

CPI facility uses InSight* for online predictive performance turbine modeling

challenge

A large heavy industrial CPI plant in Quebec, Canada, installed a steam condensing turbine to generate power for site use. Two waste heat steam generators are utilized to drive the turbine and produce 6 megawatts (MW) of power for the plant.

A water-cooled steam condenser is installed on the turbine exit to drive maximum energy output and improve efficiency. The cooling water for the condenser is supplied from the site cooling tower and is treated using GenGard*, an advanced and highly effective water treatment technology for open recirculating cooling systems.

Power production on-site provides a significant financial benefit to the facility; thus, reliability and efficient operation of the turbine is critical. However, the original project scope did not include the means to accurately monitor the condensing efficiency of the turbine that incorporates all of the operational data.

solution

SUEZ Water Technologies & Solutions set out to provide a digital solution that would monitor and trend condenser efficiency to help ensure optimal turbine operations. The team completed a detailed system survey and collected all system data and tags required for the efficiency calculations for trending purposes. The online data tags were configured to continuously upload this information to InSight, SUEZ's cloud-based asset performance management (APM) system. InSight was configured to trend the efficiency of the condenser using these data points and best-in-class condensing efficiency modelling formulae.

results

The online data and trending of the condenser efficiency using InSight was found to be very accurate and reliable. The data confirmed that the GenGard-treated cooling tower was providing optimal efficiency for the condenser and no fouling was occurring. This efficiency trending was found to be a key tool for the plant to ensure the turbine system is operating at optimal efficiency.



Turbine % Actual Vacuum to Ideal Vacuum – InSight Trend

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