

Retrofit – quick and successful

The colourful success story
of a control system upgrade

THE SOLUTION



We Love Ingredients.

AZO.



Instigator Specialist by tradition.

The customer.



The well-known, long-established firm FreiLacke (now in its third generation) can look back on more than 90 years of experience in the development of innovative paints and coatings, as well as on a broad range of expertise in a wide range of sectors, manufacturing processes and requirements.

FreiLacke provides a branded component system that makes use of all the key coating technologies (powder, liquid, electro dip coatings and materials for manufacturing composites) in perfect harmony – to give brilliant colours with consistently excellent mechanical and optical results for all surfaces and applications.

The initial situation.

After an operating period of more than 15 years (1996–2011), the control system for the liquid coatings production plant required thorough modernisation.

The existing control system was not capable of performing new tasks to the extent required.

The large-batch area was automated by means of a process control system that was no longer supported by the manufacturer. The entire production in the small-batch area had no automatic data logging, and the operator guidance was all paper-based. Furthermore, at that time the production data were input into FreiLacke's ERP system by manual data entry.





Analysis

Planning the modernisation project.

The main priorities.

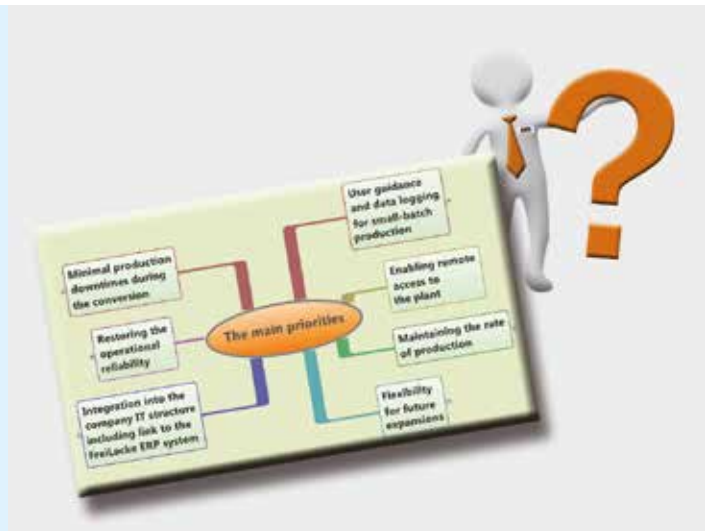
The project therefore had the following main priorities:

- Restoring the operational reliability
- Flexibility for future expansions
- Integration into the company IT structure including link to the FreiLacke ERP system
- User guidance and data logging for small-batch production
- Enabling remote access to the plant
- Maintaining the rate of production
- Minimal production downtimes during the conversion

The analytical planning phase.

The modernisation project began back in 2008 when FreiLacke carried out the planning phase. After drawing up the specifications with a pre-analysis of the production processes, the project was put out to tender. The joint work on the detailed requirement specification began in January 2011. FreiLacke and AZO CONTROLS held intensive discussions to arrive at an extensive, detailed analysis of the production processes, plant control system and interfaces to the other equipment, which was likewise affected. This laid the groundwork for successful implementation of the project. Through these discussions, the interface to the ERP system was identified as a key focal point.

Adjustments to the existing data base were required for complete integration of the production plant into the company IT structure. This process took both parties on a complicated journey, but was ultimately successful.





Focused on success Let's do it.

The project workflow.

Once this phase was completed, in May 2011, the implementation process began. The software programming for the PLC, visualisation and process control technology started, as did planning the conversion work for the switchrooms and planning the actual commissioning. To keep the production downtime as minimal as possible, commissioning took place over new year 2011/2012.

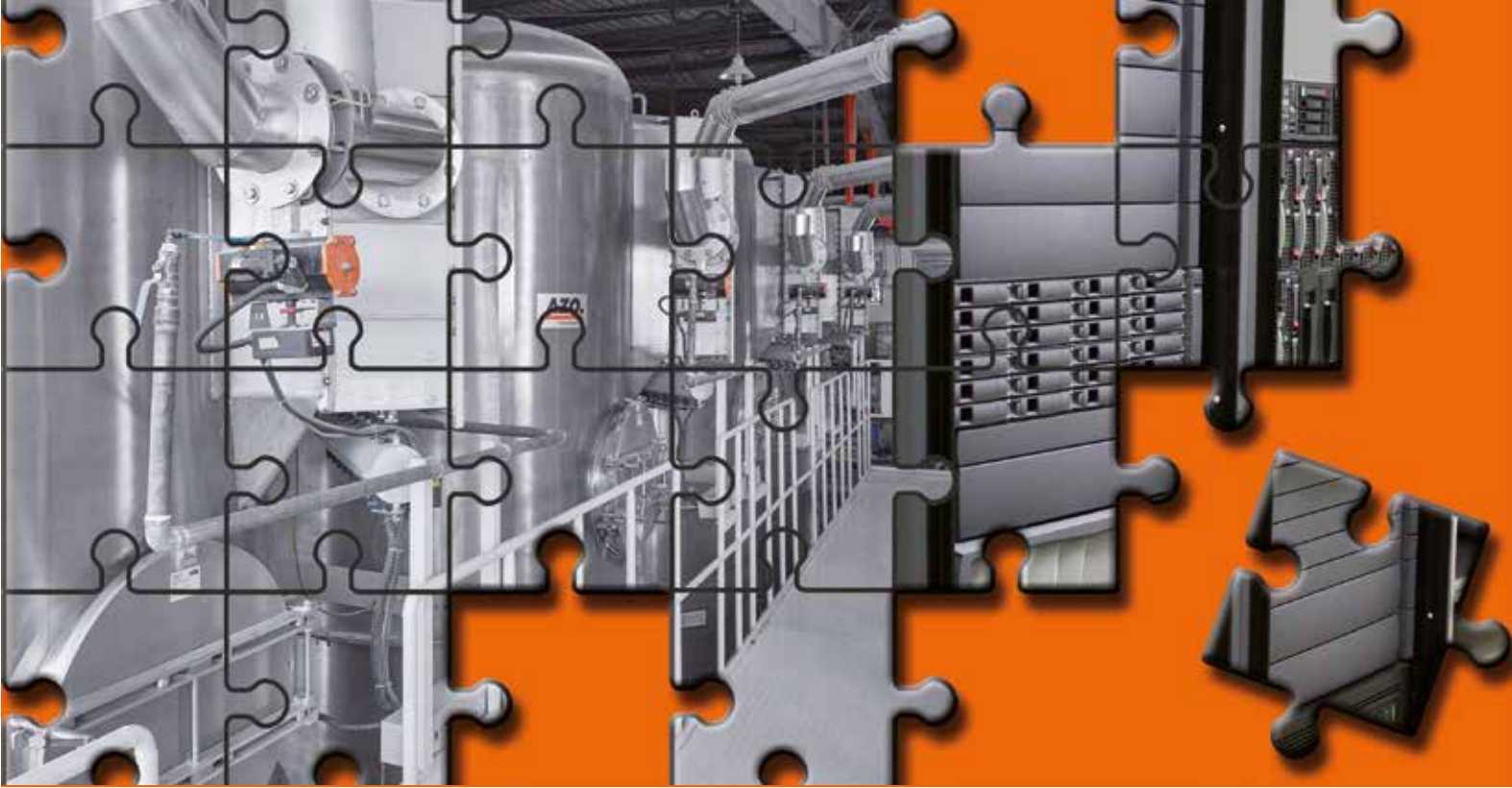
From November 2011, the conversions to the cable infrastructure and installation of control panels that did not impact on ongoing production were carried out. Crunch time for the conversion began at the end of December. Recabling and commissioning manually in stages were completed by the end of the year. The automated sequences were brought online in the first week in January.

The commissioning.

At the start of January, the plant was gradually brought up to full capacity for production orders in automatic mode, with training of the FreiLacke employees taking place at the same time. In the first week the plant was already nearly at 100% of the usual output.

The FreiLacke employees were delighted with the user-friendly, clear user guidance, which contributed to rapid familiarisation and hence to a smooth changeover to the new technology. Convenient implementation of specifications and target-oriented, intensive testing of the software in advance of delivery also ensured success in this respect. The time required for commissioning at the factory was minimal.





Fine-tuning Until everything works.

The integration.

Alongside the integration of the IT hardware, there was a particular focus on linking the production plant to the FreiLacke ERP system, DIBAC.

To do this, the recipes that were in the ERP system needed to be adapted and interpreted so that they could be used by an automatic production system. This process took the form of an intensive planning process with mutual agreement.

The result was that production orders with recipe steps, process steps, test steps and test instructions were taken from the ERP system and, following successful processing, the weighing and testing results – each with corresponding durations – were sent back to the ERP system.

The interfaces.

The system also collects material samples for the laboratory and transmits synchronisation messages to the high-bay warehouse via interface. It goes without saying that the new plant control system slotted seamlessly into the existing machines and building infrastructure with fire alarm technology.

All these interfaces meant that it was possible to achieve virtually perfect integration of the Kastor process control system with 100% automated data flows.

In the area of data transmission, the high degree of automation meant that the error rate could be reduced to a minimum. This led to a lasting improvement in operational reliability.





Forward-thinking

Promising success, today and tomorrow.

The user guidance.

More important than convenience is the user guidance and automatic logging of operating steps directly at the scales, mixers and other units.

Here it is possible to exploit the major advantage of PC technology with direct data link.

As well as the results of weighing, important process parameters are also logged. This takes place using a historian database. The process parameters are permanently logged, with time reference, and can be retrieved for later analysis of production processes and to improve recipes and parameters. This makes it possible to further reduce the error rate.

The future-proofing.

Together with the data interfaces that were put in place, the modern platform with PLC technology based on Siemens S7 and the Kastor process control system provide perfect mapping of the production processes. The close interaction between the ERP and the plant control system ensures stable production. And at the same time, it makes a good platform for further, supplementary systems, such as production data acquisition. There is likewise a basis for planned plant expansions or for incorporating further plant sections into the overall control system, as has already been carried out for one further plant section. The option for remote maintenance services without requiring a technician on site guarantees the necessary reliability. In summary, it can be said that the production of liquid coatings at FreiLacke is all set for many years of smooth operation.





Conclusion:

»The modernisation of the liquid coatings plant was carried out exactly on schedule.

Through precise planning and implementation, the project goals were achieved just a few days after commissioning.

And we are well equipped for the future.«

Simon Reichhart
production manager liquid coating