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.

Main 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 system 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.

Customer Results

MAVERICK developed a level 2 product quality system that enables the client to establish a full genealogy of information for the plates that it produces. This genealogy includes process data input (PDI) from the customer 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.

Application Description

- 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 customer 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 that 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 process data input based on process data input received from the level 3 enterprise resource planning (ERP) system.

- The product quality system database included 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 process data input, process data output and process operation start / complete events between the level 2 product quality system and level 3 ERP system.

- Rockwell’s FactoryTalk Transaction Manager 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 process data input
  - Log process data output collected per operation step
  - Log product inspection results

- The level 2 user interface created in ASP.NET allows users to:
  - Review and correct plate process data input rule violations
  - Schedule the charging of plates into the heat treat facility
  - Initiate the download of plate process data input to the heat treat control system
  - Monitor plate progress
  - Initiate plate removal from the heat treat facility
  - View plate events, process data output 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.