



Production and Performance Management in the Automotive Industry

Information as a production factor

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Production and performance management provides essential functions to control and monitor production. Using zenon HMI/SCADA software, it is possible to optimize production processes in the automobile industry.

Control and monitoring of manufacturing is one of the most important tasks in the automotive industry. Nevertheless, the potential that control and monitoring systems offer is often not exploited. Production and performance management serves to optimally plan, control and check production processes. Production and performance management makes it possible to monitor and analyze all process channels on an ongoing basis, to improve utilization and optimize production processes. Both commercial processes and manufacturing processes thus become 'transparent' across the company. The right SCADA software ensures that throughput time and inventory stocks are reduced and the supply speed is increased. The result is optimum utilization of production capacities. Costs are reduced noticeably when an effective production and performance management solution is used; productivity increases and thus competitiveness too.

Increased output, increased flexibility, increased safety

These benefits relate to all manufacturing companies, but are particularly important for the automobile industry. On one hand, especially in this industry production hours and cost continually need to be reduced. On the other, the complexity of business processes continues to increase due to the numerous different types of models. This affects production, but also other business areas such as purchase, logistics, etc. Only integrated and transparent processes guarantee efficient production and an integrated flow of information.

Professional monitoring and competent analysis

The more complex a production system is, the more significant the automated monitoring of equipment and automated monitoring of machine data becomes. Automated monitoring is more efficient and safer and less

prone to errors. If there is transparent and reliable production data, companies can verify decisions they have taken and quantify their success. With the help of key performance indicators closely related to the process, companies can evaluate the effects of changes in production and compare them to earlier data or business targets. Will a change bring the desired success or is the expense disproportionate to the benefit?

In order to calculate process-orientated key performance indicators, companies must record, consolidate and prepare the raw data that is generated in the production process and pull it together. To do this, it is necessary to have an overview of all current process information as well as the historic records of process data. This goes far beyond the display of current alarm, item numbers and equipment and machine status.



Important production key performance indicators

The availability calculations relating to downtime and volumes for machines and equipment are important process-orientated key performance indicators. The key performance indicators for volume-related availability of equipment provide meaningful and comparable results. The quality of the manufactured parts is determined by means of the quality rate figure. Thanks to different types of display, such as a table or a curve diagram, it is possible to quickly make comparisons between target and actual values, as well as good parts and rejected parts. The statistical evaluation of alarm data and unplanned downtime make it possible to localize and reveal weak points in the system. One of these key performance indicators is availability in relation to equipment downtime. In addition, the statistical evaluation of the alarm data provides a meaningful overview of problems. In this way, the user can quickly find out which problems occur most often and which ones cause the longest downtime. With this information, he can put targeted measures in place in order to minimize the downtime of the facility and, thus, considerably increase productivity and effectiveness.



The zenon application shows the down times of the equipment very clearly (left) as well as individual problems with the different robots (right) – once for the whole duration and once for the duration adjusted for breaks.

Comparative analysis of alarm data makes it possible to come to a conclusion about the possible causes for those alarms. Shift-related or equipment-related summations can provide valuable information for causal analysis. A comparison of this summated data can illustrate the differences between shifts in terms of both the equipment and employees. Management can then quickly identify possible causes of any differences. This analysis can summarize a company's activity in shift, day and weekly reports, or in equipment or machine reports. A comparison of key performance indicators provides information on possible optimization measures and demonstrates whether implemented measures have been successful.

The output of the equipment as a whole counts

In addition to the key performance indicators stated, overall equipment effectiveness (OEE) is becoming increasingly important in the industry. It comprises the availability of equipment, the quality rate and the level of performance. Multiplying these figures, it reflects the level of production performance. OEE takes into account losses that arise in a system and that have effects on the whole of production. It is particularly important, because the capacity losses of individual considerations multiply; this is often not taken into account in a pure consideration of productivity. Thanks to an OEE analysis, production companies can find out the sources of losses, introduce measures to offset them and uncover potential for optimization. In the automotive industry particularly, OEE is considered the basis for an evaluation of overall success. The greater the OEE figure is, the fewer losses have occurred in production.



Here, managers and employees of a production company see the availability, the quality and the efficiency with which the production process for a defined robot operates on a certain day (left) or in a certain shift (right).

Produce efficiently and plan on a long-term basis

The basis for comprehensive production and performance management is an HMI/SCADA platform that works in an integrated and transparent manner. A holistic, comprehensive solution ensures that all devices, all systems and all controls can be included in the overall system, in order to summarize, analyze and subsequently process data in heterogeneous infrastructures.

Forward-thinking maintenance

Analysis proves that permanent and regular maintenance is many times more cost-effective than single reactive acts of maintenance carried out in response to a problem. In addition to the monitoring of processes, the machines should therefore be permanently monitored as part of a preventative maintenance program. To do this, the software must record and document all data from the machine components and aggregates. As a result, not only can maintenance measures be implemented in advance, the lifetime of the machines increases thanks to planned, regular maintenance. Positive effects include the highest level of machine efficiency possible, increased safety and the potential for cost reductions.

Consistent production and performance management

- All production-relevant information is available for production monitoring and future control methods
- Detailed analysis, such as machine loads, availability, throughput times, etc. are possible
- Absences, deviations from plan, etc. become apparent immediately, so that countermeasures can be instigated early
- Optimum planning and implementation of future manufacturing jobs

Our Automotive experts are always at your disposal in order to meet your demands. Contact us at www.copadata.com or via email at automotive@copadata.com.



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