

# Progressive Power Generation Facility

## Selects Leading-Edge Silica Analyzer



**A natural gas-fired power station in the Northeastern USA agreed to beta test METTLER TOLEDO Thornton's next generation silica analyzer. The 2850Si's low reagent consumption, simple maintenance and other features greatly impressed the plant's Operations Manager, and he replaced the previous generation analyzer with the new unit.**

### **Advanced power plant**

In contrast to the original Salem Courthouse, famous for the Salem Witch Trials of the 1690s, the Salem Harbor Station is a state-of-the-art facility that went into commercial operation in 2018.

Salem Harbor Station is a 674-megawatt (MW) natural gas-fired Combined-Cycle Turbine Generating Station. It is specifically designed to produce and provide efficient, reliable, low-emission electrical power to New England. The plant is equipped to operate with unprecedented flexibility.

The site's two units (designated #5 and #6) operate independently, each with its own water sample panel for analytics. The new Combined Cycle plant is arranged in two 1X1 units, each consisting of a GE 7FA.05 natural gas Turbine Generator, a Heat Recovery Steam Generator (HRSG) with selective catalytic reduction (SCR) and carbon monoxide (CO) catalyst, and a reheat Steam Turbine Generator unit. The water sample panels include several METTLER TOLEDO Thornton sensors including those for pH, dissolved oxygen (DO), conductivity, silica and sodium.

### Compact silica analyzer

Being local to METTLER TOLEDO's R&D and design teams in Billerica, MA the Salem Harbor Station was an ideal location to do beta testing for the next generation silica analyzer being developed by METTLER TOLEDO. We approached Salem Harbor's Operations Manager, Joe Ferranti, who allowed us access to the site to install and perform beta testing on the new analyzer. Joe is a seasoned veteran of the power industry in the Northeast US and has been at Salem Harbor Station since early construction of the new plant.

Being compact and having a small footprint, the analyzer was mounted on top of a small instrument cart that could easily be moved between the two water sample panels depending on which of the plant's units was online at the time. The beta testing helped us finalize the design and functionality of the analyzer's reaction chamber, reagent delivery system and sample heater. All are crucial components to reduce reagent consumption while improving



the analyzer's performance when measuring low silica levels and with increased sampling frequency.

### Performance

While observing the beta testing, Joe Ferranti was impressed by the analyzer's small reagent consumption, ease of use and simple maintenance. So much so that when the new analyzer was launched, he replaced the older version silica analyzers with this next generation analyzer.

The analyzers were configured for silica-only measurements, and contained integrated 4-channel sequencers, all inside fully locking enclosures. Each analyzer is set up to automatically sample and measure silica. At any time, the operator can interrupt the automatic mode and measure a grab sample. In addition to automatic sampling, the analyzer can perform an automatic calibration on a pre-determined schedule or on-demand.



SiO <sub>2</sub> Reagent Info	
User ID	
Reagent 1	85d
Reagent 2	85d
Reagent 3	85d
Last Change	27/Dec/2021
<div> <div>&lt;</div> <div>1/2</div> <div>&gt;</div> <div>↩</div> </div>	

### Features and benefits

The 2850Si offers predictive diagnostics to continuously monitor reagent consumption, and tracks the number of days between maintenance intervals; however, there was one feature that was particularly helpful for this cycling plant. The analyzer automatically senses when there is a loss in water flow. If this happens the sequencer advances to the next stream automatically. This helps the plant when a generation unit is offline and the analyzer

is only seeing demineralized water. As the unit comes back online, the analyzer senses the flow and the sequencer automatically starts measuring the other streams.

### Service training

Salem Harbor runs a lean operation (12 operators covering all shifts) so they need analytics that are robust and easy to learn and maintain. They have purchased a service contract from METTLER TOLEDO for maintenance on all their METTLER

TOLEDO sensors and analyzers, but plan to have us provide service training so they have the option to do this on their own.

Starting with the beta analyzer and now with the new generation analyzers that they own, the Salem Harbor Station has been successfully running the 2850Si Silica Analyzer for over two years.

► [www.mt.com/2850Si](http://www.mt.com/2850Si)

### 2850Si Analyzer

- Automatic, continuous silica measurement
- Optional stream sequencer
- Automatic calibration
- 10-minute measurement cycle
- Sample temperature control
- Low reagent consumption



[www.mt.com/pro](http://www.mt.com/pro)

For more information

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