APROS Simulation Software

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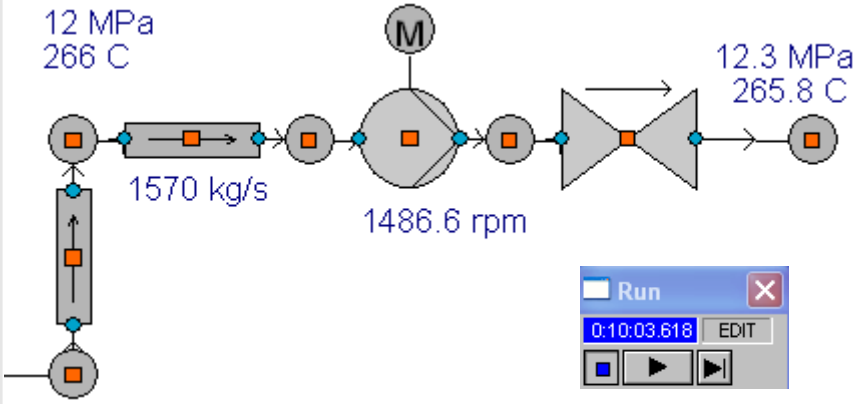
APROS Simulation Software

Multipurpose simulation software for modelling of different processes, thermal hydraulics, neutronics, electrical and automation systems

Nuclear & thermal power plant modeling

- safety analyses
- engineering tool
- training
- automation testing



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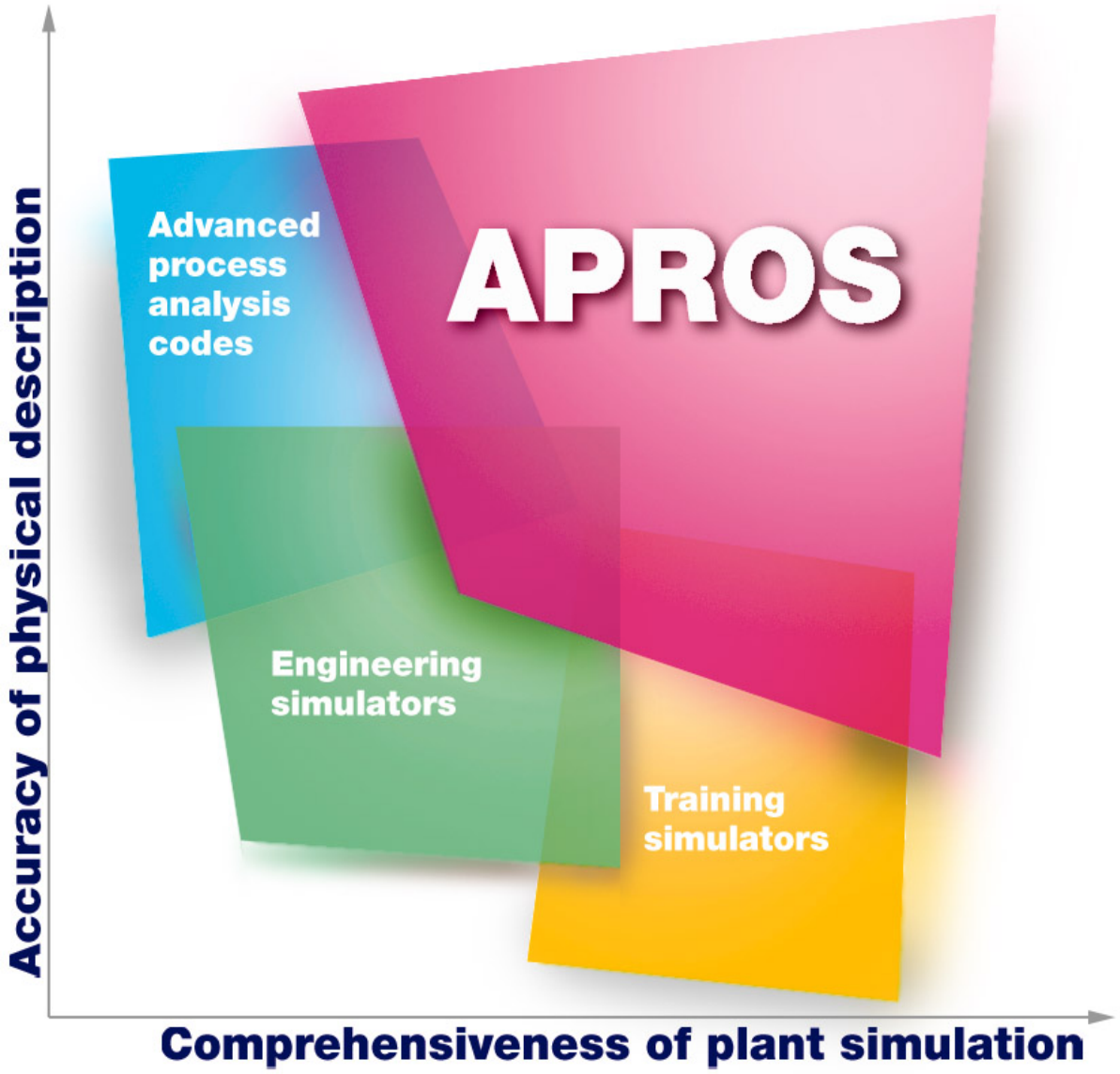
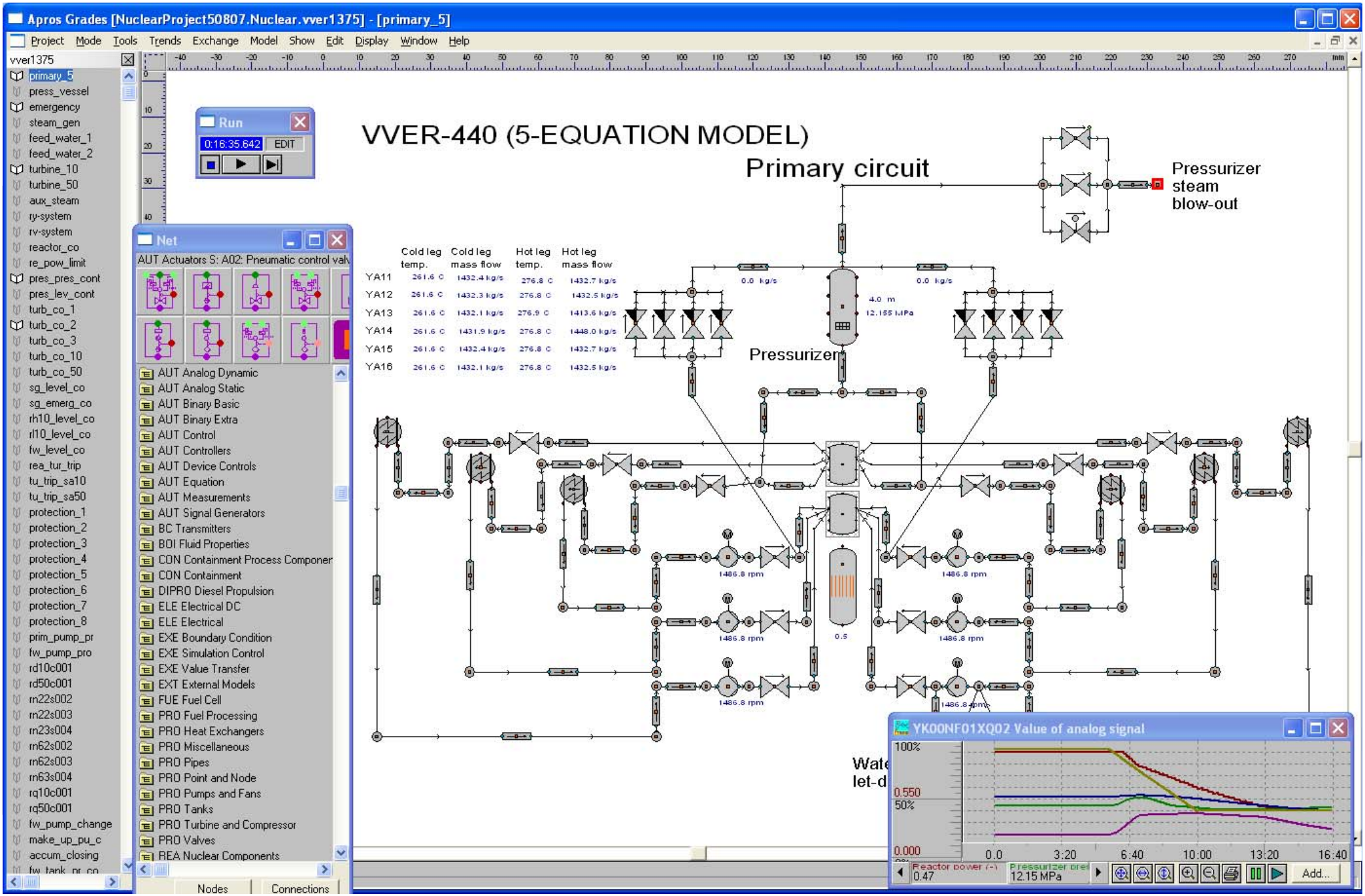
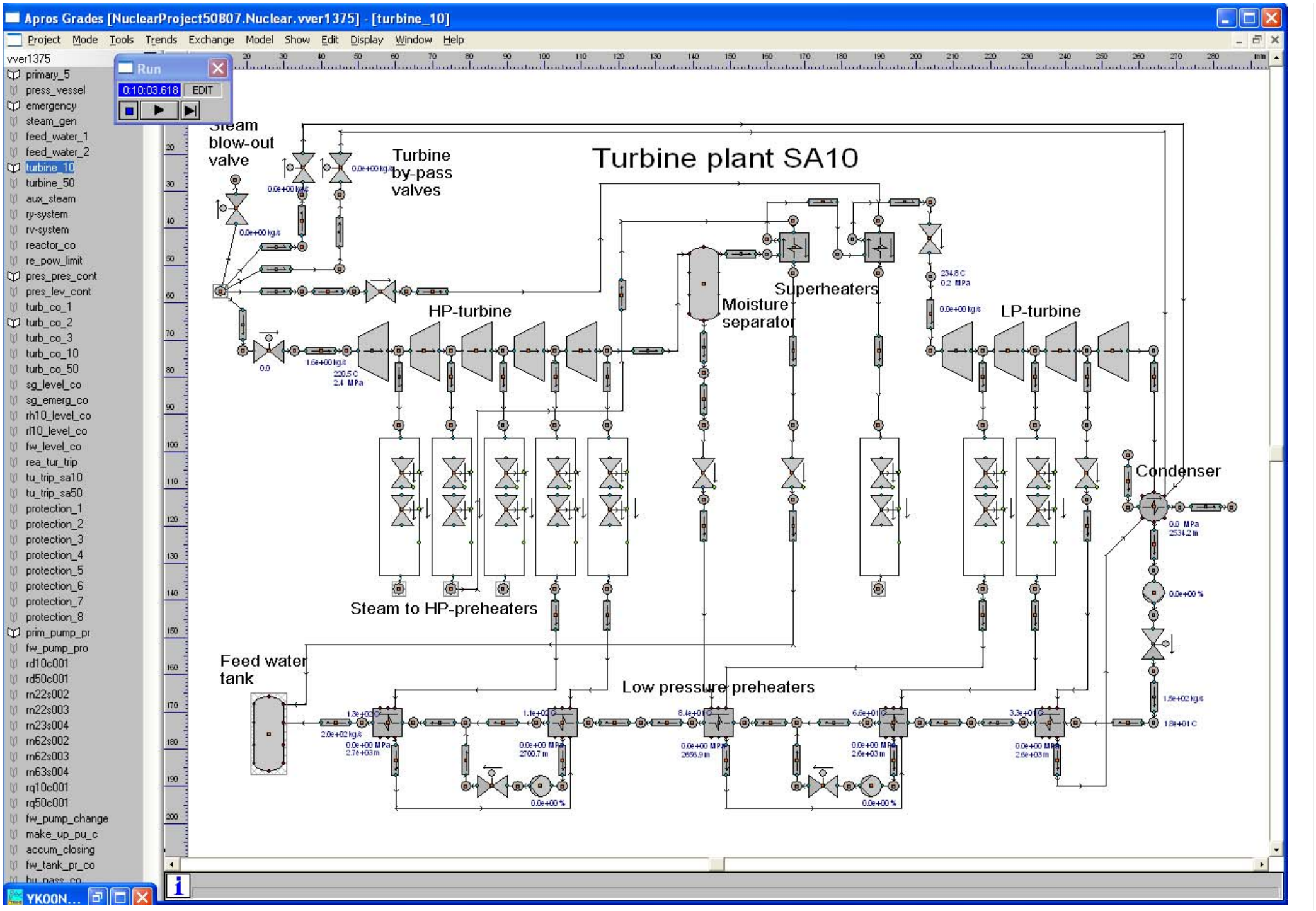
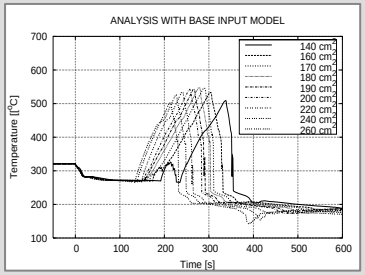

Advanced process analysis codes
APROS
Engineering simulators
Training simulators
Accuracy of physical description
Comprehensiveness of plant simulation


Apros Grades [NuclearProject50807.Nuclear.vver1375] - [primary_5]
Project Mode Tools Trends Exchange Model Show Edit Display Window Help
vver1375
primary_5
press_vessel
emergency
steam_gen
feed_water_1
feed_water_2
turbine_10
turbine_50
aux_steam
ry-system
rv-system
reactor_co
re_pow_limit
pres_pres_cont
pres_lev_cont
turb_co_1
turb_co_2
turb_co_3
turb_co_10
turb_co_50
sg_level_co
sg_emerg_co
rh10_level_co
rl10_level_co
fw_level_co
rea_tur_trip
tu_trip_sa10
tu_trip_sa50
protection_1
protection_2
protection_3
protection_4
protection_5
protection_6
protection_7
protection_8
prim_pump_pr
fw_pump_pro
rd10c001
rd50c001
rn22s002
rn22s003
rn23s004
rn62s002
rn62s003
rn63s004
rq10c001
rq50c001
fw_pump_change
make_up_pu_c
accum_closing
Run
0:16:35.642
EDIT
Net
AUT Actuators S: A02: Pneumatic control valv
AUT Analog Dynamic
AUT Analog Static
AUT Binary Basic
AUT Binary Extra
AUT Control
AUT Controllers
AUT Device Controls
AUT Equation
AUT Measurements
AUT Signal Generators
BC Transmitters
BOI Fluid Properties
CON Containment Process Componer
CON Containment
DIPRO Diesel Propulsion
ELE Electrical DC
ELE Electrical
EXE Boundary Condition
EXE Simulation Control
EXE Value Transfer
EXT External Models
FUE Fuel Cell
PRO Fuel Processing
PRO Heat Exchangers
PRO Miscellaneous
PRO Pipes
PRO Point and Node
PRO Pumps and Fans
PRO Tanks
PRO Turbine and Compressor
PRO Valves
REA Nuclear Components
Nodes
Connections
VVER-440 (5-EQUATION MODEL)
Primary circuit
Pressurizer steam blow-out
Cold leg temp.
Cold leg mass flow
Hot leg temp.
Hot leg mass flow
YA11 261.6 C 1432.4 kg/s 276.8 C 1432.7 kg/s
YA12 261.6 C 1432.3 kg/s 276.8 C 1432.5 kg/s
YA13 261.6 C 1432.1 kg/s 276.9 C 1413.6 kg/s
YA14 261.6 C 1431.9 kg/s 276.8 C 1448.0 kg/s
YA15 261.6 C 1432.4 kg/s 276.8 C 1432.7 kg/s
YA16 261.6 C 1432.1 kg/s 276.8 C 1432.5 kg/s
0.0 kg/s
0.0 kg/s
4.0 m
12.155 MPa
Pressurizer
1486.8 rpm
1486.8 rpm
1486.8 rpm
1486.8 rpm
1486.8 rpm
1486.8 rpm
0.5
YK00NF01XQ02 Value of analog signal
100%
0.550
50%
0.000
0.0
3:20
6:40
10:00
13:20
16:40
Reactor power (-)
0.47
Pressurizer pres
12.15 MPa
Add...


Apros Grades [NuclearProject50807.Nuclear.vver1375] - [turbine_10]
Project Mode Tools Trends Exchange Model Show Edit Display Window Help
vver1375
primary_5
press_vessel
emergency
steam_gen
feed_water_1
feed_water_2
turbine_10
turbine_50
aux_steam
ry-system
rv-system
reactor_co
re_pow_limit
pres_pres_cont
pres_lev_cont
turb_co_1
turb_co_2
turb_co_3
turb_co_10
turb_co_50
sg_level_co
sg_emerg_co
rh10_level_co
rl10_level_co
fw_level_co
rea_tur_trip
tu_trip_sa10
tu_trip_sa50
protection_1
protection_2
protection_3
protection_4
protection_5
protection_6
protection_7
protection_8
prim_pump_pr
fw_pump_pro
rd10c001
rd50c001
rn22s002
rn22s003
rn23s004
rn62s002
rn62s003
rn63s004
rq10c001
rq50c001
fw_pump_change
make_up_pu_c
accum_closing
fw_tank_pr_co
Run
0:10:03.618
EDIT
Turbine plant SA10
Steam blow-out valve
Turbine by-pass valves
HP-turbine
Moisture separator
Superheaters
LP-turbine
Condenser
Steam to HP-preheaters
Feed water tank
Low pressure preheaters

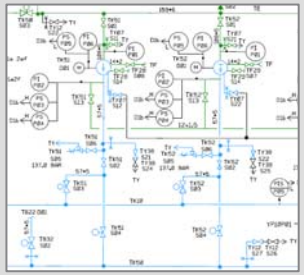
APROS - Support for Loviisa NPP

Safety analysis



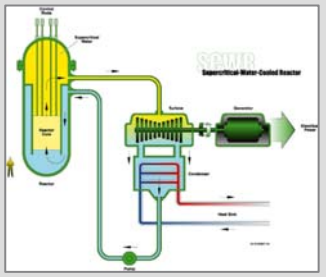
Training

Engineering



New projects

Research



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APROS Case:
Combined Heat and Power from NPP