REAL TECH INC.

WATER QUALITY MONITORING SOLUTIONS

ONTARIO RECYCLED PAPER MILL

Case Study

LOCATION:
Ontario, Canada

SOURCE TYPE:
Industrial Wastewater

PARAMETER:
COD

APPLICATIONS:
Event Monitoring, Nutrient Dose Optimization

SYSTEM:
Real Spectrum PL Sensor, Real Controller Pro, Air Purge Clean System

REAL-TIME COD HELPS SAVE COSTS FROM OPTIMIZED NUTRIENT DOSING

A paper recycling facility in Ontario, Canada, needed an effective solution for monitoring carbon content in the wastewater in real time for nutrient dosing optimization and process control purposes. The plant's existing control strategy was to monitor COD by collecting one to two grab samples a day.

The plant manufactures 100% recycled corrugated cardboard, and receives and treats wastewater from a nearby tissue plant along with its own wastewater. The wastewater is treated onsite for reuse in the plant when possible, with the remainder being discharged to the municipal sewer system for further treatment.

Real Tech provided a real-time monitoring solution to address the need for better organic loading management. The mill installed a robust UV-VIS PL sensor from Real Tech at the effluent end of the primary clarifier (Fig 1). Machine learning data analysis techniques are used to provide real-time actionable information on carbon content for the process (Fig 2).

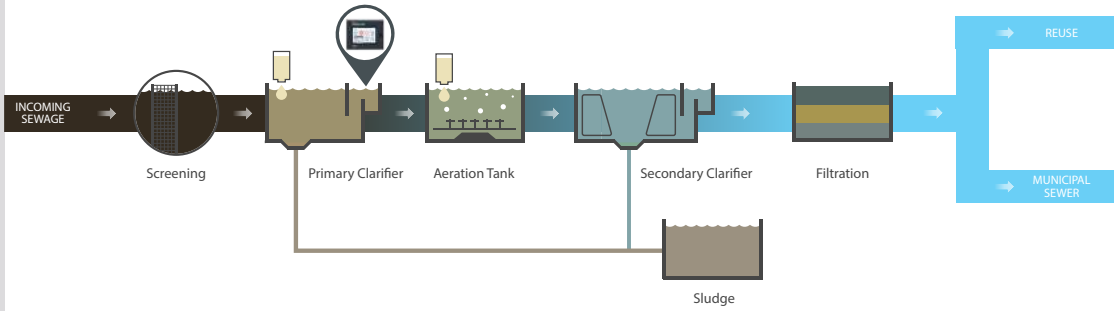

FIG. 1: A process diagram of the plant's wastewater treatment train showing where Real Tech's monitoring system was sampling from.

The facility can now properly optimize nutrient dosing in the bioreactor, improve overall system performance and ultimately reduce fees associated with municipal discharge permits.

Real Tech's monitoring system was also able to provide a very strong correlation to grab sample lab measurements of COD as shown in Fig 2 and Fig 3. This allowed the plant to see fluctuations and changes immediately when they occurred and helped improve their understanding of their wastewater and implement more data driven process control in real time.

By implementing real-time information for carbon and organic loading, the plant was able to see results in two key areas:

Nutrient Dosing Optimization

With reliable continuous monitoring of COD, the plant operators can fine tune the ammonia dosing according to the incoming organic load. This results in cost savings for ammonia dosing but also ensures that excess nitrogen is not introduced into the water, which would have to be removed before discharge for compliance.

Process Optimization and Event Monitoring

Furthermore, monitoring COD continuously allows the operators to act quickly when process related issues cause spikes in the organic load going into treatment. As this plant treats wastewater from another plant along with its own, surges in organic loading happen quite frequently and unexpectedly.

Monitoring the organic load coming into the biological treatment process enables the operators to make informed decisions on whether to use coagulants and how much coagulant to add in primary clarification. This helps reduce the organic load the biological system needs to handle, which in turn increases overall plant efficiency and capacity, while saving energy by reducing the demand for aeration in the biological treatment process.

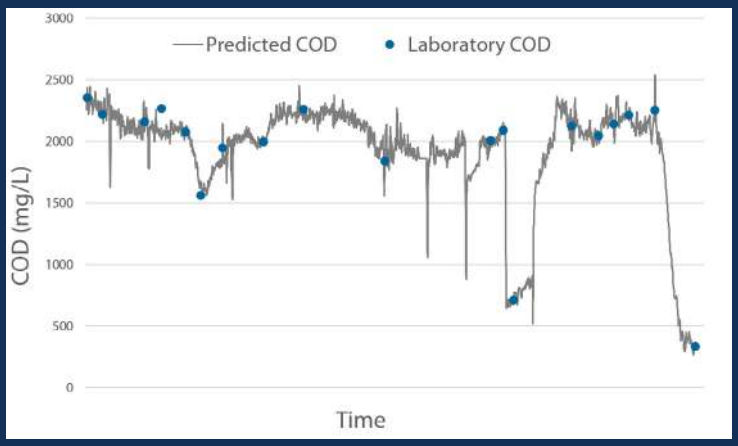

Fig. 2: Displays the real-time predicted COD data from the sensor in grey and laboratory COD grab sample data taken over the same period in blue.

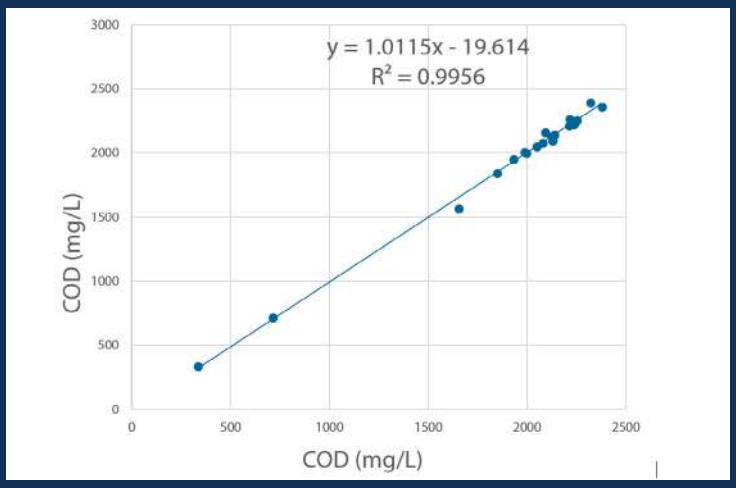

FIG. 3: Displays a comparison of 19 laboratory sample results for COD and the corresponding predicted COD results from the sensor. The R2 value of 0.9956 suggests a high accuracy in the predicted real-time data.

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