

SEA Energia – CCPP

Water-Steam Sampling System Refurbishment

Project Information



SWAN monitors in protective cabinets

SEA Energia – CCPP

Plant Background

SEA Energia Spa operates 2 combined cycle units at Malpensa International Airport near Milan, Italy, delivering heating and cooling for approximately 5,000,000 m³ of airport buildings as well as electric power to local consumers and to the main grid.

Original Sampling and Analysis Equipment

The original sampling and monitoring equipment for the two CCPPs from 1998/2000 was built as set of distributed racks for indoor installation. The equipment had no remote diagnostic capability, thus the measurement were often not made in representative samples due to lack of flow.

In addition the systems were actually installed outdoors: dust from the airfield and negative temperatures during winter took their toll on the equipment and the plant ended up running with hardly any online water chemistry measurement.

New Sampling and Analysis System

SWAN Systeme AG supplied a new water steam sampling system for each of the two blocks. The new systems were installed in protective cabinets on the same rack structures and have been in operation since 2015. Rather than simply rebuilding the old panel, the following modifications were implemented:

- Improved protection of equipment with stainless steel cabinets fitted with windows, lighting and space heaters.
- Modular instrument panels (SWAN monitor type) ensure consistent performance of the measurement chain, validation of the measurements with integrated remote diagnostics (e.g. sample temperature, flow and reagent monitoring) as well as great ease of maintenance.
- Simplified and more robust sample flow and pressure regulation according to VGB-S006-2012 instead of pneumatic actuated forward pressure regulators.

The new system allows SEA to monitor the cycle chemistry on a continuous basis, to diagnose and to correct upset chemistry conditions. For the operator, the sampling and analysis system is now a valuable tool as it contributes to a higher availability and longer lifetime of the main components of the water-steam cycle.

References:

<http://www.sea-energia.eu/en/plants/malpensa-plant>

BEFORE refurbishment



Rack with unprotected wet sensors

AFTER refurbishment



SWAN monitors in protective cabinets



Unprotected sample conditioning



Modular sample conditioning in cabinet



Unprotected arrangement of sensors



Three conductivities & pH as module in cabinet

SWAN Systeme AG

Provides engineering services related to water chemistry for operators. The scope covers water chemistry consulting, concepts and execution of refurbishment of water steam sampling and analysis stations.

➔ Consulting

- Water chemistry diagnostics
- Optimization concepts

➔ SWAS Engineering & Manufacturing

- Steam Water Analysis System SWAS redesign
- SWAS refurbishments

➔ Service

- SWAS maintenance
- Remote monitoring



Headquarters of the SWAN-Group in Hinwil



Designed, manufactured and tested in Switzerland 

swan
SYSTEMS ENGINEERING