

Digitalisation

THE PATH TO OPERATIONAL EXCELLENCE

THE HISTORY OF BESIX HAS BEEN A HISTORY OF INNOVATION AND PIONEERING. AS A RESULT, THE GROUP STANDS TODAY AT THE FOREFRONT OF NEW TECHNOLOGIES IN CONSTRUCTION. IN 2020, BESIX HAS SET NEW AMBITIONS, IN PARTICULAR TO FURTHER DIGITISE ITS CONSTRUCTION PROCESSES. THROUGH INCREMENTING INNOVATION, THE OBJECTIVE IS AN UNPRECEDENTED IMPROVEMENT IN THE EFFICIENCY OF OPERATIONS AND THE SUSTAINABILITY OF CONSTRUCTION SITES

WHY DIGITISE?

Cutting-edge technologies offer extraordinary opportunities to improve the daily work of operational teams. "We bring innovation and digitalisation to our construction sites, to the benefit of our operational excellence", says Patrik Peynsaert, Manager for Project Support and Digitisation at BESIX Europe. "The aim is to provide site managers with objective, reliable information on the project and work progress".

The method is twofold. It consists, firstly, of enhancing the use of BIM models on site to better manage the construction phase, and secondly, of using digital solutions to improve day-to-day project control.

BIM ON SITE

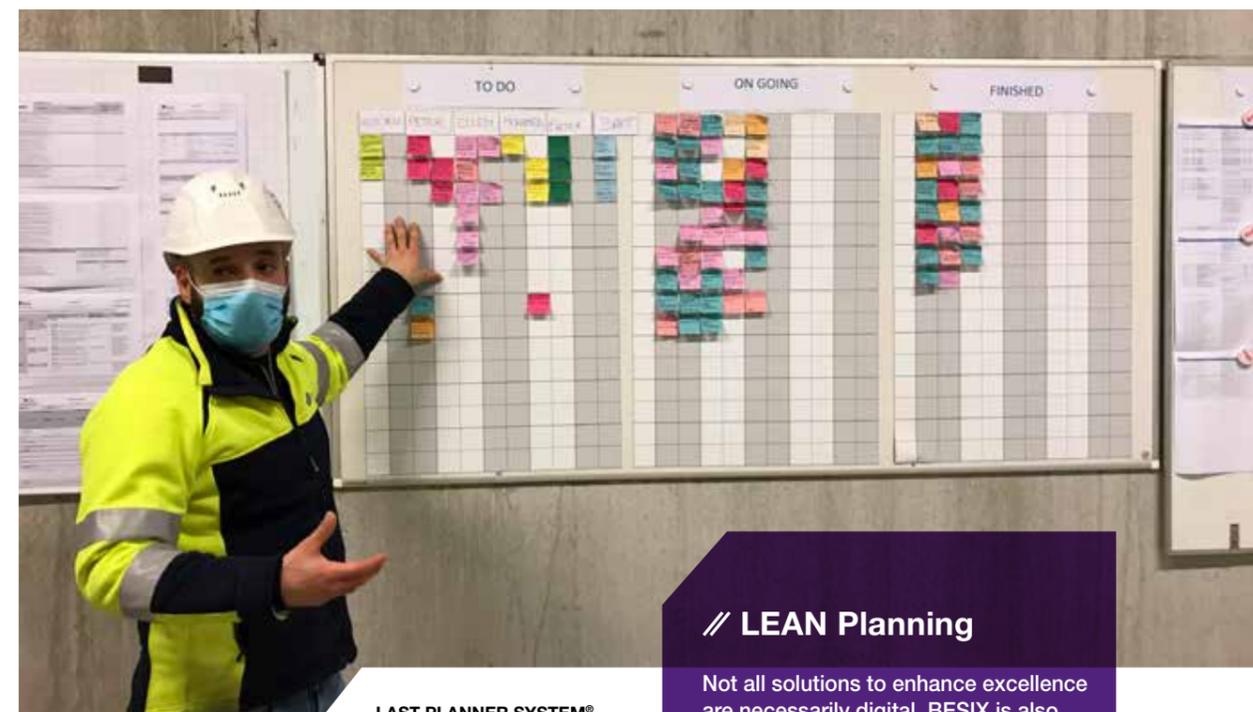
BESIX Engineering was a pioneer of BIM. The BIM approach consists of creating a 3D digital model of a project before building it. This allows, during the design phase, to detect errors, optimise the project, estimate quantities and costs, prepare planning and methods.

But BIM is also of great use in the construction phase. "The BIM model centralises all project data in a single tool, which is a great asset for preparing, assessing and effectively coordinating trades", explains Juan Nolet, Design Coordinator at the NMBS/SNCB site. "BIM is also a dynamic collaborative platform. All stakeholders have access to the same model, which improves communication and information sharing".

// Added value for clients

By better controlling cost and planning, digitisation has a positive impact for clients. But digital tools offer more than that: the BIM model is an extraordinary set of data documenting every aspect of the construction. This can be the most comprehensive "As Built" file, providing a wealth of information that is extremely useful for maintenance, the origin and suppliers of materials, 3D scans...

The digital model will also serve as a basis for clients to maintain their smart building with optimised use and efficient energy consumption.



LAST PLANNER SYSTEM®

// LEAN Planning

Not all solutions to enhance excellence are necessarily digital. BESIX is also extending the use of the Last Planner System®, for example. This means involving in the planning process all parties who contribute to logistical and operational tasks, which improves performance and sustainability by reducing time loss and waste.

Examples of extensive use of BIM on BESIX projects are numerous and include for example the Warner Bros. World Abu Dhabi project.

MEASURING = KNOWING

Digital solutions are also used to better monitor and control work progress. "Worldwide, project control is still under-digitised", says Patrik Peynsaert. "Including for the key aspects of our activity, such as quantity management, cost control, planning, reporting. Digital innovations now enable us to measure these aspects, often in real time".

THE DIGIPRO EXAMPLE

In the Middle East, Six Construct's operations and digitisation teams have developed a unified tool to monitor work progress. They called it DIGIPRO, an acronym for 'Digital Project'.

"DIGIPRO was created with one objective and one focus in mind: to improve our performance and be more competitive by giving to our site teams a better control over their project", explains Ouafae Messaoudi, Project Manager.

"DIGIPRO allows us to create a smart connection between different information available on site and to have it at our disposal within an efficient project control platform", she adds. In particular, DIGIPRO combines quantities, cost control, manpower performance and general planning into a centralised digital system.

"DIGIPRO connects these aspects to each other. By combining them, we can visualise the progress of a project like never before. The fact that the data is instantaneous and easy to use helps projects team to control and monitor different aspects of the project in a timely manner", continues Ouafae Messaoudi. "A problem can be almost instantaneously detected and resolved".

// IoT to tackle the pandemic

At the Dubai Uptown Tower, workers are connected via sensors in their helmets. While preserving anonymity, this helps to improve safety and the logistical organisation of the site. With their agreement, when the first workers tested positive for Covid-19, the application made it possible to identify other workers at risk, which prevented widespread contagion.

// Enhancing sustainability

Innovative solutions improve the energy management of sites. For example, BESIX uses solar panels on many construction sites, reducing energy costs and their carbon footprint. In Dubai, on the Uptown Tower site, the project team has even installed the world's largest solar power plant on a civil worksite. Since November, this system has also been connected to the local grid, allowing excess electricity to be fed back into the grid and to reduce the electricity bill.



SOLAR POWER PLANT, DUBAI UPTOWN TOWER, UAE

To achieve this result, an unprecedented co-creation between the different departments of Six Construct to standardise and integrate different systems and data was necessary. DIGIPRO is now implemented on a few construction sites and is proving to be a reliable tool to anticipate, visualise, and prevent projects overruns.

RELIABLE DATA

In addition to smart codification, systems such as DIGIPRO require reliable data. Here too, digitalisation plays a key role. For example, by connecting workers via the Internet of Things, by creating digital timesheets, by linking the players in the logistics chain within a single live digital platform, by adopting digital reporting...

"We collaborate with innovative companies that provide us solutions or with whom we develop new ones", says Patrik Peynsaert. "The work of the BESIX Innovation Board over the past few years has certainly played a major role in this. We have created links with innovative start-ups and acquired a thorough knowledge of this ecosystem". In 2020, it was decided to move from a centralised to a decentralised approach, where everyone at BESIX is encouraged to innovate, especially on construction sites.

THE KEY TO SUCCESS

If the solutions are digital, the key to success remains the people within the operational teams. "Interaction and exchange between operations and BESIX Engineering teams, where the use of cutting-edge technologies is highly advanced, play an important role in the adoption of digital solutions on our sites. In addition, young engineers joining us every year have a natural openness to this topic. All this creates a momentum to transform our company to this digital era", adds Patrik Peynsaert.



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PATRIK PEYNSAERT, MANAGER FOR PROJECT SUPPORT AND DIGITISATION AT BESIX EUROPE



TOMORROW'S WORLD NOW

SMART BUILDINGS & INFRASTRUCTURES

BESIX OFFERS ITS CLIENTS THE POSSIBILITY TO DEVELOP NEXT-GENERATION SMART BUILDINGS AND INFRASTRUCTURES. CONSTRUCTIONS WITH WHICH IT IS POSSIBLE TO INTERACT TO IMPROVE COMFORT, MAINTENANCE OR ELECTRICITY CONSUMPTION. BESIX SOLUTIONS ARE THE RESULT OF INTERNAL DEVELOPMENTS AND COLLABORATIONS WITH LEADING COMPANIES IN ICT AND ENERGY (E.G. PROXIMUS, ELIA). THEY ALSO STEM FROM THE ACQUISITION OF STAKES IN COMPANIES SPECIALISING IN ADVANCED DIGITAL TECHNOLOGIES, SUCH AS NEANEX.

THREE QUESTIONS TO BART GENTENS, SENIOR MANAGER NEW CLIENT SOLUTIONS

What is a "Smart Building"?

A: It is a building that integrates new technologies improving its performance: comfort, sustainability, maintenance, hospitality... The building is smart because it actively assists its tenants and owners to be more efficient and comfortable and because it can optimise energy consumption and simplify maintenance through remote inspection and by automatically detecting anomalies. All this is enabled by cutting-edge technologies that have matured in other industries and are now finding their way into real estate: digital twins, the Internet of Things, data science, artificial intelligence, ...

What are BESIX's strengths in the development of these solutions?

A: In addition to our ability to design and build complex buildings, our advanced capabilities in BIM are an overriding advantage. BIM is becoming ever more important as enabler for smart buildings. It forms the backbone that allows owners to remain masters of their buildings' related data. We prevent our customers from getting locked into an expensive application landscape from which they can't get out. Remember that the only game you

could play on early mobile phones was Snake and if you wanted another game you had to buy another phone. Today we expect to be able to choose from an extensive list of games in the Appstore. The same goes for our customers and their buildings. But this requires careful planning. I consider this as the next step in BESIX's renowned expertise in value engineering.

So what does our Smart Building offer look like?

A: We partner up with experts in data collection and analysis, because data science truly forms the foundation of smart buildings. Our smart buildings allow users, via smartphone, to adjust the temperature or ventilation, charge their cars, book meeting rooms... By constantly analysing this input, they adapt and proactively optimise electricity consumption. They learn from past experience and anticipate their needs. They also simplify maintenance through remote inspection and by automatically detecting anomalies. With regard to energy, our expertise even allows buildings to communicate with each other, creating interconnected local energy communities in which they are both producers and consumers. All of this enables us to live up to our purpose to excel in creating sustainable solutions for a better world.