BILFINGER TEBODIN
OFFERING INDUSTRY
A DIGITAL FUTURE

Bilfinger Tebodin, one of the largest engineering and consultancy companies in Central and Eastern Europe, is offering digital technology not only during the development of new production facilities but also in the case of the modification or upgrade of existing plants.

One element of this is **Building Information Modeling (BIM)**, a collaborative way of working that unlocks more efficient methods of designing, creating and maintaining assets. BIM is generally specified as mandatory for both residential and commercial construction; however, the technology is not always applied in the industrial sector.

BIM offers investors incredible advantages when investing in new facilities. Modern industrial processes can be complex, partly due to the number of stakeholders and different engineering disciplines required. BIM enables all the information to be shared during the design process and enhances communications across the project team, wherever they are in the world.

Bilfinger Tebodin engineers are able to design complete process and industrial plants digitally from concept to construction with innovative solutions to industrial design challenges. This seamless collaboration produces considerable savings and dramatically reduces costs and project timescales. It creates a common environment for all stakeholders which can be viewed in virtual reality.

One of the biggest projects of Bilfinger Tebodin using this technology has been the Great Wall Motors Company's car factory in Russia. This giant facility (225,000 sqm), with a production

capacity of 150,000 vehicles per year, was designed by Bilfinger Tebodin involving a team of more than 100 engineers across seven countries.

INDUSTRIAL 360º: FIRST STEPS TOWARDS A DIGITAL PLANT

Making changes in production processes and production plants is not always straightforward. You need a good insight into the present situation, preferably digital, to share and discuss. In order to conduct quick inspections for quality audits for instance, or to monitor the progress of construction work, a good, fast and photorealistic insight in the current situation of the site is very helpful.

The digital tool Bilfinger Tebodin has developed is an innovative scanning system capturing industrial sites in a photorealistic manner. This, together with 3D point data from the site itself, creates a transparent information model in HD. By using a special 360° camera and accompanying software, an average factory can be scanned in just a few hours, with a scanning speed duration of about 200-300 sqm/hour.

The Industrial 360° virtual factory is affordable, fast, accessible online, and enables clients to visualize new designs, or modifications to their factory or installation, in a photorealistic environment. In this virtual environment, it is possible to navigate freely and add user

instructions, video clips, or other relevant information to locations on the site. Virtual equipment can be tagged with extra information and linked to existing databases.

The virtual walkthrough with Industrial 360º can be used for many purposes. Visualization for tender packages, visualization of equipment for training, for all kinds of safety inspections, maintenance objectives and turnarounds. During brownfield investments, the 360° virtual factory can help everyone from the investor, through to the designer and the construction contractor as well, in many ways. Online meetings can be significantly more effective. It gives fast, user-friendly and very cost-effective insights into your present plant situation.

Károly Pető

"Recently, we completed a project for one of our key customers where we made a 360° virtual factory of a production facility. The target of the

virtual scanning was to assess the current state of the facility and share it with a third-party company located outside of Hungary to prepare the upgrade of the heating and ventilation system to improve the efficiency of these systems," said Károly Pető, Process Engineer Manager in Hungary. "This is a great example showing how we can work virtually together on the same project from different locations with the help of a 360° virtual factory."

Data-driven decision making is not only a trend for the future; the past months under the pandemic situation have also proved that it is necessary to establish digital solutions to enable executing and performing projects even without physical travel by the stakeholders.

"We can help investors by taking relatively small and affordable steps in the digitalization process. This is also attractive to small- and mid-sized facility owners who are looking for smart and sustainable solutions to their challenges in engineering, maintenance and operations," says Marc-Jan Backer, Senior Business Developer at Bilfinger Digital Next.

Company digital solutions cover the entire lifecycle of the project from design to maintenance and to operations. Its goal is not only to achieve performance enhancements but also to optimize production and processes, to increase labor productivity and to realize energy savings. With our cloud-based **Bilfinger Connected Asset Performance (BCAP)** platform, Bilfinger offers operators of industrial plants a modular digitization solution that unlocks the hidden potential of isolated data from various sources such as from BIM, asset management systems, Computerized Maintenance Management Systems, P&IDs and others. The platform combines this data and, with the help of data
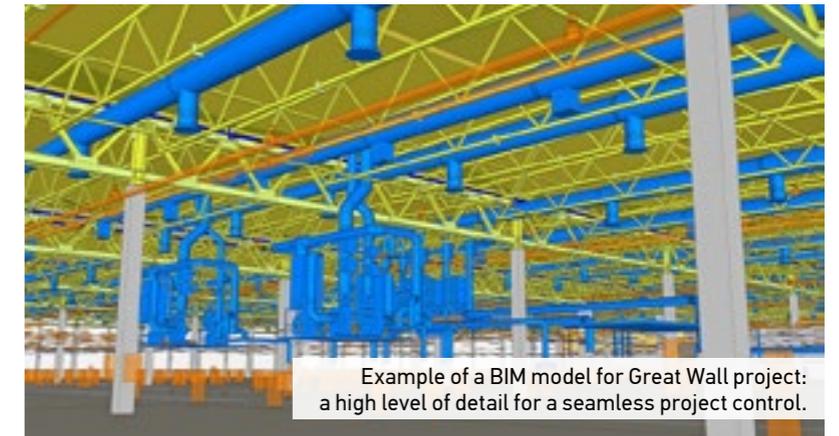
Example of a BIM model for Great Wall project: a high level of detail for a seamless project control.

science, translates it into visible and readable models that give clear recommendations, alerts and transparency.

With this approach, companies show 7-15% improved overall plant effectiveness, 10–30% lower maintenance costs, up to 15% increased labor productivity and a whopping 20% reduction in unplanned downtime. In general, the capital invested returns within a year.

COMBINING DIGITIZATION AND SUSTAINABILITY

Every company understands that it has to deal with sustainability in the coming period. The climate agreement alone to reduce CO_2 emissions will force companies to take action. The question is where to start?

Much of the data to be collected is already available in a company. However, this data is often spread across several departments. Think, for example, of data needed for environmental permits, energy saving studies, production data and purchasing data.

Once the data has been collected at company or process level, the environmental impact can be calculated. The methodology assumes that data is entered at regular intervals. This usually concerns data

from the previous period. With the use of sensors and algorithms, the processes in factories can be further updated and optimized. As a result, the level of detail of the environmental impact is better mapped out, which also allows for better control. Particularly with regard to CO_2 reduction, the development of process optimization with algorithms is rapid. By combining knowledge in the field of energy efficiency technologies with the artificial intelligence-based process optimization of digitization experts, a lot of profit can be achieved. In addition to lower energy consumption and optimal use of raw materials/ waste, predictive maintenance, HSE improvements and quality can also be considered. Digitization offers better possibilities to link the impact of internal and external factors in order to make sustainability more effective.

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