

Steel Plate Heat Treat Facility Develops Product Quality System

MAVERICK developed a level 2 product quality system for the modernized plate heat treat facility of a major steel manufacturer.

Objective

MAVERICK partnered with a major steel supplier to develop a system that proves the quality of each plate produced by documenting the product genealogy. In an industry awash with foreign imports, this supplier is able to differentiate its superior offerings from those of inferior producers through the use of this system. MAVERICK was chosen for our expertise in developing level 2 product quality systems.

Results

MAVERICK developed a level 2 product quality system that enables the customer to establish a full genealogy of information for the plates it produces. This genealogy includes process data input (PDI) from the order, recipe and equipment setup parameters, process data output (PDO) and plate inspection results. The product quality system is fully configurable, allowing new process data input and output to be easily specified.

Solution

The MAVERICK team architected the product quality system's core SQL server database to provide a full genealogy for each plate produced. Information tied back to each plate includes:

- » Process data inputs (PDI), including order, recipe and equipment setup parameters
- » Process operations, including repeated process steps
- » Process data outputs (PDO)
- » Product inspection results

The product quality system database included design flexibility so plate attributes and process operations can easily be added to the system.

MAVERICK developed a recipe management system in the product quality system database that generates derived PDI based on PDI received from the level 3 enterprise resource planning (ERP) system.

The product quality system database includes a plate rules engine to analyze and flag plates that do not meet specified criteria. Plate rules include:

- » Process data input rules
- » Scheduling rules



MAVERICK developed a .NET service to communicate PDI, PDO and process operation start / complete events between the level 2 product quality system and level 3 ERP system.

FactoryTalk® Transaction Manager from Rockwell Automation was selected to form a communications bridge between the level 1 heat treat control system and the level 2 product quality system.

The team configured FactoryTalk Transaction Manager to:

- » Download PDI
- » Log PDO collected per operation step
- » Log product inspection results

The level 2 user interface created in ASP.NET allows users to:

- » Review and correct plate PDI rule violations
- » Schedule the charging of plates into the heat treat facility
- » Initiate the download of plate PDI to the heat treat control system
- » Monitor plate progress
- » Initiate plate removal from the heat treat facility
- » View plate events, PDO and inspection results

The MAVERICK Difference

MAVERICK provided the system architecture, design and development expertise to create a product quality system that produces a full genealogy of plate data for a modernized steel plate heat treat process.



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