

# Fortum Power and Heat Oy Kokkola, Finland

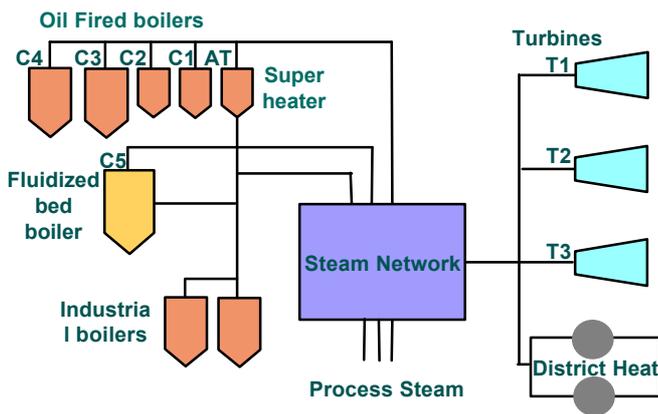
Power plant automation includes:

- fluidized bed boiler
- oil fired boiler
- turbine with primary controls and turbine protection
- district heat and turbine steam network feed

## Background

Metso Automation has been awarded an order for the replacement of existing process control systems to Fortum's power plant in Kokkola on the west coast of Finland. Located in a large-scale industrial park, the plant supplies process steam to adjoining industries, electricity and district heat.

The power plant's main boiler is a peat fired, circulating fluidized bed boiler started in 1995. Four oil fired boilers, a superheating boiler and two off-site industrial boilers are also connected to the steam network. Two condensing turbines and a back-pressure turbine generate electricity.



Power generation:

- Process Steam 106 MW
- District heat 82 MW
- Electricity 184 MW



## Metso Automation delivery

The delivery will consist of a metsoDNA process automation system for the fluidized bed boiler (C5), oil fired boiler (C4), and back-pressure turbine (T3) controls. The turbine T3 is scheduled to restart with the new controls in August 2007 after summer shut-down, boiler C4 during winter 2007 / 2008 and boiler C5 after a summer shut-down 2008.

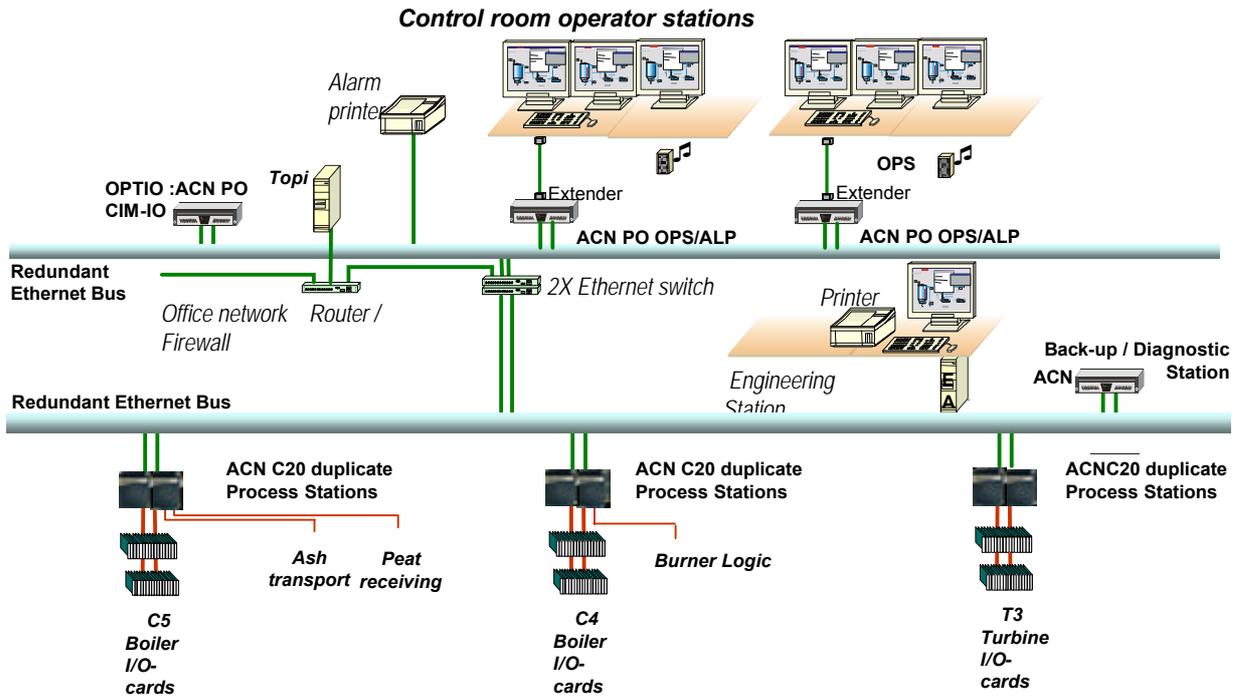
metsoDNA will replace several generations of earlier third party systems, and uses the existing field wiring and boiler termination cabinets to facilitate rapid and economical installation. It will provide operators with up-to-date automation functions and an easy to use common interface.

## metsoDNA controls

The metsoDNA system covers the boiler and boiler protection, as well as turbine automation including primary controls and turbine protection. Start-up sequences and shutdown functions are fully automated.

Turbine primary controls and protection are usually challenging for automation. To achieve the best possible solution, this part of the project was carried out in very close cooperation with the turbine hydraulics renewal supplier. metsoDNA utilizes both 2/3 and 2 channel techniques based on field equipment, protection and availability demands.

The new metsoDNA system is connected to Fortum's own information system, known as Topi. The common platform technology simplified the integration of Topi and metsoDNA. Data collection is secured with a metsoDNA CIM IO process data buffer.



### Scope of Delivery

- **Turbine controls**
  - Turbine run-up
  - Load control
  - Back-pressure control
  - Steam extraction controls
  - Limiting controls
  - Parameters for island operation
- **Turbine protection**
  - Diagnostics
  - Testing
- **Boiler controls**
  - Base automation
  - Boiler protection
  - Automatic start-up
- **Steam Network and district heat supply controls**
- **The common platform technology makes it easy to integrate the Topi information system and secure back-up to metsoDNA.**

### Secure and safe

Safety is a key concern in the power plant. All major components in the system are duplicated for secure operation and both operator stations have independent alarm functions. This redundancy ensures that maximum operational readiness, system availability and safety requirements are met at all times.

### Metso Automation's Lifecycle Solutions



*Metso Automation's solutions for power industry customers cover the entire lifecycle of the customer's plant extending from project management to availability services and continuous performance improvement.*