Steel Coil Processing: Scheduling and Performance

METALS & MINING

Data Sources

- Process Data Historian (OSIsoft PI, AspenTech IP21, Honeywell PHD, etc.)
- SQL data source with relational data (e.g., product properties)

Data Cleansing

- Condition cleansing/filtering to allow aggregations by operator (shifts)

Calculations & Conditions

- Seeq Formula was used to aggregate the data and filter the operation's steps as needed for the calculations.
- Signal from Condition and Scorecard metric were used to calculate metrics such as average coils/hour and loading step times.
- Taking advantage of the property values stored in the relational data, the Histogram tool was used to visualize processing performance by operator, product properties, etc.

Challenge

There are many insights to be identified from the steel coil processing operation, but they are challenging to obtain due to the need to combine processing data with relational data (such as product properties). The data needs to be cleansed, aggregated, and categorized in various ways to improve production goal setting, scheduling accuracy, and troubleshooting of delayed time causes. Typical data analysis tools do not provide the time series/relational data integration and contextualization features needed for this challenge.

Solution

Using Seeq's capsule/condition functionality for contextualizing data, the steel coil processing steps (loading, threading, etc.) were trended at a large-scale flat-rolled steel processing company. Product properties were easily integrated as condition properties. Seeq's condition cleansing features were used to separate coil processing performance by operator (shifts).

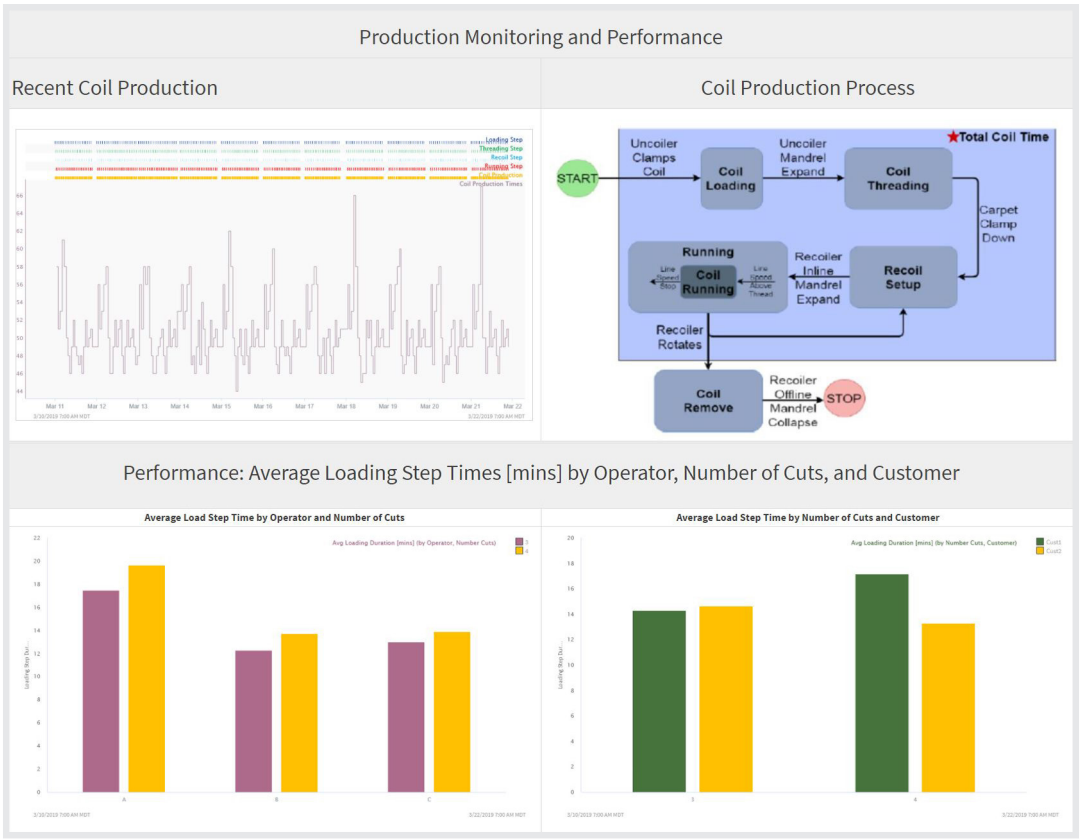
Results

The insights gained from the steel coil processing analytics generated the following results for the operations team and management, as the dashboard reports were regularly reviewed:

- Increased scheduling accuracy: Daily production goals were set more consistently and realistically. Scheduling is now based on actual data and can be differentiated by several variables.
- Significant processing delays based on operator and product properties were addressed more rapidly.
- Gaps in operator performance were readily visible. These results drive training, sharing of best practices, and additional staffing efforts.
- As these major optimization items are addressed and operator performance becomes more consistent, the analytics can be used to identify deeper opportunities in processing steps, sequencing of customer orders, etc.

Reporting & Collaboration

The results are shared in a dashboard report for daily/weekly review and include recent production monitoring (e.g., last week) as well as daily/weekly performance metrics. The team uses the dashboard to respond quickly to production issues and, on a slightly longer-term basis, to optimize production/scheduling and identify training opportunities.



Coil processing dashboard showing recent production and metrics by operator, product properties, and customer.