



SITE-WIDE INSTRUMENT CALIBRATION AT ROOKERY SOUTH ENERGY-FROM-WASTE (EFW) POWER STATION

BACKGROUND

Rookery South Energy Recovery Facility (ERF) is a cutting-edge plant designed to process up to 657,000 tonnes of residual waste annually, significantly reducing landfill reliance while generating baseload electricity sufficient to power 112,500 homes. In addition, the facility recovers valuable resources and by-products for reuse. The facility's efficiency, safety and regulatory compliance are critically dependent on the precise measurement of key operational parameters, including temperature, pressure, flow and level, ensuring optimal performance and environmental responsibility.

CHALLENGE

The Rookery South Energy Recovery Facility faces several challenges in maintaining optimal performance and compliance. Operating 24/7, the plant requires meticulous planning to calibrate instruments without interrupting energy production. Ensuring continuous operation while managing instrument maintenance adds complexity to the process. Additionally, the plant must adhere to strict regulatory standards for emissions and environmental impact, with any inaccuracies in measurement posing the risk of fines or operational shutdowns.

The variety of instruments from different manufacturers, each with distinct calibration needs, further complicates the project. Safety is also a critical concern, as accurate calibration of safety-critical instruments is essential to preventing equipment failures and minimising environmental risks.

The primary objective of the project was to conduct a comprehensive, site-wide calibration of all critical instruments at the Rookery South Energy from Waste (EfW) facility. This aimed to optimise operational efficiency by ensuring accurate measurements, reduce downtime through preventative calibration and maintain energy generation targets while upholding environmental standards. Key instruments calibrated included temperature sensors for furnace and steam monitoring, pressure sensors in steam and water systems, flow meters in water and air lines, emission analysers for CO₂, NO_x and particulate matter and level sensors for boiler drums and tanks. Additionally, specialised equipment was calibrated for water testing and analysis of iron and silica levels.

SOLUTION

The solution involved on-site calibration by field engineers for critical and immovable instruments, including those in the boiler, combustion chamber, and hydraulic pump units. Portable calibration equipment was utilised for flow meters and pressure sensors. After calibration, functional tests were conducted to ensure accurate data and system reliability. Comprehensive calibration reports were produced for internal review and regulatory audits, ensuring full traceability and validation of all instrument adjustments.





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RESULT

The calibration of over 250 instruments significantly enhanced measurement accuracy throughout the Rookery South facility, improving temperature and pressure monitoring in the combustion chamber and ensuring precise emission readings at the stack. This accuracy boosted operational efficiency, allowing process control systems to optimise fuel usage, reduce waste and increase energy output.

This highlights the critical importance of regular calibration in energy-intensive industries like EfW for maintaining safe, efficient and compliant operations. A phased calibration approach minimised disruptions, keeping the plant operational throughout the project. Prioritising emission-related instruments ensured environmental compliance, helped avoid penalties and supported the facility's sustainability goals.



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