COMPSYS™ MC DYNAMIC SIMULATION SERVICE

DYNAMIC SIMULATION
OF A LARGE UTILITY STEAM PLANT
Example of steam system

Controllers set point and enabling commands

CONTROLLERS BOARD
OVER 50 CONTROL LOOPS

FEEDBACK BUS

CONTROLLER SIGNAL BUS

EXOGENOUS INPUTS BUS

TURBINES SPEED
TURBINES EXTRACTION FLOW RATE
TEMPERATURE
PRESSURE
LIQUID LEVEL

PHYSICAL SYSTEM (PLANT)

11 STEAM TURBINES
6 WASTE HEAT BOILERS
3 AUXILIARY BOILERS
6 SUPERHEATERS
14 ATTEMPERATORS
22 CONTROL VALVES
OVER 20 SAFETY VALVES
OVER 6.5 km OF PIPING

OTHER BOUNDARY CONDITIONS

PRESSURE
STEAM FLOW RATE
WATER FLOW RATE
THERMAL POWER

EQUIPMENT PERFORMANCE
VALVES POSITION
CONTROLLERS ACTUATION
OVER 200 STEAM STATES
The simulation service

- Tuning of the plant controllers
- Verification of the steady state at normal operating conditions
- Analysis of significant shutdown scenarios

CONFIRMATION OF THE OPERATIONAL BEHAVIOUR OF THE CONTROL SCHEME
Results: turbine operating point during a plant transient

CONSUMPTION DIAGRAM OF AN EXTRACTION STEAM TURBINE

Control logic priority: TURBINE POWER

max power oscillations range during a severe transient of the plant:
LESS THAN 3% OF THE SET POINT
Links

CLICK ON THE
BUTTONS TO VIEW
IN GREATER
DETAILS

COMPSYS™

TGSIM

MAIN
PRESENTATION