

Operations Control System for Kokereibetriebs- gesellschaft Schwelgern



KBS is the operating company of Thyssen Krupp Stahl AG for the Schwelgern coking plant. With an annual capacity of 2.5 million tons, it supplies around 70 % of coke demand by Thyssen Krupp Stahl AG for the two big blast furnaces in Duisburg-Schwelgern.

The Task

For the five operating areas of coal pre-treatment, coke-oven operations, coke cooling, coke treatment and by-product system, KBS was searching for a comprehensive operations control system for gathering and balancing all mass fluxes in the coking plant. In conjunction with the lower-level model servers, the operations control system was to support technical operations management of the plant. The data gathered was also to be available for technical and commercial documentation and was to meet with official requirements and obligations to furnish environmentally relevant data.

The Solution

The operations control system (BLS) supplied by PSI gathers and compiles

almost completely auto-matically in 24-hour mode the data generated in the five areas of coking operations. The system contains the live data/technical image of the coking plant and carries out the following functions:

Collection of all Process Values

The system gathers and manages:

- Approx. 6,000 analog values, such as temperature, flow, pressure...
- Approx. 20,000 binary values, such as switch positions, valve positions...
- Approx. 500,000 messages per day from the lower-level systems.

The data to be managed in the operations control system can be configured and selected online. The data is continuously archived for later

operational analyses and can be made available at any time.

Central analysis and evaluation

The data gathered can be used to create freely configurable ratios, reports and diagrams. The Technical Data Warehouse featured in the system enables the visualization and evaluation of the process data, fault messages and alarms in the system. The operations control system (BSL) contains the complete, up-to-date historical overall image of the plant and hence a view of all the plant sections of the coking plant.

Material tracking and balancing

All materials used (coal, coke and ancillary products) that pass through from the time raw materials arrive to the time of shipping (ship, rail, lorry) are recorded together with their quantities,

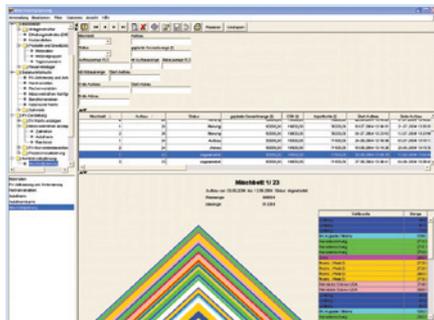


Figure 1: Blending bed planning

time and quality information. Balance-sheets are formed over the various transport routes and this information is passed on to the higher order systems for billing.

Integration of models

In order to optimize and improve production, the following process models were integrated into the system in

cooperation with our partner UHDE GmbH:

- BatControl™ for automatic firing control,
- GasControl™ for ancillary recovery,
- AutoTherm™ for automatic measuring and control of the chamber wall temperature,
- PushSched™ for automatic generation of the pressure and filling schedule.

Central reporting

The system supplies all the required reports for the coking plant. These are generated automatically or on request.

The Highlights

- Gathering and archiving of a continuous measured-value and data stream in uninterrupted 24-hour mode.
- All the relevant operating data (measuring, quality, plant, staff data, etc.) in one relational database.
- No costly PIMS or SCADA software required thanks to the use of standard database functionality even in real-time mode.
- Dialog-controlled, compressive configuration possible for individual user requirements.
- Access to current and archived data possible at the same time.
- Little training required thanks to a standardized interface („Look & Feel“) for all operating areas.
- Highly integrated solution with secure management of user privileges.

PSI Metals – a market-oriented standard

PSI Metals is a customized market oriented standard, developed for planning and controlling of the whole logistic chain. Our focus lies in the comprehensive vertical and horizontal integration of the production process.

PSI Metals is the result of over 30 years project experience in the steel industry and modern software development.

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