Phase 1 Instruments - Controller Exercise 3.

Loop Tuning

Name :- **Date:-**

Aim - The aim of this exercise is to show how to 'tune' a control loop to obtain the desired response to a process change.

Read <u>all</u> instructions before starting exercise!

1. Connect and switch on 20 psi air supply to unit.

2. Switch on mains supply and when "WAIT" disappears on bottom left-hand display, press the ACK button.

3. Press X three times until STI 1 is displayed and using the right-hand knob adjust to 10.00

4. Press "STORE"

5. Press X twice until SPG1 is displayed.

6. Using the right-hand knob alter the setting on the top display to read 0.1 and then press the "STORE" button.

7. Press "A/M" button so that the red LED adjacent to M is lit. Adjust knob until right-hand bar is steady at approx 30. Press "A/M" again.

8. Ensure the "S" LED is lit (press "D" if not) and make a rapid, about 20% adjustment to the Set point (left-hand vertical bar)

9. Record and describe the response action of the Measured Value or right-hand vertical bar (e.g. fluctuations/slow response, etc). Note the deviation from the set point and the speed of response.

10. Repeat steps 5 - 8 recording the responses in increments of 0.1 until 1.0 is achieved. ***Step 7 only needs to be performed if process reading is off scale.***

11. Make a note at which setting produces a steady fluctuating response. Multiply this figure by 0.42 and then enter the result into SPG1 and also the table on the next page.

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12. Make a set-point change again and note the response action.

13. Set STI 1 to 0.1 What effect does this have?

X refers to the button that is marked TUNE 1 ←

FINDINGS

Gain	Response (Description) - slow/fast, whether there is any difference offset between setpoint and measured value
0.1	
0.2	
0.3	
0.4	
0.5	
0.6	
0.7	
0.8	
Gain set to	
STI 1 set to 0.1	

.4,.1,.1,1