NALCO Water
An Ecolab Company

Steel Producer in North America uses Ecolab® Rolling Mills IQ™

CASE STUDY

BACKGROUND

One of America's largest domestic steel producers has been operating since the 1990s. Their flat roll steel products are used in numerous industry sectors, including the construction, automotive, manufacturing, transportation, agriculture, and pipe and tube (including oil country tubular goods) markets. With a combined flat roll steel shipping capacity of approximately 11.4 million tons per year, including numerous value-added coating lines, this group offers one of the broadest lines of flat rolled products available in the industry. The customer was experiencing water quality issues in the hotmill operation that were causing premature failure of descale pumps. They worked with the Nalco Water team to address these issues.

SOLUTION

The Nalco Water team initially performed a site survey to understand the imminent issues at the mini mill, specifically the hotmill operation. In parallel, the Nalco Water team analyzed the situation and customer needs with the site team. This included the hotmill manager, operations manager, process engineer, and chemistry management team.

The team identified four major issues:

1. A lack of data of the water quality around the contact water loop.
2. A reactive approach to maintenance and chemistry control due to this limited or no visibility of water quality.
3. Increased amount of downtime due to increased levels of turbidity and oil in the system.
4. Siloed information and limited flow of data across teams.

The solution included:

Turbidity and oil sensors for data collection and visibility.

- Nalco Water's proprietary 3D TRASAR™ technology to monitor critical cooling water key performance indicators (KPIs) and control chemistry.
- Nalco Water's proprietary algorithms for analysis of data from key assets.
- Real-time visualization of system and asset performance (red-yellow-green color coding) on Nalco Water's ECOLAB3D™ cloud platform.
- Customized alarming and personalized automated recommendations depending on alarm scenario.

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ANNUAL SAVINGS

ASSET PROTECTION

$1,200,000

Reduced descale pump maintenance and repair

RAW MATERIAL OPTIMIZATION

$40,000

40% chemical reduction

TOTAL VALUE DELIVERED

$1,240,000

eROI℠ by Ecolab

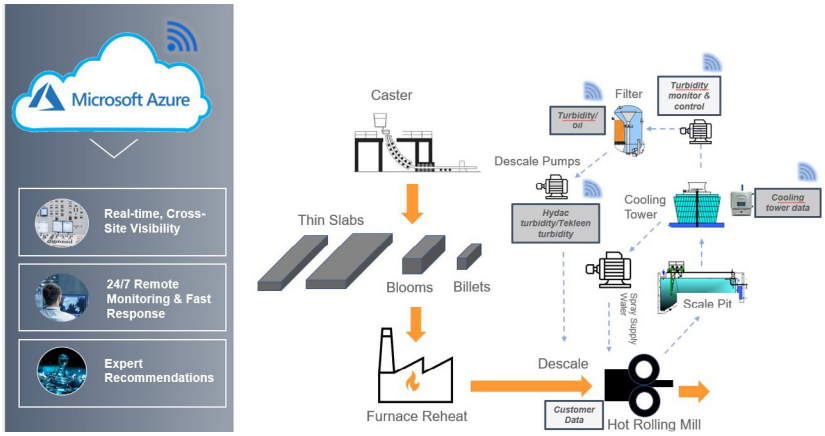


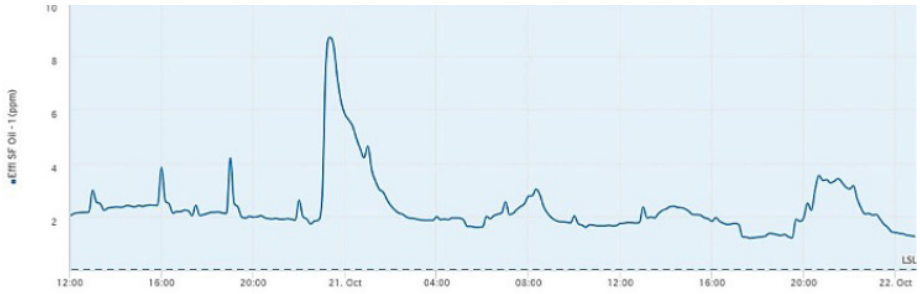
FIGURE 1: Visual summary of the solution and the process diagram.

RESULTS

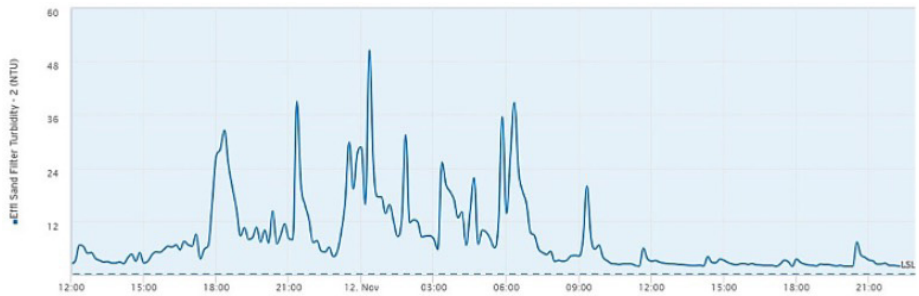
As a result of the Nalco Water solution, the program improved visibility into turbidity, oil and other critical water KPIs across the system by increasing engagement with the process engineer for more visibility into the day-to-day operations and upsets as well as providing more proactive chemistry control. Automated control of the scale pit chemistry via Rolling Mills IQ technology resulted in a 40% reduction of chemistry usage, a $40K/year savings.

The customer and Nalco Water teams monitored hotmill performance over the program implementation period and documented descale assets replacement costs. Over the course of the program, the customer has seen $100K/month in reduced descale pump maintenance and repair costs.

The following graphs show how the Rolling Mills IQ technology detected an oil leak and a sand filter issue.



GRAPH 1: An oil leak was detected in real time with the Ecolab Rolling Mills IQ™ technology. This can be seen by the large 8+ ppm signal on the 21st of October



GRAPH 2: A sand filter issue was detected utilizing real-time turbidity information. A periodic spike in sand filter effluent turbidity was correlated with sand filter backwash cycles

CONCLUSION

Rolling Mills IQ was successfully implemented at this site. The customer was very pleased with the offering and have specifically called out these benefits which have assisted them with their day-to-day operations:

- 24/7 data and alarms
- Data showing scale pit efficiencies
- Data showing filter(s) efficiencies
- Operators have the turbidity data to help pinpoint issues much more accurately and quickly
- Able to determine oil leaks quickly
- Automated chemistry control

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