

thyssenkrupp – Furnace Guidance Program RAW1-3

LOCATION: Dortmund, Germany

SYSTEM/TECHNOLOGY: WinCC with Step5/7 + TIA, VBA, MSSQL, SAP, Intouch, etc

SERVICES: Commissioning, Project management, Quality assurance, Documentation, As-built status and data recording, Basic-engineering and pre-engineering, Detail engineering, Maintenance

INDUSTRY BRANCH/TYPE OF PLANT: Large Plants

CLIENT: thyssenkrupp rothe erde Germany GmbH

Project description

thyssenkrupp rothe erde Germany GmbH, the end customer of INP Germany, operates a ring rolling mill for the production of rings made out of steel, aluminum, copper or stainless steels. The rings are manufactured in the requested sizes and materials in the radial-axial roller bearings (RAWs). In the next production step, the steel rings produced in the rolling mill are subjected to heating and cooling treatment in the tempering plant consisting of annealing furnaces and cooling water tanks to increase durability and quality and to achieve the desired hardness.

Scope of work

INP Deutschland GmbH was commissioned to migrate various inventory visualization systems including the associated production databases to a new plant-wide uniform visualization system, to establish the connection to the plant-wide SAP system for data exchange for the higher-level production management, as well as to achieve an increase in the level of automation and digitalization through the development and integration of a digital furnace book incl. batch and order management, a (partially) automated parts tracking system, and through standardized furnace controls via uniform programmers.

The existing visualization systems (obsolete WinCC stations, Protool panels, Intouch visualizations, etc.) of RAW lines 1–3, 4 and 5 as well as the heat treatment system were migrated to a uniform WinCC system V7.3.

Particularly noteworthy was the requirement for a plant-wide standardized operating, authorization, and visualization concept for the operator, taking into account an ergonomic design for the plant drivers (not a pure migration solution). The existing MSSQL databases had to be migrated and adapted to the latest versions in order to transfer all necessary data for connection of the WinCC tags to the plant production control system (SAP).

Together with the plant, a model for (partially) automated parts tracking within the production line was developed and implemented with VBA via WinCC. Similarly, uniform programmers were integrated to control the

POINTS OF CONTACT



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numerous furnaces.

INP services

- Basic engineering uniform operating, authorization, and monitoring concept
- Takeover of the existing operator screens from various existing systems in WinCC V7.3
- Migration of MSSQL databases including adaptations of the interface structure to the SAP system
- Adaptation of the migrated visualization system for plant-wide standardization
- Integration of an ergonomic design for the visualization
- Engineering of a central digital furnace book and an order and batch management system with integration of hand-held scanners for automated processing via barcodes
- Engineering of a (partially) automated parts tracking system including furnace assignment plans
- Engineering of uniform programmers in WinCC for the inventory control
- Saving of fixed as well as editing of dynamic furnace programs according to the specifications by quality management as well as backup of order-related production data for quality assurance
- System commissioning of WinCC server client, system configuration with connection to the existing S5, S7-300 and 1500 controllers
- Integration of additional furnaces and production lines into the overall system
- Commissioning of the plant via the new visualization system
- Commissioning of the interface software for the connection of SAP to WinCC for the transmission of the job setpoints
- Optimization of the temperature regulation and controls of the individual furnace programs
- Continuous system maintenance incl. updates/upgrades and optimization as well as expansion of system technology