Example 10.9 Cascade and FeedforwardControl

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0 — NOP

TIC2501 Heat exchanger temperature master loop.

1 — TIC_Tic.DN

TON	
Timer	TIC_Tic
Preset	1000
Accum	0

EN, DN

2 — TIC_Tic.DN

PID	
PID	TIC2501 ...
Process Variable	TT2501
	<Local:4:I.Ch0Data>
Tieback	0
Control Variable	FIC2502.SP
PID Master Loop	0
Inhold Bit	0
Inhold Value	0
Setpoint	310.0
Process Variable	0.0
Output %	0.0

FIC 2502 Steam flow slave loop

3 — FIC_Tic.DN

TON	
Timer	FIC_Tic
Preset	250
Accum	0

EN, DN

4 — FIC_Tic.DN

PID	
PID	FIC2502 ...
Process Variable	FT2502
	<Local:4:I.Ch1Data>
Tieback	0
Control Variable	FY2502
	<Local:5:O.Ch0Data>
PID Master Loop	TIC2501
Inhold Bit	0
Inhold Value	0
Setpoint	4.5
Process Variable	0.0
Output %	0.0

Handle loop modes. Master in manual when not controlling temperature. Slave in manual when controlling neither flow nor temperature.

5 — Heat Exch Temp Control HEX_TEMP — TIC2501.SWM

6 — Steam Flow Control STM_FLOW, Heat Exch Temp Control HEX_TEMP — FIC2502.SWM

When master in manual and slave in auto, copy operator flow SP to master Set Output. Must descale. When slave in manual, master set to track flow.

7 TIC2501.SWM FIC2502.SWM /

CPT
Dest TIC2501.SO
0.0
Expression ((FIC2502.SP-FIC2502.MINS)/(FIC2502.MAXS-FIC2502.MINS))*(100.0)

***** Feedforward *****

Scale feedforward analog input to gpm.

8

CPT
Dest FT2503_R
0.0
Expression ((FT2503)/(100.0))*(8.0)

Limit valid range to 3 to 7 gpm

9

LES
Source A FT2503_R
0.0
Source B 3.0

MOV
Source 3.0
Dest FT2503_R
0.0

10

GRT
Source A FT2503_R
0.0
Source B 7.0

MOV
Source 7.0
Dest FT2503_R
0.0

Calculate feedforward correction and move to Bias of TIC2501

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CPT
Dest TIC2501.BIAS
0.0
Expression (FT2503_R-5.0)*10.29

(End)

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