PRECAST CONCRETE PRODUCTION WITH UNICAM.23

PROSPECT Automation for precast concrete plants . WATCH NOW →

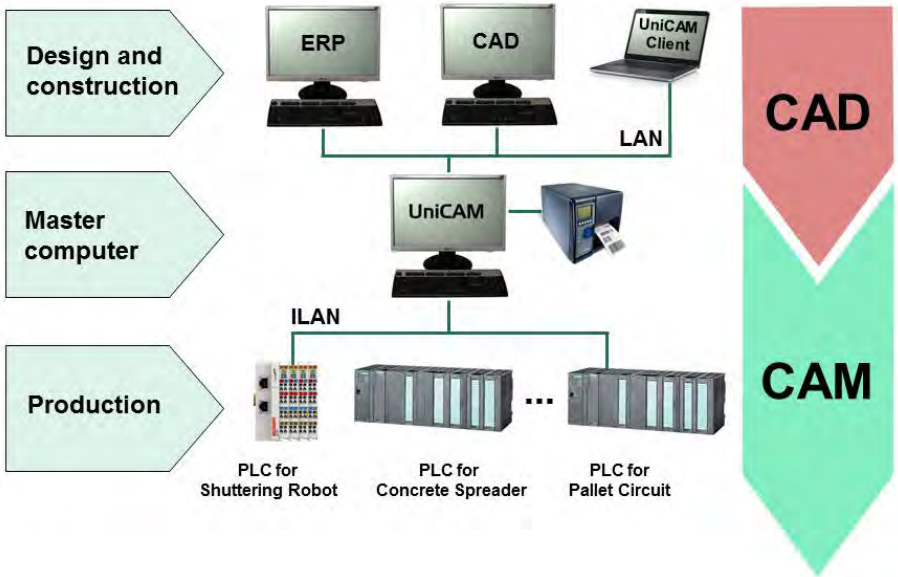
Unitechnik

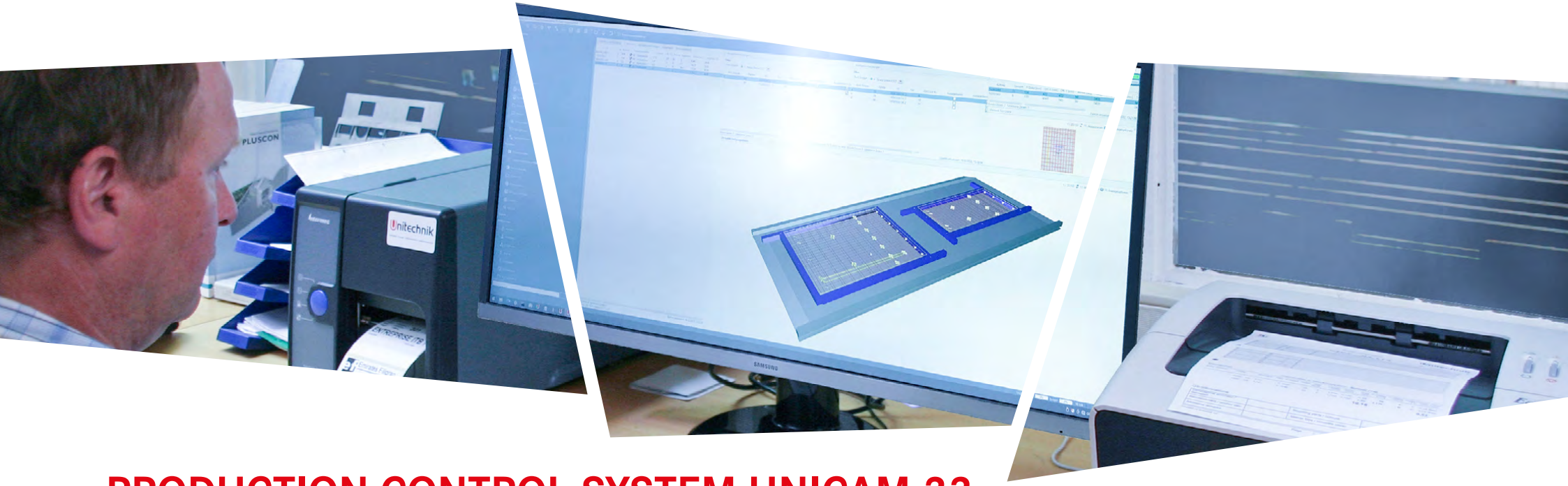
PERFECTION AUTOMATED.

AUTOMATED PRODUCTION WITH BATCH SIZE 1

Unitechnik Systems automates modern precast concrete plants. Individual slabs and wall elements are produced on steel pallets up to 18 m long. These automatically pass through a series of work stations. These include: Cleaning, formwork, fixtures, reinforcement, isolation, concreting, compaction, hardening and lift-off. These work stations can have various levels of automation. Typical machines include shuttering robots, concrete distributors, stacker cranes, lifting equipment and demolding robots. Based on individual CAD drawings and order data, the slabs and walls are produced and loaded onto the truck as required by the construction site.

This is made possible by an integrated automation concept:





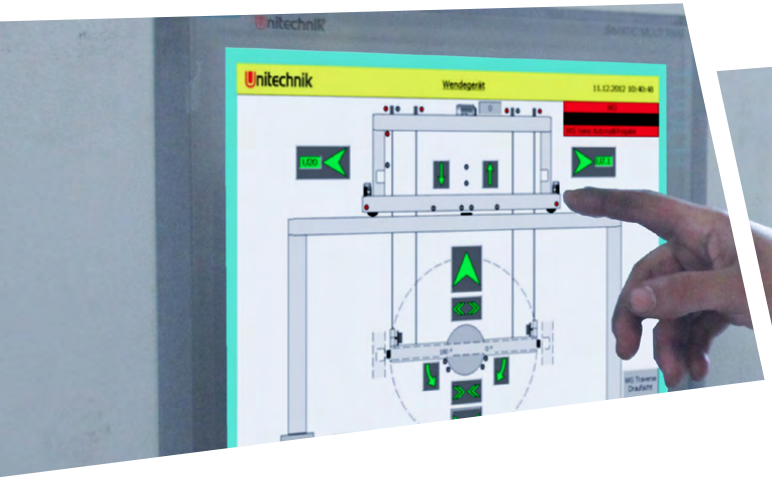
PRODUCTION CONTROL SYSTEM UNICAM.23

The UniCAM production control system is the heart of the precast concrete plant. The control system acts as a link between design and production as well as the precast component warehouse. Based on the individual CAD data, UniCAM plans and optimizes the production process.
In production planning, the production control system suggests an efficient production sequence and pallet loading. It supplies production with all information just-in-time, coordinates the material flow and controls the machines - all with the aim of achieving the shortest and most homogeneous cycle times possible.

In addition to the high productivity of the plant, UniCAM provides many tools for quality management. The module „Element Check Pro“ as well as the laser projection UniLaser enable the target-actual comparison before concreting. Photo documentation, comments, CAD data and production parameters are archived for each element produced and are available at the push of a button in case of complaints.

UniCAM has been shaping technological progress in the industry for over 30 years. Over 200 systems in nine different languages are in use around the world.

WHAT'S NEW AT UNICAM.23



UNICONTROL: SAFE AND ROBUST CONTROL TECHNOLOGY

With UniControl, Unitechnik supplies control and safety technology from a single source. Only industrial components from major manufacturers are used. Planned by experienced electrical designers and manufactured in our own switchgear construction department, control systems are created that are characterized by high availability and ease of maintenance. The control system is roughly divided into pallet circulation with curing chamber, shuttering and demolding robot, concrete distributor and other machines.

The circulation system reflects the logistical processes of the plant. Pallets must be in the right place at the right time. Key success parameters here are: safety, ease of operation and energy efficiency. Graphics-oriented touchscreen operation significantly reduces familiarization times and prevents operating errors.

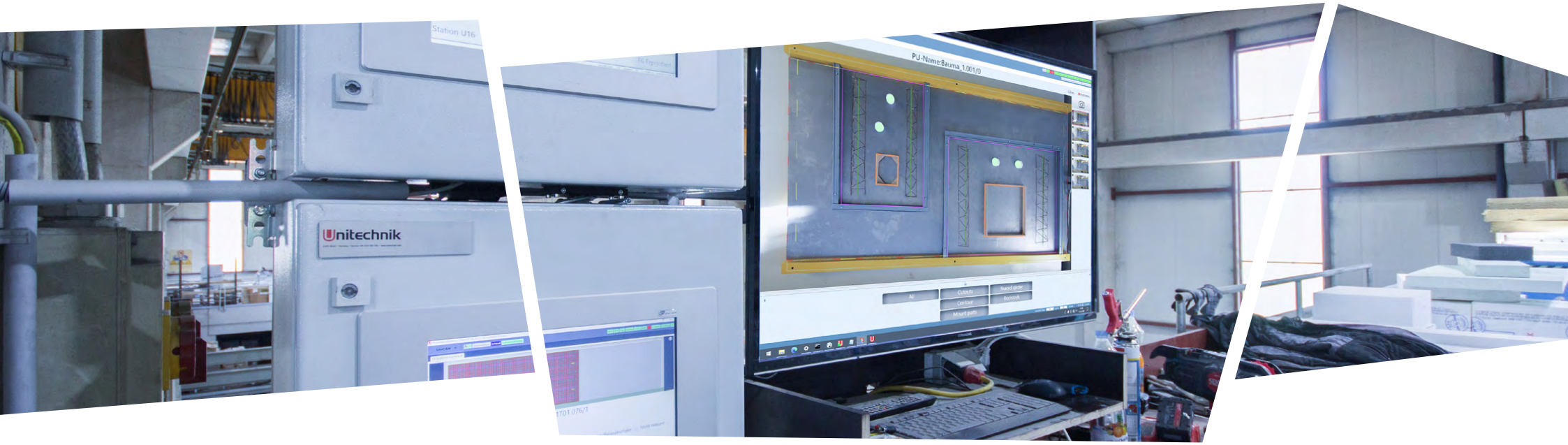
In the shuttering and demolding robot, up to six axes are controlled with high dynamics and precision. Before demolding, the pallet is measured with millimeter precision. During automatic concreting, intelligent algorithms ensure that the concrete is spread evenly and precisely in the required quantity.

PAPERLESS PRODUCTION

Digitization makes it possible: All information is displayed where it is needed in the production process. Printed drawings of the concrete elements to be produced are just as much a thing of the past as pallet assignment sheets. Instead, commercially available LED televisions (55 inches or larger) are mounted at the workstations. When a new pallet arrives at the workstation, the system automatically displays the associated drawings on the large screens.

Important key figures on current production are displayed by the system in a central location in the production area. In this way, every employee can see whether the targets for the day‘s production are being met.
The large screens can also be used as screens for the UniCAM master computer. For example, it often makes sense to display the stock-out list at the pick-up station. If possible, no employee should have to run to the control room office to get information.

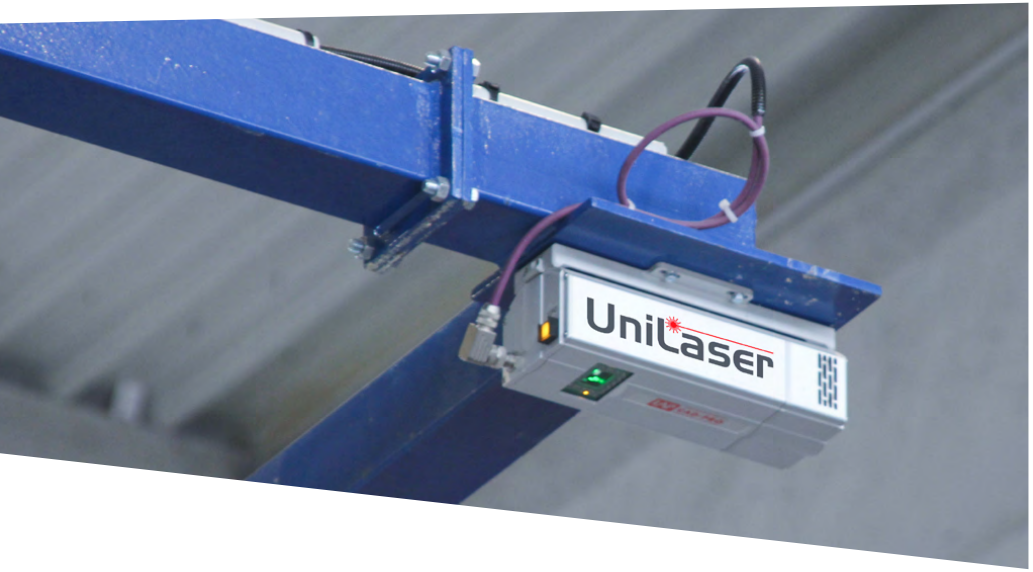
WATCH CASE STUDY

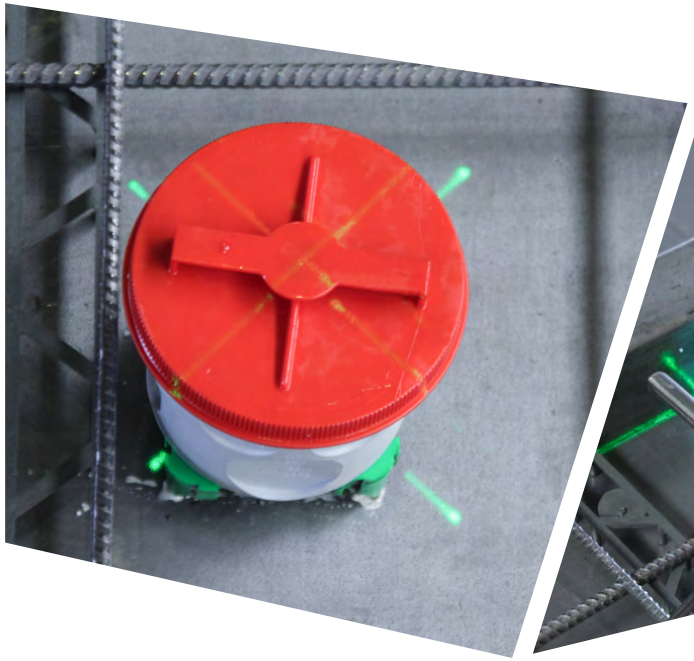


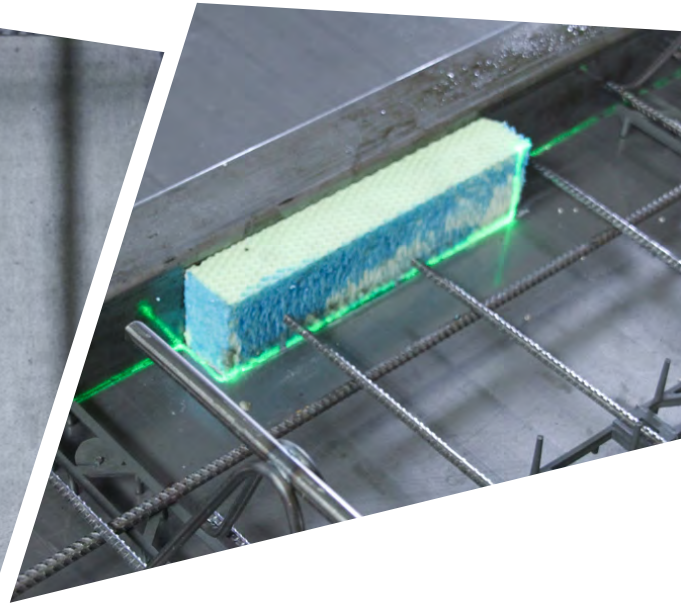
EFFICIENT QUALITY MANAGEMENT

In addition to a functioning process, control and documentation are important elements of quality management. The „Element Check Pro“ function provides the worker with an exact and true-to-scale photo of the pallet and can overlay it with the CAD data. The individual levels of the element data, such as „reinforcement“ and „fixtures“, can be shown or hidden. Deviations in the position and completeness of the parts can thus be easily identified and corrected.

Any deviations are documented via comments and archived together with the image. For this purpose, employees insert comments at any position of the photo. UniCAM offers a similar procedure after the elements have been lifted off. After the final physical inspection, comments can be stapled to the graphic image of the element. If a complaint then comes from the construction site, a few clicks in UniCAM are enough to view the entire history of the element.





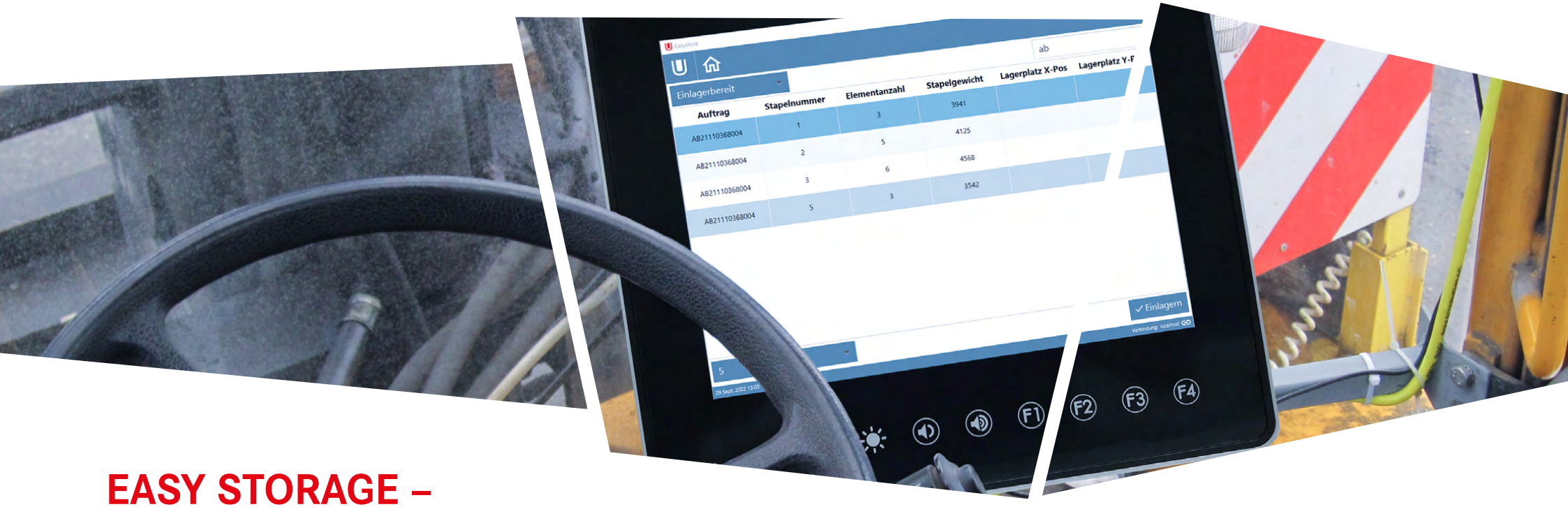


LASER PROJECTION SYSTEM

The UniLaser laser projection system is an efficient tool for the dimensionally accurate setting of parts on the production pallet. Through integration into the UniCAM master computer, UniLaser adapts to the individual production process. For example, if part of the formwork has already been set by robot, UniLaser only projects the remaining length of the formwork. Advantage: no disturbing reflection, no flickering lines.

If a window frame is to be positioned, it may make more sense to mark the top edge of the frame. Advantage: none of the lines are shadowed by the frame. Projection at freely definable heights is particularly effective for multi-layered or three-dimensional elements.

Another area of application for UniLaser is quality assurance. Before concreting, all dimensions can be checked. The projection height is automatically determined from the CAD data. During double wall production, the lattice girders of the first shell are projected in order to exclude later collisions when turning in. UniLaser is an integral part of the automation technology from Unitechnik. Customers benefit from smooth commissioning and professional service, including hotline and remote maintenance.



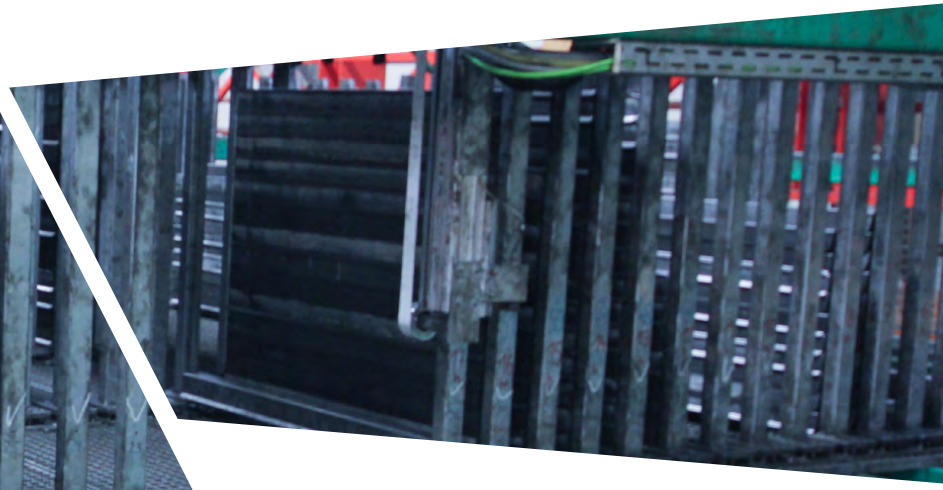
EASY STORAGE – THE OUTDOOR STORAGE EASILY AT HAND

For the operator of a precast concrete plant, managing his outdoor warehouse is sometimes a time-consuming task. The „Easy Storage“ function ensures an optimized process. The module is an integral part of the Unitechnik UniCAM master computer. It is operated by touch via a forklift guidance system. The system automatically synchronizes the data with the production master computer.

The forklift driver places the finished parts in a free storage location. The topology of the outdoor warehouse and thus the designation of the storage bins can be defined as required. For retrieval, the order number is then sufficient to locate the corresponding load units. The data exchange between forklift terminal and UniCAM master computer takes place via WLAN. Bookings can also be made in offline mode.

Furthermore, the software structure of „Easy Storage“ is open and allows the connection of transport or yard management software. Automated transport or storage systems can be easily integrated.

MORE INFO ON EASY STORAGE



FLEXIBLE MODERNIZATION

Unitechnik offers the modernization of the control and instrumentation systems of precast concrete plants. It is irrelevant whether the plant was originally automated by Unitechnik.

We offer customers a non-binding inventory and consultation. The great experience from umpteen modernization projects and the professional project management guarantee a short conversion time. Production downtime is minimized.

The renewal of the control technology ensures that current regulations are complied with, the plant runs stably and support and spare parts are available. Retrofitting or renewing a modern production control system also opens up many new functions for the plant.

With UniCAM embedded, it will also be possible in the future to provide UniCAM functionalities under a third-party control computer - for example, on the Beckhoff PC of the shuttering robot controller and as a mini PC in the control cabinet. This innovation enables a variety of retrofit scenarios and gives plant operators the option of combining systems from different manufacturers.

LIFETIME PARTNER – TAILOR-MADE SERVICE

Our claim is to accompany the entire life cycle of the plants. For us, this means that we not only focus on the implementation of the control and instrumentation technology, but also attach great importance to the support of the plants during operation.

Our service center is available to you in the event of plant malfunctions - around the clock. Via remote access, we dial into both the control systems and the UniCAM master computer. Together with your employees on site, we quickly find the cause of the fault and guide you through the troubleshooting process.

By means of maintenance we keep your plant in good shape in order to avoid the occurrence of malfunctions in advance. In this context, we also advise our customers on optimization measures. Of course, we are also the right contact for questions regarding the modernization of control, instrumentation and safety technology.

MORE INFO

Unitechnik
PERFECTION AUTOMATED.

Unitechnik is an owner-managed family business in the 2nd generation. For five decades we have been one of the leading suppliers of industrial automation and information technology. We plan and realize customized systems for internal logistics and production. In doing so we act as a total supplier worldwide.

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