

APROS Success Stories

Simulation-Aided Automation Testing - case Narva

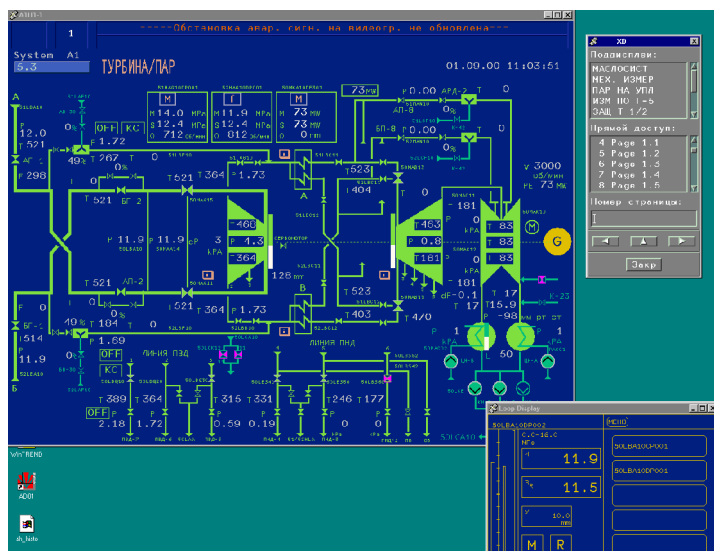
The Estonian power plant at Narva is an oil shale combusting power plant that consists of 8 units each with two boilers and one steam turbine. Each unit has an electric output of 200 MW. The plant is of Soviet make dating to the 1970's.

In 1999 - 2000 Fortum Engineering carried out a modernisation project of one unit, in parallel to which a full-scale dynamic simulation model on the unit was built. The process was modelled using Apros, and the automation was implemented in the virtual metsoDNA environment, all running in Windows NT environment on standard PC's. The systems were connected through their OPC interfaces. At the highest there were about 2000 signals conveyed simultaneously through this link.

The simulation model was used for testing the automation, mainly concentrating on the control loops. The testing procedure was rather similar to the control loop commissioning procedure at site. The loops tested included steam temperature, steam pressure, drum level, flue gas oxygen, electric power, feedwater tank pressure and mill temperature control loops.

Additionally, different variations of the master control were tested by simulation and compared against each other. The master control of the power plant includes the control of the electric power, turbine initial pressure and pressure in the two boilers.

After the operation in steady state and in load changes was checked, it was verified that the control loops worked properly in certain disturbance situations. These included a forced draught fan trip, a fuel mill trip and quick bypassing of the preheaters.



For further information, please contact:

Jarmo Rinta-Valkama
Fortum Power and Heat Oy
P.O.Box 20
00048 Fortum, Finland

Tel. +358 10 453 3681
Fax +358 9 563 2225

Jarmo.Rinta-Valkama@fortum.com

Visit: Rajatorpantie 8, Vantaa

APROS

a member of the Advice product suite

apros.vtt.fi

APROS is a registered trademark of VTT and Fortum

