

# ProsimCMS

On-line performance monitoring software  
for thermal power plants

- On-line condition monitoring
- On-line cost calculation and optimisation
- Power plant on-line simulation

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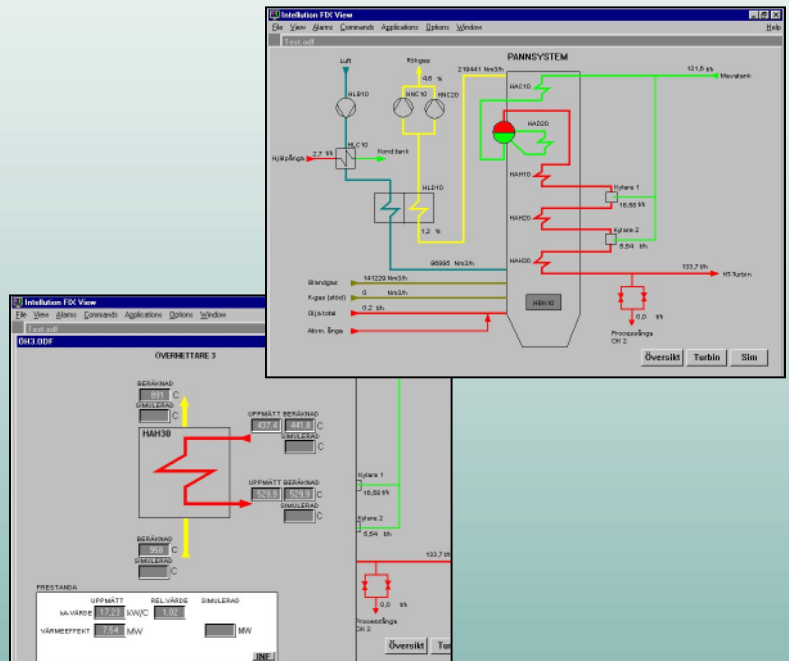
# On-line condition monitoring

Main purpose of ProsimCMS is to achieve higher efficiency and availability of the power plant. ProsimCMS runs condition monitoring and other specified calculations for the main equipment

ProsimCMS calculates thermal performance of the whole power plant and the components equipped with necessary instrumentation. ProsimCMS contains a large validation program for all measurements.

The Performance Monitoring System calculates the actual measured and to standard conditions corrected over all efficiency (heat rate), steam turbine efficiency, boiler efficiency, flue gas and condenser losses.

ProsimCMS is a software for early identification of malfunctioning in processes for power stations. CMS calculates and presents indirect parameters and states, even when there are no measurement instruments.



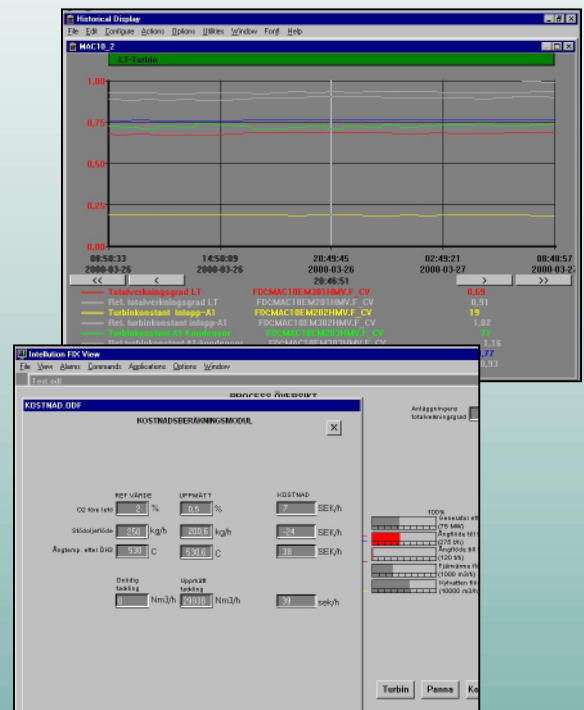
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# On-line cost calculation and optimisation

ProsimCMS calculates continuously the most economic operation mode. Additional costs due to deviations in the operation mode compared to the optimum are hourly reported.

In the operation cost calculations the effect of selected main parameters are studied. In operation cost calculations actual process state is compared to the process state simulated with selected optimal process values. Actual process state is the measured process state. The operation cost calculation calculates for example power lost if the steam temperature is lower than the nominal temperature. The power lost and its value is reported. Parameters included in the operation cost calculation are individually decided for each power plant. Cost calculations show how much money can be saved by using optimal process parameters.



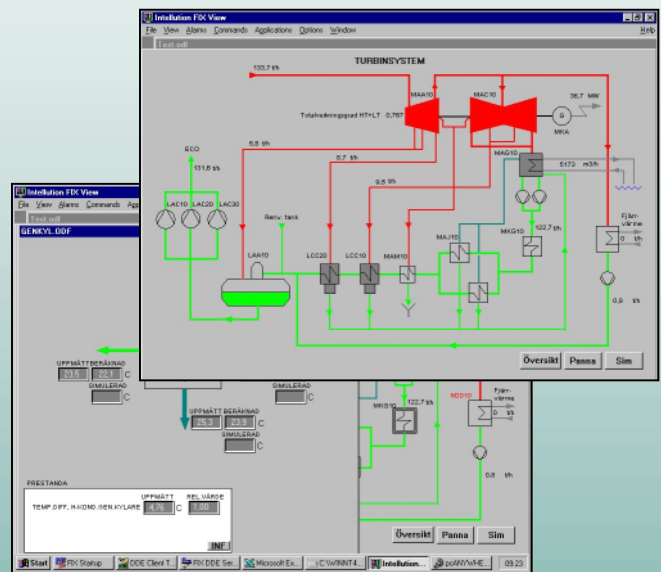
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# Power plant on-line simulation

ProsimCMS includes a simulation model of the actual power plant. The process engineers and the operation personnel can use the simulation model to simulate different operation modes and loads. New loads can be simulated beforehand. Simulation possibility enables “What if” calculations of the process. In “What if” calculations operation personal can see how changes affect to the process.

The simulation model for all calculations is built using the standard Prosim power plant simulation program that has been in commercial use since 1985. Prosim consists of more than 70 calculation modules. Prosim is a modular simulation program where the model for simulation and condition monitoring is constructed using Prosim modules. The boiler consists of economizer, super heaters, sprays, boiler bank etc. and the turbine is modelled using shut off valves, regulation stage, turbine stages, condenser etc.



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