

Production on the Web

Building on the greenfield or on the basis of facts



"Most MES systems are in fact mini-ERP systems," asserts Thomas Kurth, production planner for injection moulding at ADC Krone, commenting on his decision to opt for a standardized MES solution.

"If I'm building a new production facility on a greenfield", he continues, "then it makes sense to go for a complex MES system, though we would end up with much too big an overlap with our SAP system."

Since May 2004 Krone AG, Berlin, has formed part of telecoms group ADC USA based in Eden Prairie, Minnesota. ADC is a systems provider for telecom and data networks with a global workforce of around 8,400. At its Berlin branch, which employs a staff of around 500, the company was looking for a highly automated MES software solution that requires little hardware. The aim was to add it to existing PC input terminals without generating too much expenditure. Furthermore, the system had to be easy to operate and avoid excessive complexity. ADC Krone had already investigated the market in MES providers and rejected other solutions as being too complex. INCLUDIS submitted its web-based software solution for machine data capture based on industry standards that simply integrates machines and equipment into the existing IT systems landscape.

For the user, it was important that the software was capable of capturing and tracking the entire manufacturing process for the injection/die cutting and assembly areas involving a total of 70 machines of all types. The machines in the three production areas were linked electrically to an ethernet TCP/IP bus system. The system then captures messages relating to status, quantity, and actual running time. These are then made available online via a web browser using the company's intranet or the Internet. The information can be called up on the shop floor using the workshop's PCs or in the office directly via Windows Internet Explorer. As the software solution is licensed for a certain number of machines, the number of users is irrelevant, so any authorized user can request the information, although only shift controllers and supervisors have access to enter manually the reasons for any downtimes. Feedback on downtimes is entered using mobile barcode scanners that are synchronized with the MES via a docking station - a highly practical solution.

Apropos practicality - the focus is on ergonomoy

Another requirement was for the graphical user interfaces (GUIs) to be very simple and almost self-explanatory. The workforce had to be given a tool on hand that not only works but is easy to call up and can be operated without much training. "The ergonomic nature of the software is quite important to our staff," says Thomas Kurth as he points to an example of the overview of another software provider containing highly complex information that he has to scroll page by page. He doesn't want to open three frames at once. He simply wants to display the essential information at a glance on one mask.

Achieving process quality through weak- point analyses

As we look around the production facility, Thomas Kurth shows me the machine with the highest production output of a million parts per day or 2,000 parts per minute. He shows me the same machine later in his office as a production order in the system. He controls the cycle time and can immediately tell from the OEE indicator displayed that the specified time is correct. Thanks to the running time display with its colored bars indicating running time (green), downtime (red) and setting-up time (purple), there is an exact record of when the machine is at a standstill and where weak points are to be found. By way of example, it was noticeable that short periods of machine malfunctions were much more common in the assembly area than in the die-cutting or injection moulding area. The setting-up process for the machines with the test times is too long, and tool quality and the accompanying installation process are still a work in progress as regards process optimization. 17 shifts per week are worked during peak production periods. This means that the first shift of the week starts as early as 10:00 p.m. on Sundays. "It happens that machines spook on weekends", says Thomas Kurth. With this he means that machines operate without personnel on weekends. With the MES-system, it is precisely recorded which machines operated without malfunction during the relevant period. Individual machines or the entire machinery are constantly monitored. The data collected reliably support the traceability of processes. Internally, they serve as evidence for the optimization of production and externally as evidence for product quality and liability. "Currently the representation of runtime, station times, and downtimes are very important", is reported by Thomas Kurth. "We monitor the actual condition in order to conduct downtime weak-point analyses. Variable data are exclusively posted in SAP. In the future, a continuous allocation of orders and direct feedback to the superior SAP- system will take place".

Industry Forensics: Means of evidence by MES

In order to increase investment safety in the software solution and to minimize dependency on one provider, ADC Krone attached importance to industry standards relating to hardware equipment and a slender software structure. The high level of automation in production in Berlin caught the attention of the American parent company. Especially the process flows are much

more tightly organized and require far fewer personnel. The MES-System supports efficient production planning through the discovery of weak points, saving potentials, and optimization possibilities. Daily reports via e-mail have become important evidence for the more critical analysis of the processes, the elimination of reasons for downtimes, and the discovery of added-value potential. So, in this way, the trouble-free operation of machines is secured, the capacity utilization of resources is improved, storage times are reduced, and, above all, an increase in production is achieved.