

Sluggish control systems – a warning sign

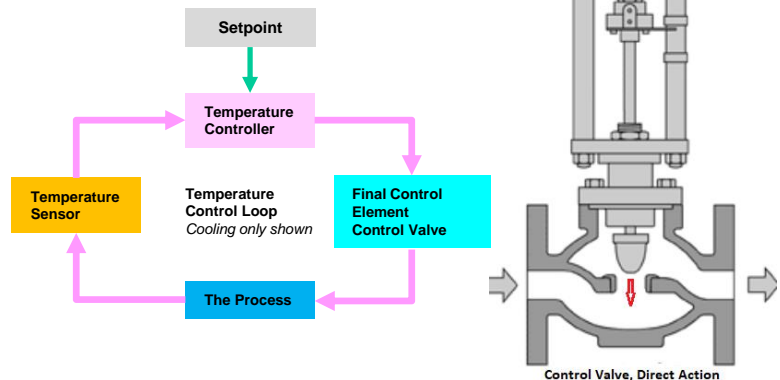
October 2019

Your process temperature climbs beyond the setpoint, leaving the operating range. The available cooling capacity is sufficient, but the control system is slow in bringing the process back into the operating range. Finally, the control system reacts as it should, and the temperature returns to setpoint.

Was that normal? It should not be. Control loops that are well designed, tuned, and maintained will operate smoothly, maintaining process control with small changes to the valves regulating coolant, heating, feeds, or other process variables.

Why did this happen? What could it mean? Possible reasons are:

- The **control valve** may be stuck by e.g. corrosion or solids settling from the fluid.
- The air supply to, or flow within, the control valve could be restricted. The **sensor** may be faulty or blocked.
- The **control loop tuning** may be inadequate for the actual process and needs to be reviewed.



Did you know?

- Minor control problems may only lead to a quality concern, but they can be an early warning that the system is beginning to fail.
- **Any** component of the control loop could be failing – the sensor, the logic, or the control device. **All three** need to be checked.
- A control system problem is rarely a random event. Although it may go away, it may return later and with more impact. *Random events must not approach safe operating limits.*
- If several control loops are experiencing problems, it could be a sign of a deeper and much more serious issue. Today's sluggish behavior may be tomorrow's failure.

What can you do?

- When systems do not respond as expected, ask others if they have seen this issue. That will let you know if it is a recurring problem.
- Put a note in the shift log explaining the problem; this will warn others to monitor it.
- There may be a simple reason why the valve does not perform as it should. Take the time to look for possible problems. (e.g. a leaking airline, or a cooling system problem).
- If the problem persists, write a work order to have the system inspected. Any component of the control loop could be at fault, not just the control valve.

Control system problems are warnings – react to them before you have a major upset.