



Mill modernisation by system integration - protection of existing investments

When it comes to the modernisation of existing mill systems, protection of existing investments and swift, smooth commissioning of new system elements play an especially important role. The integration of standard technology and experience typical to the sector in the modernisation of automation technology components guarantee the owner a tangible improvement in production effectiveness while maintaining functioning system levels during a conversion phase that is precisely calculable in terms of timing.



At its "Hildebrandmühlen Mannheim" branch, Kampffmeyer Mühlen GmbH in Hamburg operates the largest and most modern durum wheat mill in Germany. The plant has an annual milling capacity of about 170,000 t of grain. Durum wheat semolina, which is supplied as a raw product to the macaroni industry, to makers of baby foods or also to other foodstuffs producers, is produced in the two mill systems, which were completed in the years 1989 and 1993, paying attention to the highest of hygiene standards. The AURORA brand of durum wheat semolina is also supplied to foodstuffs retailers in small packages.

view into the control room of "Hildebrandmühlen"

Effective modernisation of the automation systems

Automation of the mill previously consisted of a subordinate control level with visualisation on the basis of SIMATIC S5 type programmable controllers and a higher-level control system in the form of a DEC PDP 11913 type computer with corresponding terminals as operator control consoles. To improve plant effectiveness, operation and production data acquisition and thus also production reliability, in 1999 the owner decided in favour of modernisation of the control system. ECKELMANN AG, which has gathered great experience in the area of control system modernisation for mills, received the order. The requirement for ECKELMANN was above all that existing investments were to be protected. This specifically meant complete integration of the existing interfaces to the subordinate control level and the on-site commercial IT in the new control system.

System integration with protected investments

ECKELMANN realised the new control system as a network on the basis of PCs in a client/server structure under Windows NT 4.0 and with the Oracle 8.0 database system. At the moment, the system comprises a standard server belonging to a high performance class, three PC process computers and six workstations consisting of PCs belonging to a medium performance class. The manufacturer and design of the PCs used were oriented to the customer's stipulations and to the ambient conditions. An additional SIMATIC S7 type PLC was used to couple the process level to the control system. Addition of further process computers or workstations to the control system in line with requirements is planned and is easily possible at any time.



Thanks to plant-specific adaptation of the new control system's hardware and software, it was possible to realise continued use of the existing interfaces to the subordinate control level in all production areas, i.e. acceptance, cleaning, mill, end product silo, mixing plant, loading and packaging shop.

The new control system also communicates with the on-site IT through the existing interfaces and exchanges relevant data, for example for processing loading orders and delivery note printing and invoicing.

Advantages through standard technology

In terms of the hardware, and as described, the new control system is largely based on commercially available standard PC components. On the one hand, this considerably reduces investment cost and, on the other hand, the owner is largely independent of individual manufacturers' or developers' terms and conditions of delivery and production. However, the use of standard products also guarantees simple upgrading and conversion in the event of hardware generation changes. The Windows NT operating system that is used ensures compatibility of the system with the current market and industrial standard. If required, the owner also profits from the progress achieved in future operating system versions (Windows 2000).

Optimised commissioning minimises standstill times

No owner can afford to tolerate a prolonged machine standstill during the conversion and commissioning phase. To avoid production outages and to protect the perishable goods, the entire changeover to the new control system of Hildebrandmühlen took place in three segments - Mill 1, Mill 2 and Loading, each over one weekend. Thanks to conscientious advance tests of the control system software and the experience of ECKELMANN's engineers that is typical of the sector, it was possible to complete the conversion in line with deadlines and according to the customer's wishes.