of a project, and has positive impacts in terms of costs, risk management, choice of construction methods, and preparation. More recently, it has also taken the carbon footprint of our projects into consideration for further optimisation. The constant sharing of knowledge between the Design and Construction teams over the years is what allows us, today, to adapt to the varying, high-level requirements of our clients in order to create unique structures and, in some cases, to redefine the boundaries of engineering in construction.”

BESIX Engineering on Tour Triangle (France)

This emblematic 180-metre high tower, with its distinctive triangular shape, is located in the south of Paris (15th arrondissement) and is intended to house offices, a conference centre, and a hotel. It will change the entire skyline of the French capital, becoming the third highest building in the city after the Eiffel Tower and the Montparnasse Tower. “This project is a collaborative effort among multiple teams within BESIX Group. It involves the contributions of our structural and geotechnical experts, who are stationed both in our design office and that of our affiliates, Franki Foundations and their French branch, Atlas Fondations. Additionally, our design office is responsible for the design and definition of methods, together with our Operations colleagues who are responsible for managing the project site in Paris. To ensure that the project started smoothly, we seconded the head of our Methods department to the site.”

“Last summer, the team encountered a significant impediment, wherein the foundation works had to be stopped as we noticed an unforeseen uplift, by a few millimetres, of a nearby tunnel. This issue posed a critical challenge to the team, necessitating their concerted efforts to promptly identify viable solutions and restore the project to its original trajectory. Promptness, proactivity, and leadership combined with high-level technical analysis instilled all the different stakeholders with sufficient confidence to resume the work promptly, part and parcel of a trusted collaborative relationship. Through conducting daily meetings and orchestrating a comprehensive mobilisation of top in-house specialists, the team proficiently showcased their expertise and delivered an acceptable resolution”, continues Fabian Boucher.



1. 2. Tour Triangle, Paris (France)
3. 4. Saint-Denis Pleyel Metro Station, Paris (France)
5. A16 ‘De Groene Boog’, Rotterdam (The Netherlands)
6. F Tower, Abidjan (Ivory Coast)
7. 8. 9. Hydroelectric Project, Nachtigal (Cameroon)

BIM in the BESIX Community

The methodology of Building Information Management (BIM) has been used for many years in the company. “This way of virtually building, planning, calculating, and surveying our projects has had a significant impact upon our method of collaboration. Working around a virtual 3D model changes the way we interact with each other. Bringing every stakeholder – from architect to engineer to client – around a centralised, virtual project makes everyone more involved in the project. It makes it possible for us to analyse a situation or an issue virtually, within the context of the whole project. With the project in a central place, BIM makes us communicate and collaborate better together.”

The centralisation of the project data and the common way of working around the BIM-model leads to fewer mistakes and more efficiency, which leads to better designs, better communication, better collaboration, a higher stakeholder involvement, and, in the end, a better project.

These successes never come for free. “We can no longer rely on traditional methods of managing projects. New ways of working and collaborating pop up as we leave the traditional paper trails behind us. We are thinking with a digital mindset,

always with the end goal in mind. When we know what the project needs, we can better prepare the virtual models and feed them with accurate information so the site execution team can process this data in the format that they need, be that 2D drawings, quantity take-offs, or asset data for digital twins.”

The move to BIM has taken the company to the next level to become a virtual builder. “As virtual builder, we host communities, rather than teams, who all work together around a common set of information: the BIM-model!”

BESIX’s strength relies on its community of BIM experts. “At its core, you have the BESIX Engineering department, a team of BIM managers and BIM coordinators who are supporting the company’s projects, day in day out, together with a team of BIM modelers who are creating this digital information. This BESIX BIM community spreads over the whole company: from Europe to the Emirates and Australia, from contracting to subsidiaries. Everywhere, communities big and small are liaising with BIM partners. From the Engineering department onwards, the dots are connected and we let the BIM community grow”, concludes Fabian Boucher.

Carbon footprint reduction at the core

The Sustainability team in BESIX’s design office develops advanced solutions to improve the environmental performance of construction projects. Especially in the Benelux countries and in the Middle East, BESIX has often been a frontrunner in the environmental field, developing unprecedented circular construction projects or building energy-neutral infrastructure in the Netherlands.

CO₂ as design parameter

“Our Sustainability experts contribute to the design of projects in order to achieve high environmental certifications and labels, such as BREEAM, LEED, HQE, Passive Buildings, Eco-construction, Cradle-to-Cradle, Zero-Energy, and CO₂ neutral projects”, explains Fabian Boucher. “The level of carbon dioxide emissions is systematically considered as a critical factor in our design process. This involves evaluating the environmental impact of each project and designing it in a way that minimises its carbon footprint by reducing CO₂ emissions throughout the project’s life cycle.”

Crucially, it means using or developing new materials with low embodied carbon, improving energy efficiency, incorporating renewable energy sources, and taking the logistics into consideration in order to reduce a project’s carbon footprint. “It even means designing an asset with disassembly and recycling in mind!” insists Fabian Boucher.

Material passports

“This is one of the reasons why we have increased our efforts around material passports: by providing a detailed record of the materials used in an asset, we can help identify opportunities for material reuse or recycling at the end of the asset’s life, rather than simply sending materials to landfill. As top-notch engineers, it is our duty to promote practices and strategies that reduce the amount of waste generated during the construction process, as well as developing ways to reuse or recycle materials that are no longer needed”, adds Fabian Boucher.

Green concrete

“Let me add another point: we are also actively involved in several R&D initiatives, notably with academic bodies and suppliers, which test a variety of methods and materials to reduce the environmental impact of concrete. This ‘green concrete’ can be made of recycled materials, especially crushed concrete or recycled aggregates. It can also be made of alternative cementitious materials, such as fly ash, slag, or silica fume, in place of some or all of the Portland cement. We are also testing cement using low-CO₂ production processes, as well as cement mixtures where the amount of cement used is reduced. In short, we are responsive to the market, being active in investigating and testing low-impact concrete whilst also guaranteeing the necessary performance characteristics and durability of the material.”

Onsite and offsite support, from tender to execution

The capabilities of BESIX’s design office rely on the skills of specific experts. These experts are made available according to the particularities of each project, as is the case for method engineers. The Methods & Planning services offered by the BESIX in-house design office determine the methods for carrying out the work and draw up the precise sequence of operations in order to guarantee optimal implementation in terms of cost, timing, and quality, including sustainability.

Streamlining construction with LEAN methodology

The LEAN methodology is a management approach that emphasises the elimination of waste and the continuous improvement of processes. Services provided by Methods & Planning include the implementation and organisation of this LEAN methodology. “In a nutshell, it consists of involving all the site’s stakeholders, including subcontractors and suppliers, in the planning of logistical and operational tasks. Site teams using LEAN are seeing subcontractors, workers, and managers take on more responsibility, leading to greater trust, less waste, and more efficient cost management. This in turn leads to less fire fighting and more time for anticipation and preparation”, explains Fabian Boucher. “This approach is particularly useful in large, complex projects where there are many stakeholders, with a correspondingly higher risk of delays and cost overruns. In 2022, we seconded LEAN experts on several projects, both on and offsite.”



“Our method engineers play a critical role in improving production processes to increase efficiency and reduce costs. They intervene during the project’s tender and design phases of course, but also during execution. During execution, they analyse existing processes, develop solutions for improvement, and work on site with project teams to implement and monitor those solutions. Their focus on continuous improvement helps us remain competitive and efficient in our operational processes. And that’s the reason why most of our method engineers are also skilled in applying LEAN methodology.

Fabian Boucher, Director of BESIX Engineering

Conclusion: adding value to clients’ projects

“In conclusion, I can say that our in-house design office is a vital component to achieving success in today’s competitive market. With the ability to protect our company and our clients from design risks, provide significant engineering value to our client’s projects and function as a trusted mentor to young engineers, our in-house design office offers numerous benefits that cannot be overlooked. I see our in-house design office as the ideal platform to create a culture of innovation and continuous improvement, paving the way for long-term success.”

Innovative and Sustainable Technologies

BESIX has always had a culture of promoting and adopting innovative technologies and techniques, positioning itself at the forefront of the construction industry. This proactive approach has been instrumental in establishing BESIX as a market leader on several segments of its markets. The continuous exploration and utilisation of advanced technologies has enabled BESIX to develop and integrate new competencies within its technical and engineering teams, particularly in areas such as asset management, offsite construction, digitisation, energy efficiency, circularity, and sustainability. These state-of-the-art offerings are designed to benefit its clients and enhance the longevity of their projects. Here are a couple of examples.

Sustainable housing at the snap of a finger with CIRCL



CIRCL, a spin-off of subsidiary Vanhout, is specialised in the construction of circular and sustainable single-family houses. Its unique circular and mostly offsite construction method makes it possible to build a house literally in no more than 6 weeks' time, after designing it with an in-house developed software, which digitalises the whole 'home-buying' process for the client.

CIRCL works with elements that can be mounted, dismantled, and replaced very easily. It also uses sustainable elements in the form of bio-based and recycled materials. CIRCL is truly making terraced houses sustainable and affordable! A model one has been built on the Ghent Technology Campus of the Leuven University, while Vanhout is currently building two others in Diest (Belgium).



Smart buildings thanks to aug-e



BESIX and Proximus, the Belgian digital service and communication provider, joined forces a couple of years ago to develop a smart energy software platform, called aug-e, with the ambition to help millions of people to become more energy-efficient.

Concretely, aug-e is a digital platform that connects the physical building to a series of useful digital applications that allow building users and facility managers to optimise energy performance and reduce carbon footprint, which will help combat climate change, to improve comfort and to facilitate efficient operations and long-term maintenance. Moreover, aug-e learns how the building has behaved in the past and can predict future energy consumption. Smart buildings equipped by aug-e can anticipate their own needs based on real-time energy data enriched with weather forecasts, energy market prices, or user feedback. On this basis, aug-e also enables workplace management as well as predictive maintenance. Lastly, aug-e enables buildings to communicate with each other and integrate them into grids and networks, thus creating interconnected local energy communities in which buildings become both producers and consumers.

By combining data on the building, energy market spot prices, weather forecasts, connected electrical vehicles, etc. with artificial intelligence algorithms, aug-e is already bringing more comfort for a lower energy invoice to many Belgian and Dutch energy consumers and producers.

PropTech with Square Sense

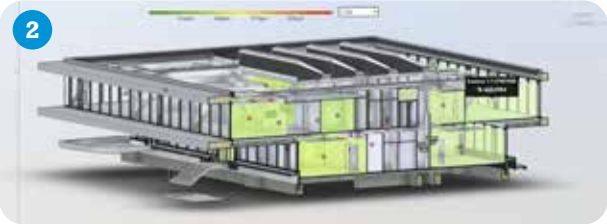


In line with its digitalisation programme and ESG commitment, BESIX RED invested in 2022 in the PropTech company Square Sense.

Square Sense improves the energetic and financial performance of offices and managed residential real estate by collecting and analysing all the data produced by using a building. This includes financial data, usage data, and technical data, such as data of energy consumption and environmental quality. On top of that, real estate developers and asset managers also get business recommendations generated by the platform's artificial intelligence.

Thanks to the analyses and recommendations, real estate developers and asset managers are able to manage their projects in a more virtuous way and optimise the environmental performance, financial efficiency, and tenant satisfaction of their real estate portfolios.

With the platform, Square Sense aims at tackling the biggest challenges of the real estate sector, including the energy crisis, ESG requirements, and impact on the financial performance. BESIX RED is proud to support the further development of this platform.



- 1. Circl
- 2. Digital twin powered by aug e
- 3. BuildUp

BuildUp, the specialist in offsite construction with hybrid systems



BuildUp, a Belgian start-up in which BESIX and Vanhout hold a 40 % stake, is a pioneer in off-site construction in Belgium and France and specialises in both new buildings (totalfit) and energetic renovation of existing buildings (retrofit).

Off-site construction, also known as modular construction, is a method of building where various components of a structure are manufactured off-site in a factory and then transported to the construction site for assembly.

Concretely, BuildUp designs digital tailor-made structures, offering clients and architects extensive freedom that breaks with traditional prefabrication. The modules are then fabricated in a controlled environment using specialised equipment, and quality control measures are taken to ensure that each component meets the required standards. From the load-bearing skeleton to the finishes, with hybrid systems combining wood, steel and concrete, everything is produced off-site. The in-house integration and coordination of design, prefabrication and assembly reduces waste and transport requirements to the project site. In addition, the materials used by BuildUp are primarily locally produced, sustainable and certified, and offer a high level of traceability.

Not only does BuildUp build houses from A to Z with its hybrid off-site systems, it also renovates and refurbishes existing houses with off-site produced facades and roofs, completing home makeovers at an incredible speed. All elements, after digital design by BuildUp engineers, are produced in the off-site production factory, including structure, windows, doors, insulation, and claddings. That way, BuildUp can construct an isolating building shell off-site and swiftly assemble it afterwards against the existing structure of a house on-site.

Thanks to this off-site method, retrofits can be executed 60 % faster compared to traditional construction or renovation methods. At the same time, quality can be better supervised and processes can be automated, which in turn reduces costs. BuildUp's innovative approach is also an example of how state-of-the-art modular construction can contribute to improving the environmental footprint of the sector.

BuildUp participated in two large-scale renovations of 192 occupied social houses in Roubaix and Wattrelos (Northern France) in a record pace. After the façades and roofs were produced in BuildUp's off-site location, the houses were renovated in only 24 hours. By adding solar panels and a heat pump, all the houses were made completely energy neutral.

Begin 2023, the company was selected, with 14 other Belgian, German, Italian, and French companies, by the European Commission to benefit of the 'Life Giga Regio Factory' programme, which aims at accelerating the execution of energetic renovations and make them more accessible. With this subsidy, the group of companies will be able to renovate 750,000 social houses with off-site construction by 2030.

Timber for more sustainable buildings

The use of timber in construction has been around for centuries, but in recent years, it has become increasingly popular due to its sustainability, affordability, and versatility. The use of wood in construction presents some challenges, but also many advantages. The production of timber generates significantly less CO₂ and nitrogen. In addition, during their growth, trees absorb CO₂, which remains stored in the material. This means that timber construction limits additional emissions and, compared to traditional construction methods using concrete, has a potentially positive carbon balance.

BESIX Group can feature a number of projects using complex timber structures. In 2022, BESIX Watpac completed the Wurriki Nyal Civic Precinct in Geelong, Australia, a state-of-the-art 2,550 square metre structure, where sustainability has been a key feature, with a five-tiered cross-laminated timber frame. The project earned a 6-star rating from the Green Building Council of Australia.

Another example is the new Dutch headquarters of DPG Media which BESIX Nederland is currently building in Amsterdam and which will be one of the largest hybrid-timber office buildings in the world. The building will be highly energy efficient, also thanks to an underground thermal energy storage system combined with a heat pump and solar panels on the roof, and aims for BREEAM Excellent certification.



Neanex



Neanax, in which BESIX has been a shareholder since 2019, is a digital company with a strong focus on information management in the construction industry. Its mission is to bridge the gap between engineering, requirement management, design, construction, and operations by using a ‘Digital Asset Register’ portal, which is a web-based solution connecting teams, tools, and data relating to a building or infrastructure, over its total life cycle, thus providing a single source of information.

For large, complex construction projects, which imply working with different contractors, engineering firms, operators, and other parties, Neanax enables to move from document-driven to data-driven management, making sure all parties are aligned in control of quantities, planning, design, execution, and financials.

This results in a top notch Digital Twin platform, called ‘Fundamend’ (www.fundamend.com) that is used by large contractors and asset owners to lower cost, speed up delivery, and gain control in providing critical assets in our built environment. Mission of Fundamend is to create sustainable data as a key enabler for a sustainable built world.

In 2022, the European Commission identified Neanax as one of the three key innovators in the SPHERE project, one of the strands of the Horizon 2050 strategy, by integrating it in its ‘Innovation Radar’, an initiative of the Commission to identify innovations and innovators with high potential. In particular, SPHERE focuses on improving and optimising the design, construction, performance, and energy management of buildings, while reducing construction costs and their environmental impact.



Building Information Modelling (BIM)

BESIX engineers involved in the design, construction, or maintenance of buildings and infrastructure have been using Building Information Modelling (BIM) for a decade now. In 2017, BESIX became the first construction company in Europe to be awarded the BIM Level 2 certification, in accordance with the PAS 1192-2 standard for information management during design and construction phases of BIM projects. Since 2020, BESIX has been ISO 19650-2:2018 certified, the world’s first international standard for BIM.

Building Information Modelling is a digital representation of the physical and functional characteristics of a building or infrastructure asset. It is a collaborative process that involves the creation and management of a digital model that centralises information on the design, construction, and operation of the building, throughout its life cycle, allowing to detect errors, optimise the project, estimate quantities and costs, and prepare planning and methods.

Projects in which BIM management has played a significant role recently include the Mohammed VI Tower in Morocco, the Grand Egyptian Museum in Cairo, the world’s largest Waste-to-Energy plant in Dubai, the Tour Triangle in Paris, the Guggenheim Museum in Abu Dhabi, and the A16 highway ‘De Groene Boog’ in the Netherlands.

In this last example for instance, a BIM model was created for the highway tunnel which integrated all its elements and was used to automatically generate drawings. The BIM model was then turned into a virtual reality model, a so-called ‘digital twin’. This type of model included the functional behaviour of the installations, which in turn enabled the virtual testing of all system behaviours. This created trust towards compliance with the stakeholder requirements in an early phase, which saved time and money for later test phases and long-term maintenance.

In September 2022, BESIX and Orascom Construction won the Autodesk Excellence Award 2022 for ‘Best Construction Project’ for their use of BIM software on the Grand Egyptian Museum. The software allowed them to smoothly coordinate the more than 150 subcontractors on the project.

1. Wurriki Nyal Civic Precinct timber structure, Geelong (Australia)
2. Timber structure at Mediavaert, Amsterdam (The Netherlands)
3. 4. BIMPrinter

BIMPrinter

BESIX was the first construction company in the world to use a topographic robot on a skyscraper, the Mohammed VI Tower site in Morocco. This mobile and autonomous topographic plotter, known as BIMPrinter, traces digital drawing details on the concrete slab to real scale and to the nearest millimetre, for example to prepare the construction of complex partition walls with complex geometry and angles.

In the case of the Mohammed VI Tower, BESIX was looking for a solution for a very accurate tracing of the partitions on 50 floors. The BIMPrinter allowed construction teams to gain accuracy and efficiency, producing a complete floor plan in less than a day, which is three times faster than the traditional topographic preparation method. Moreover, there are no longer limitations by points and lines only, any design pattern can be traced, whether straight or arched. The quality of the tracings is impressive for both straight and arched lines, and the ‘painted’ lay-out reflects very well the future installations well before the start of assembly works, which is very helpful for workers, subcontractors, but also for the architect and the client’s representatives.

The BIMPrinter is also being used for the coordination of MEP works (lighting, ventilation, sprinkling,...) on another construction project of the Group, that of the French-speaking broadcaster’s new headquarters in Brussels. In this project the client requested that all the MEP’s were placed in the ground, in an 80-cm-high false floor, instead of the false ceiling. Given the enormous amount of techniques which have to go through this false floor, engineers are using the BIMPrinter to trace all the partitions, walls, and especially the techniques, fast, easily, and more accurately than ever before.

Parametric Design

BESIX engineers have been early adopters of parametric design. Parametric design is a design approach that involves using parameters and rules to generate and manipulate complex geometries and designs. Design engineers define a set of parameters and constraints, which can include factors such as size, shape, material, and functionality, and then use algorithms and software to manipulate these parameters and generate variations of the design.

One of the key advantages of parametric design is that it allows design engineers to quickly explore and evaluate multiple design options and variations, without having to manually create each one. This can be especially useful in complex projects, where designers need to consider many different factors and constraints. Parametric design has been for instance applied on the Rottemeren tunnel on the A16 ‘De Groene Boog’ project in Rotterdam, where the design of a single segment could be automatically reproduced along the entire length of the tunnel. Automation reduced the risk of errors and saved the engineers time to study alternative design solutions. That way, the teams came to an optimal design with reduced material quantities.

Similar automation principles are currently being used for other projects such as for reinforced concrete design calculations on the Tour Triangle (Paris) for beams and columns, and for the calculation of repetitive structures such as retaining quay walls in Duba Port (Saudi Arabia).

BESIX Group's Commitment to Sustainability & ESG

BESIX Group recognises the importance of sustainability and its social and environmental impact on its stakeholders, including clients and employees, and the communities in which it operates. The Group is committed to demonstrating its Sustainability & ESG approach by engaging with its stakeholders, providing clear information on its sustainability efforts, and integrating sustainability into its Group processes. True to its noble purpose to ‘excel in creating sustainable solutions for a better world’, BESIX Group has integrated ESG into its processes, and its sustainability strategy is based on four engagements and eight commitments. BESIX Group is dedicated to following ethical business practices, human rights, working conditions, and preserving the environment. The Board of Directors and the Executive & Strategic Committee support the Sustainability & ESG strategy and work to translate it into daily business practices. The senior management members of each entity work together with their teams to support the Group’s engagements in their daily activities, translating the Sustainability & ESG strategy into reality.



International frameworks as guiding compass

As an active member of the United Nations Global Compact since 2016, the Group reaffirms its support of the Ten Principles of the United Nations Global Compact in the areas of Human Rights, Labour, Environment, and Anti-Corruption. It also supports the 17 UN Sustainable Development Goals (SDGs) which are a guiding compass while focusing on selected Goals, on which the Group can have the most impact.

The Group has identified five main challenges in its industry, including climate change, society's aging, the growing need for green buildings and energy, workers' welfare, and the need to improve talent management. In response, the Group has committed to contributing to the transition towards a low-carbon and low-waste society, encouraging green solutions, increasing employees' safety and comfort, growing as a preferred employer, promoting social and economic development, being inclusive with authorities and NGOs, endorsing a Code of Conduct, and conducting respectful and sustainable operations.

The Group has set ambitious goals to contribute to a safer and greener planet, build a better place to live in, and go beyond legal requirements in the social, environmental, and economic areas on a voluntary basis.

Human rights

BESIX Group adheres to the United Nations Universal Declaration of Human Rights, the International Labour Organisation Conventions, and the OECD rules. The Group places a high priority on respect for human rights and occupational health and safety. The implementation of the International Framework Agreement and the Declaration on Healthy and Safe Workplaces is evidence of the Group's ongoing commitment to labour welfare.

Fighting against climate change

BESIX Group integrates solutions for global climate challenges into its ambitions and considers its leading role, its take on acquiring clients with a sustainable mindset, and its goals towards lobbying, investing, and collaborating on sustainable topics. The Group's knowledge in green projects rating systems, smart buildings, integrated environment system, and sustainable engineering solutions remains crucial to fine-tune its ambitions, translating them into concrete objectives.

Achieving ESG objectives

To achieve its sustainability objectives, BESIX Group sets the framework, the ambitions, the indicators, and the areas in which each company is invited to subscribe to specific sustainability and ESG objectives. The Group also publishes a Communication on Progress every year to the UN Global Compact and in the Group's Activity Report, allowing for an introspective look at the situation.

BESIX Group takes a bottom-up approach across the entire group to determine objectives for all entities in each discipline covered by the SDGs that the group has selected for proactive actions. BESIX Group follows the highest and most relevant standards, including ISO 26000, the Code Buyse III in relation to CSR for Belgian non-listed companies, and the Global Reporting Initiative (GRI) Standards, to ensure the sustainability of its operations.

Upcoming steps

Starting from mid-2023, BESIX Group will adopt a strategic approach to align its ESG priorities with those of its key stakeholders. This consultation process will include a dual materiality analysis, which will identify how business and finance can impact climate change and society compared to what can be addressed internally. The Group's intention is to undertake this exercise in order to update its roadmap and as one of the necessary steps towards compliance with the Corporate Sustainable Reporting Directive (CSRD), which the Group will have to meet by 2026.