

Unitechnik Cieplik & Poppek AG, 51764 Wiehl, Germany

# Heidelberger precast facility in Penig modernised extensively

With its three production facilities in Saxony and one in the east of Saxony-Anhalt, Heidelberger Betonelemente GmbH & Co. KG is one of the market leaders in the region. Heidelberger Betonelemente provides an entire range of precast concrete components for private residential buildings and commercial constructions. Floor elements and double walls are manufactured in the production facility in Penig. However, the 15 year old plant's availability had definitely been below par in latter times. The management decided to modernise the plant with a view to continue satisfying market demands in the future. Unitechnik, a company from Wiehl in Germany, gained the contract to this end.

## Brief plant profile

The compact circulation system is composed of a Weckenmann formwork robot with plotter function, which is fed with formwork by an automated part storage machine. The work is carried out with magnets and superimposed formwork. Reinforcement rods and lattice girders are set in place automatically. Straightening and cutting machines plus reinforcement robots from Filzmoser are in operation. The concrete spreader, vibration station and turning device all originate with Avermann, as does the curing chamber with its 61 slots. For hoisting, 4 locations are available, one of which is set up as a tilting table. The system is equipped with 70 pallets (10.5m x 3m). A DOS based ULB computer from Unitechnik is in operation as master computer.



*The touchscreen terminal was very well received by employees*

## Contributions by Unitechnik

Unitechnik's contract included the complete modernisation of the control and instrumentation technology in the pallet circulation system. The Simatic S5 control units were converted to Simatic S7 with the modern

UniControl control software also being utilised in this process. The existing control points were supplemented at two places in the system by 19" touch panels. Their job is to help operate the system intuitively and visualise the machines and system parts. A

great deal of information can be called up directly on the spot in the system. The formwork robot and automated part storage machine are now controlled by a Beckhoff system after the modernisation. With this system as well, a large screen shows the operator all relevant information concerning the robot and the part storage machine. It is also operated by touch. The combination with new SEW propulsion technology allows the axes to be driven more dynamically with less stress on material. The old master computer was exchanged for a Windows based UniCAM.5 System from Unitechnik. A UniCAM Thin-Client has been provided in the hoisting area next to the control stand. The plant manager also possesses direct access to the master computer from his office PC via a remote desktop connection.

## Grounds for modernisation

The availability of the electrical components according to plant manager Michael Kilian was totally inadequate of late. As example, he cites the obsolete S5 control



*Penig production facilities of Heidelberger Betonelemente GmbH & Co. KG*

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Beckhoff control unit for the auto-storage machine and formwork robot

unit components. A lack of spare parts and poor support increasingly gave rise to yet longer plant downtimes. Remote maintenance via modem and L1 BUS often proved to be slow and wearisome. "To sum it all up," states Kilian, "you might say that we could no longer assure reliable plant operations."

#### Award of contract

Unitechnik had already supplied the control unit for the formwork robot and the master computer in the original plant. "Our experience with Unitechnik was positive. They had always helped us rapidly and competently when we had problems," says Michael Kilian. Other criteria for the decision

were the supplier's market position and innovative strength. The precast production facility in Penig also wants to benefit from new developments in the sector over the next few years. At the final count, Unitechnik won through with a solution both geared to practice and oriented towards the future, plus price / performance ratio.

#### Progress of project

A 4 week interruption in production had been calculated for the conversion measures needed. At the beginning of February 2011, the contractors began work. Besides Unitechnik, this meant Filzmoser for the reinforcing technology. Control technology components were delivered preconfigured



Formwork robot with more dynamism

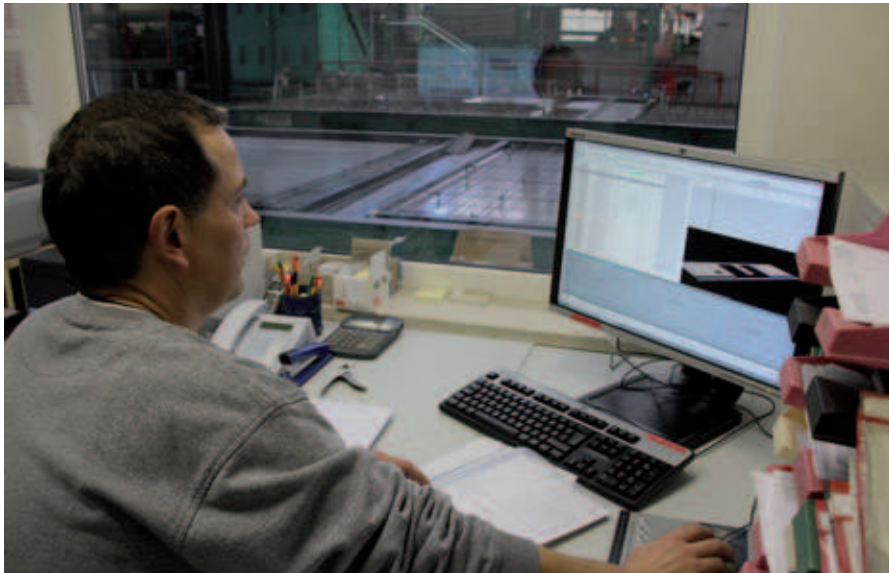
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to the construction site so that work on site was kept to a minimum. A supervisor was placed on hand for the assembly work by Unitechnik. Heidelberger Betonelemente made two electricians available.

This had the advantage for the customer that their electricians were acquainted with the new technology right from the outset. After one week's assembly work, the machines' commissioning began with the new control units. The software developers from Wiehl came on site for this event. Employees had already been instructed in operating the machines parallel to the commissioning. "Here, too, we thought it important to integrate our team in the proceedings as early as possible," explains Michal Kilian. "This meant that our people could identify with the new technology right from the beginning." The UniCAM.5 master system was set up within a week and the staff trained with this new system.

### Acceptance by employees

The plant operators had already accompanied the commissioning and had, in this way, become familiar with the operating elements at an early stage. The employees quickly grasped the advantages provided by the touch screen monitors.

When analysing a breakdown, for example, the switching states of all relevant limit switches can be checked at a glance, instead of having to climb up to a cross beam with a ladder. The initial training of new employees is simplified as the graphical representation of the machines makes their operation more readily understood. The staff also got on well with the master computer

right away. The Windows compliant interface facilitates entry.

### Increase in productivity

The aim with any plant modernisation should always be an increase in productivity. On the one hand, this was achieved by the plant's greater availability. Fewer breakdowns occur and fault rectification is speeded up.

On the other hand, there is a great deal of smaller improvements that are reflected in higher throughput rates. Modifying the absolute value encoder on the robot has eliminated the need for a time-consuming reference run. Communication between the master computer and the robot control unit now works in a more rapid and stable manner. Waiting times have been eradicated. The robot anticipates the preparation of formwork. None of these are major points but, when added together, they lead to improvement in cycle time.

One further factor influencing productivity at the facility is information from the master computer. Detailed, linked information concerning orders, stacks, elements and pallets facilitates optimum and flexible production planning. Using an example from practice, Michael Kilian describes the advantages of a high-performance master computer: "I can also just try something out with the system - for example, by bringing another order forward - and can see immediately if I can get better pallet occupancy."

As the system has not been running for very long, it is difficult to make any well-founded statement about increases in productivity.

"Based on current statistics, I believe an increase in productivity in the order of 10% is realistic," resumes Kilian.

### Upshot

One reason for modernisation is often the need for action due to the fact that spare parts are not available or manufacturer support can no longer be assured. Aside from these constraints, it also provides great opportunities for a company: more transparency, improvement in productivity and more flexibility in relation to the customer. One further advantage is becoming increasingly more important in times of scarcer human resources. Modern technology makes an employer more attractive and he can recruit new staff more easily.

### FURTHER INFORMATION



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