

PENNSYLVANIA PULP & PAPER MILL

Case Study



RAPID DETECTION ENSURES EFFLUENT COMPLIANCE

LOCATION:
Pennsylvania, USA

SOURCE TYPE:
Industrial
Wastewater

PARAMETERS:
BOD, Colour,
Black Liquor and
8 Distinct Dyes

APPLICATIONS:
Event Monitoring,
Wastewater Treatment
Optimization

SYSTEM:
Real Spectrum PL Sensor,
Real Controller Pro,
Dilution Ssystem

Pulp and Paper Mill in Pennsylvania, USA, was seeking a solution that could capture contamination events or chemical spills in real time.

The company has a commitment to environmental excellence and wanted to ensure compliance with regulations and prevent pollution to the receiving waterway. Specifically, dye and black liquor spills from the production process were a primary concern as the plant had limited capacity to capture these events manually.

Real Tech proposed a customized solution that would allow the plant to monitor various parameters of concern in real time on the mill effluent. The monitoring system was installed between coarse screening and primary clarification (Fig 1). The solution included calibrations for 8 distinct dyes, black liquor, colour, and BOD (Fig 2).

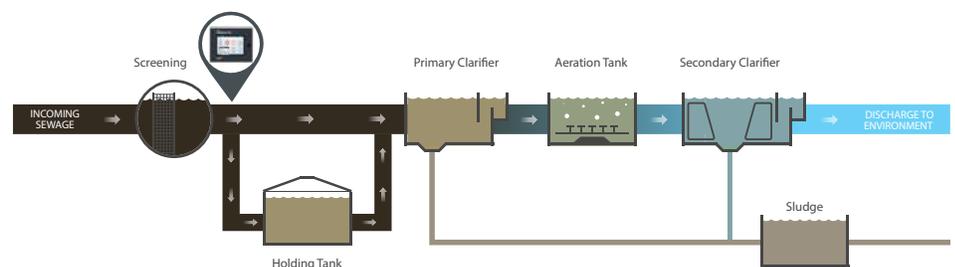


Fig. 1: Process diagram of the plant's treatment train showing where Real Tech's monitoring system was sampling from.

Real Tech's most robust primary wastewater-grade system was selected for the site to cope with the harsh pre-treatment wastewater conditions and Real Tech's high-resolution Real Spectrum PL-Series sensor was used to obtain the data needed for accurate and reliable parameter and contaminant calibrations.

The system continues to learn the mill's effluent, adding more strength to the calibrations and confidence for the plant over time. As the mill experiences new events, event time and characteristics information is relayed to Real Tech. This information is then matched with the sensor's real-time data and used for improving the event detection algorithms employed.

Once installed and commissioned the system delivered continuous information to the mill on dye concentrations, alarming when set concentrations are exceeded, as well as BOD, colour and special spill events such as black liquor, soap, tall oil, turpentine, foul condensate, white liquor and weak wash (Fig 3). By implementing real-time monitoring, the plant was able to see results in two key areas:

Process Optimization

When problems do arise, such as spills in the production process, a real-time alarm is triggered giving the operators the ability to take immediate corrective and preventative actions. Early detection also helps to protect the downstream wastewater treatment plant operations: when certain dye concentrations reach levels toxic to biological treatment, the wastewater is diverted to a holding tank. Non-compliance events are thus avoided.

Compliance Assurance

With information available to the operators every minute of every day, the plant has a greater assurance that effluent discharge regulations for colour are being met and permit violations are prevented.

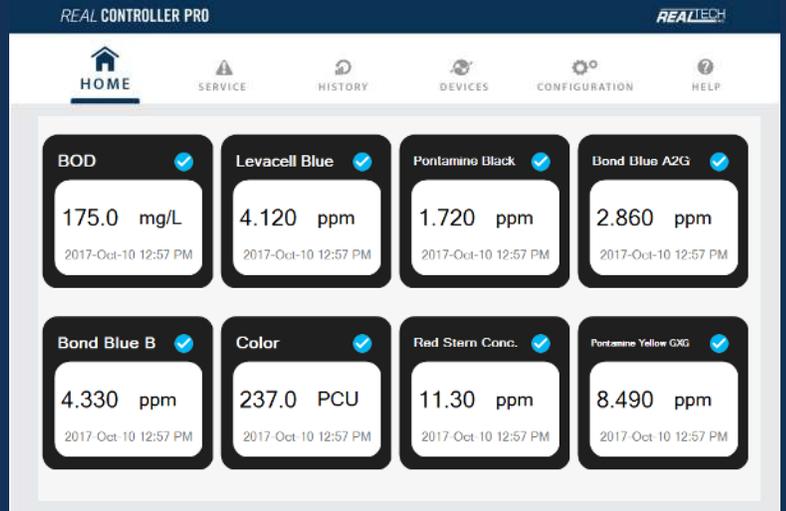


FIG. 2: Screenshot showing various parameters Real Tech UV-Vis sensor system is monitoring in the mill effluent.

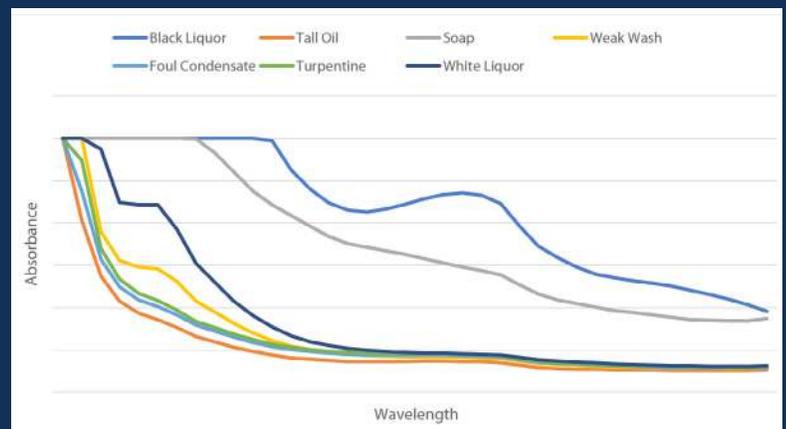


Fig. 3: Spectral fingerprinting allows detection of specific contaminants even in high-strength wastewater environments.