

Teknillinen Korkeakoulu

AS-0.2230 Automaatio- ja systeemitekniikan laboratoriotyöt

Automaation Tietotekniikka

Työ 14: Voimalaitosprosessi

Operating Manual

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1. Starting the process

1.1. Setting up the work environment

- Turn on the process equipment
- Start ProConOS WinRT
- Start Multiprog

1.2. Starting the control logic

- Open the project file 'ASlab_T14.mwt'
- Make the code: Build > Make
 - o Should say: 0 Error(s), 0 Warning(s)
- Open the Project Control dialog: Online > Project Control...
 - o Should say: 'State: On'
- Click the 'Download' button
 - o Only 'Include OPC Data' should be selected
- Click the 'Download' button in the 'Project' area to load the program to the Soft-PLC
 - o Project Control dialog should say: 'State: Stop'
- Click the 'Cold' button to start the process
 - o You should hear a small 'click' from the process equipment
 - o Should say: 'State: Run'

1.3. Starting the process visualization

- Go to the Visualization Workspace: View > Visualization
- Open the screen 'D00_Main' from the 'Project Tree Window'
- Click the small triangle in the left side of the tool panel (tooltip 'Runtime') to start the process visualization
 - o The process variables should now be updated

1.4. Setting up the control circuitry

- Go through the control screens: D10, D15, D20, D30, D40 and D60 found in the 'Project Tree Window'
 - o Set all the circuits to 'AUTO'
 - o If any of the interlocks are on in the D15, turn them off by setting 'Int Disable' first on and then back off
 - o This should clear the interlocks

1.5. Turning on preheater tank water level control

- In the screen D10 set the set point (SP) of LIC100 to '200.0'

1.6. Enabling the preheater

- In the screen D10 set the set point of TIC100 to '30.0'

1.7. Enabling the feedwater tank level control

- In the screen D15 set 'Enable' on for FIC100
- In the screen D20 set the set point of LIC200 to '200.0' and set 'Enable' on

1.8. Enabling the pressure control for the process

- In the screen D30 set 'Enable' on for PIC300
- If the measured pressure is not '0.00', manually set the valve 'Y204' (V204) to 'manual on' and then back to 'auto' in order to normalize the pressure
- Now give a set point for the pressure, eg. '0.10'
 - o The process should now be working at the given pressure

1.9. Running the process

- You may now adjust the process throughput by adjusting the valve 'Y501' (V104)
- You can also try changing the control circuit set points or PID parameters

2. Shutting down the process

2.1. Disabling the process pressure control

- In the screen D30 set the 'Enable' off for PIC300

2.2. Disabling the feedwater tank level control

- In the screen D20 set 'Enable' off for LIC200
- In the screen D15 set 'Enable' off for FIC100

2.3. Disabling the preheater

- In the screen D10 set the set point of TIC100 to '0.0'

2.4. Disabling the preheater tank level control

- In the screen D10 set the set point of LIC100 to '0.0'

3. Shutting down the work environment

- Click the small rectangle in the left side of the tool panel (tooltip 'Design') to stop the process visualization
- From the Project Control dialog click the 'Stop' button to stop the Soft-PLC from running the control program
- Close the Project Control dialog
- Shut down Multiprog
- Shut down ProConOS WinRT
- Turn the power off from the process equipment