

Ebawe Anlagentechnik GmbH, 04838 Eilenburg, Germany

# Byggelement's turnkey sustainable production solution

Automated machinery and integrated software are the key for a sustainable production of sustainable products. Byggelement expanded its production with two fully automated and digitalized factories from one turnkey provider, Progress Group, to become the leading company in regards of sustainable building with precast concrete in Sweden. With overall four plants the innovative company is leading the way to a more environmentally friendly and at the same time cost effective and long-lasting way of building in the Nordics.

## Innovative goals in a conservative industry

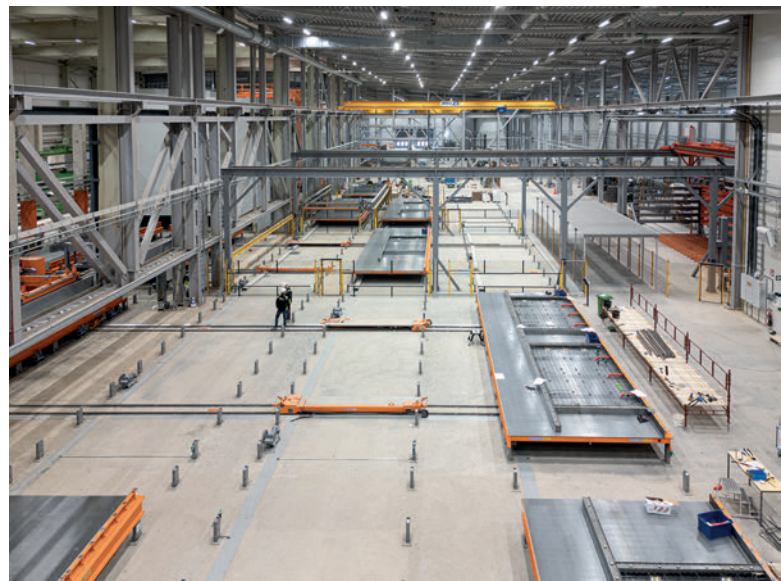
In 2020 the group of companies set two goals for themselves: They want to be the number one, when it comes to an environmental position in terms of the lowest CO<sub>2</sub> emissions in the Swedish market and they want to lead the race of automation in the industry.

They started with the search for an alternative binder, which is essential for a more sustainable concrete, as cement is the largest contributor of CO<sub>2</sub> in precast. Starting with 10 percent now they are at more than 60 percent of alternative binders in their concrete mix. Also, the reinforcement changed. Byggelement switched to suppliers that have the lowest CO<sub>2</sub> footprint in Europe. The company only uses green electricity,



Tobias Rönje, CEO of Byggelement and Carl Rülcker, Chairman CEO Peab Byggsystem AB.

which comes from wind and hydro power. So, they have zero emissions from the power used. They are leading in transporting precast on railroads for long-distance transports. Testing new binders, finding different ways of production - as the curing time increases with alternative binders - as well as finding the right automation, software, and steel supplier - all this means a lot of investment. Based on these efforts, the



The automated plants in Ucklum and Hallstahammar have been fully automated and digitalized.



The Form Master shuttering and deshuttering robot even implements the little parts needed into the form fully automated.

producer has defined a product called ECO-Precast as the market in Sweden has significantly changed. Although it is not ready to pay more for the sustainable solution, investors are willing to choose this option, when they are at the same level of pricing as the others are. So having the lowest CO<sub>2</sub> emissions, is now turning into a competitive advantage.

“Compared to the ordinary way of producing where you use 100 percent cement as binder and buy just the cheapest reinforcement, where you do not care about the emissions and use whatever electricity is the cheapest, we have reduced our CO<sub>2</sub>-footprint by approximately 50 percent.” Carl Rülcker Chairman CEO Peab Byggsystem AB and Tobias Rönje CEO of Byggelement clarify.

**The key for sustainable production is automation and digitalization**

Byggelement concluded that these precast products can only be produced fully automated and with a software solution that optimizes the process as productivity goes down due to the longer curing time of the new binders. According to Carl and Tobias they were discussing with various suppliers to find a solution. The aim was to get a high level of automation and a higher level of alternative binders. The best answers as well as the most personal relationship they got from Progress



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M-System mesh welding plant is welding but also bending the steel and forms them into the special cages needed.



The eCon Drive concrete spreader in the factory in Ucklum can produce 5 pallets per hour with 28 m<sup>2</sup> per pallet.



For a smooth concrete surface, the freshly poured and compressed concrete must be scraped off with the smoothing equipment.

Group: "We found a partner that offered both, the "hardware" (machinery) and the software under one roof with hands-on consultancy and support. We wanted to have a turnkey solution, and this is the reason, why we choose Progress Group. When it comes to such a big investment, you want to lower the risk and you want to know that it will work the day you push the button, so we signed a turnkey solution contract with Progress for both factories. The one in Hallstahammar produces mainly solid walls, half sandwich walls and sandwich walls and the one in Ucklum is producing concrete slab elements."

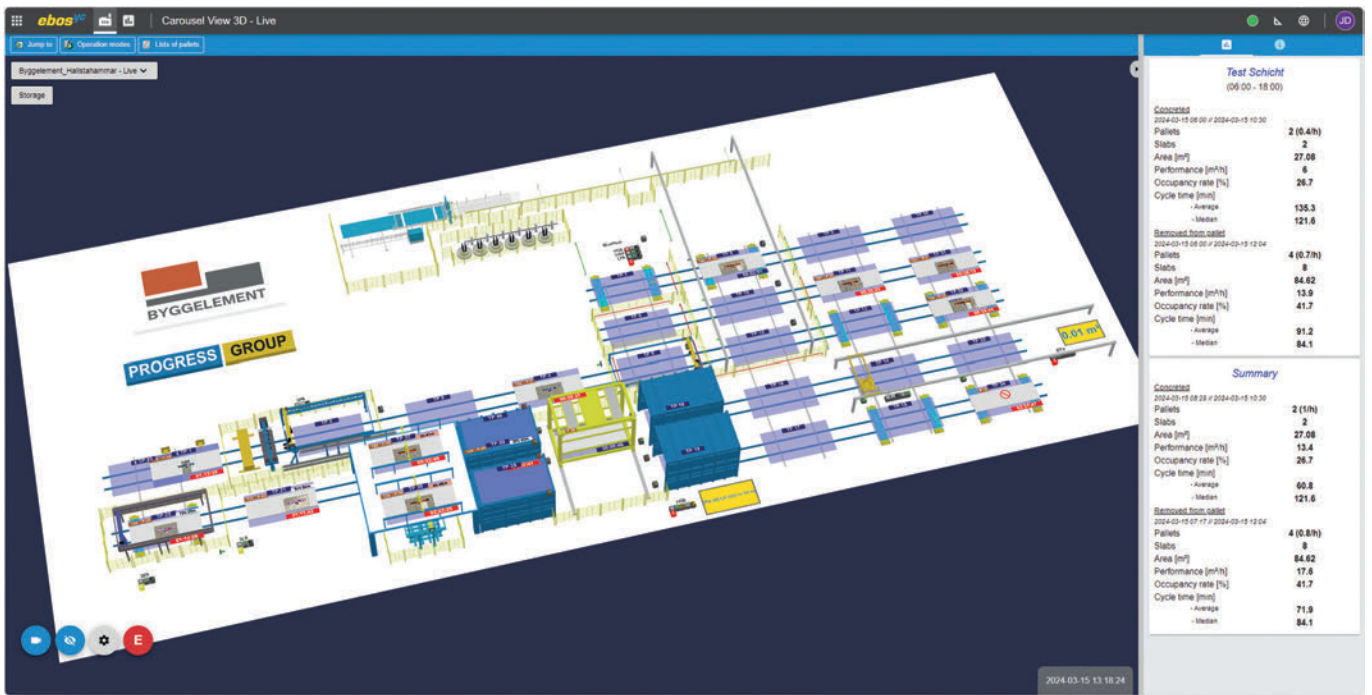
### The Iphone of the precast industry

The decision was influenced from the fact, that Progress Group is one of the most experienced players on the market, especially when it comes down to the reinforcement machinery from coil. The mesh welding plant M-System BlueMesh® with integrated bending system can produce complex cages from 6 to 16 mm and bringing a huge advantage for Byggement by effectively saving time and reducing labour costs.

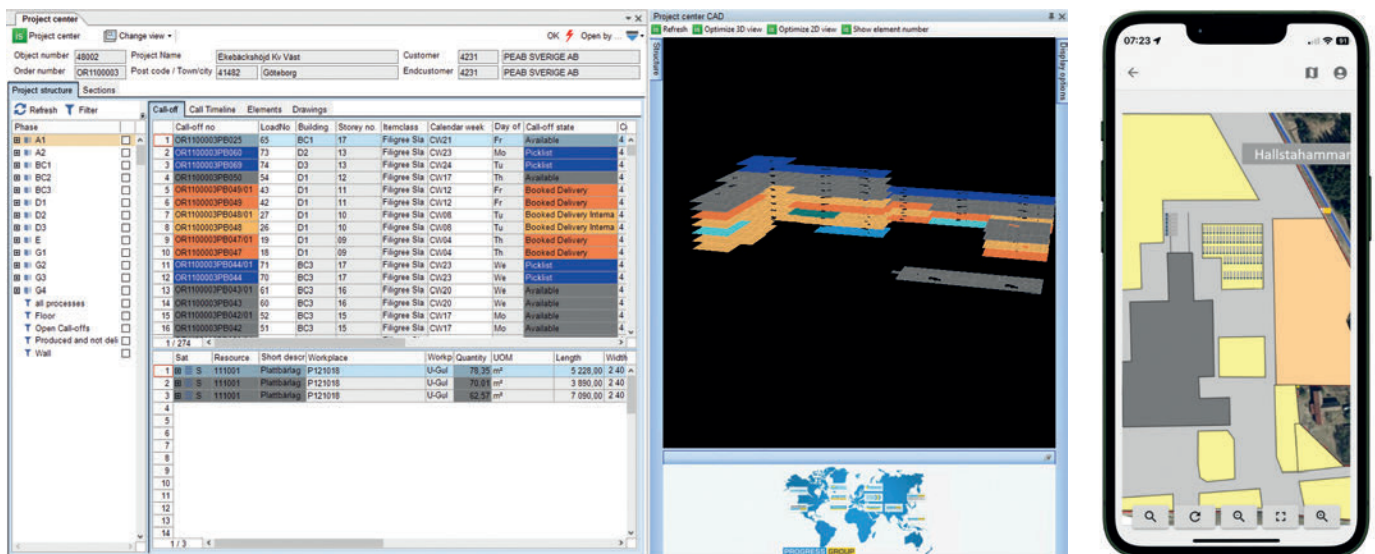
The carousel plant in Hallstahammar has a production capacity of 3 pallets per hour and can produce slabs with a height of up to 2,9 meters. It is specifically equipped with machinery for primarily solid and sandwich walls such as a levelling beam and a power trowel. The fully automated Form Master shuttering and deshuttering robot, the eCon Drive concrete spreader, a pallet stacker, compacting device, tilting equipment and a run-off carriage are just some of the machines in the plant to make the working environment safer and more efficient at the same time.

The plant in Ucklum on the other hand produces half slabs of up to 3 meters width on 70 pallets and is characterized by a very high degree of automation. The finished elements are lifted by means of a crane with a shear demoulding traverse.

However, the key to the successful cooperation of the two groups of companies was, that Progress Group could combine automation and digitalization. They are linked together and communicate together. "It is like with the iPhone - maybe you can find a better processor or a better camera in another



Full transparency in 3D with GPA (Graphical Performance Analyzer) in ebos<sup>®</sup>. It identifies bottlenecks at a glance, enables optimum pallet assignment and provides real-time data.



ERP<sup>®</sup>ebos, the erp solution specifically for precast concrete plants, covers the entire planning process. From sales to production planning, logistics and invoicing with integrated EPD calculation.

phone individually, but Progress Group has managed to put it all together under one roof and made it easy to use.” says Carl Rülcker and adds: “By seeing the headquarters of Progress Group, which is a big show room for innovative precast elements as well as visiting their own plant nearby, where the machinery and software are tested and working for their own precast production, we saw how aligned we are with our own quality requests. Progress Group has the same innovator spirit as we do.”

### Software solutions for a smooth workflow

The software ebos is great for controlling, monitoring and analyzing the complete production process. The entire process can be monitored in detail, with a better visual overview of where the elements are. Byggelement knows at all times what is currently being produced, where the bottlenecks are and how to reach optimal productivity by providing a digital helicopter view of production. Same with the ERP sys-



The solid walls produced can be used in residential construction but also for the construction of office buildings and hotels as well.



The newest plant in Hallstahammar has been successfully opened in April 2024.

tem – Tobias Rönje states that e<sup>P</sup>bos from Progress Group is the strongest product on the market. The integrated and cost-effective solution is now used in all plants and provides one platform for sales to production planning and logistics to invoicing. e<sup>P</sup>bos also supports CSRD, which tracks the environmental impact of concrete elements, including CO<sub>2</sub> calculations and EPDs (Environmental Product Declarations) per element and concrete mix.

Going with a turnkey solution for the whole plant was the right decision for Byggelement, also from an investment point of view. The great service and personal connection with Progress Group was another important reason. According to Carl it ultimately comes down to people working with each other, communicating from Sweden to Italy and back and solving issues together. For example, the software solutions have not only been implemented in the new factories, but also in the two already existing factories. Such complex topics could be solved with an ongoing and clear communication.

### Progress with Progress Group

“Professional. Personal relation. Flexible and willing to help.” describes Carl Rülcker his experience with Progress Group and adds: “When you do unique projects like this, not everything will work as planned and the relationship is built on how you solve these issues. Progress Group knows how to solve the issues and listens to the customer which has been very appreciated by the entire Byggelement team.” He proceeds to say that Progress Group has an offering that stands out with both machinery and software which makes the customer



*This residential project Persikan in Södermalm is currently being built with precast elements from the new factory in Hallstahammar.*

experience more seamless. "To summarize - we are very satisfied with this collaboration." says Carl Rülcker, chairman and CEO of Peab Byggsystem AB and Tobias Rönje, CEO of Byggelement.

Byggelement is part of the Peab Group and one of Sweden's leading suppliers of prefabricated concrete elements. Within the precast unit the company Byggelement offers a complete range of prefabricated concrete elements. Different kind of products are produced in the factories: In Ucklum are produced mainly precast slabs and in Hallstahammar the focus products are solid walls and sandwich walls. The typical customer for Byggelement are construction companies building residential houses, with an average of 80 to 120 apartments.

FURTHER INFORMATION



Byggelement  
Factory Ucklum  
Presstorp 106  
44494 Ucklum, Sweden

Factory Hallstahammar  
Rallstavägen 76  
73492 Hallstahammar, Sweden  
[www.byggelement.se](http://www.byggelement.se)

PROGRESS GROUP

EBAWE Anlagentechnik GmbH  
Dübener Landstr. 58  
04838 Eilenburg, Germany  
[info@ebawe.de](mailto:info@ebawe.de), [www.ebawe.de](http://www.ebawe.de)

Progress Maschinen & Automation AG  
Julius-Durst-Strasse 100, 39042 Brixen, Italy  
[info@progress-m.com](mailto:info@progress-m.com), [www.progress-m.com](http://www.progress-m.com)

Progress Software Development GmbH  
Julius-Durst-Strasse 100, 39042 Brixen, Italy  
[info@progress-psd.com](mailto:info@progress-psd.com)  
[www.progress-psd.com](http://www.progress-psd.com)



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