PROCESS TROUBLESHOOTING GUIDE

Common Issues and Solutions

TEMPERATURE CONTROL ISSUES

Problem: Temperature rising trend

Possible Causes:

- Cooling water flow reduction
- Heat exchanger fouling
- Catalyst deactivation
- Control valve malfunction

Solutions:

1. Check cooling water supply and return temperatures
2. Review heat exchanger performance data
3. Analyze process samples for catalyst activity
4. Test control valve stroke and positioning

Problem: Temperature oscillating

Possible Causes:

- Control loop tuning issues
- Sensor noise or interference
- Mechanical problems with control valve

PRESSURE CONTROL ISSUES

Problem: Pressure spikes

Root Causes:

- Control valve sticking or overshooting
- Pump cavitation or surging
- Downstream restrictions

Diagnostic Steps:

1. Monitor control valve position vs. demand
2. Check pump suction and discharge pressures
3. Verify downstream flow measurements
4. Review recent process modifications

Problem: Gradual pressure increase

Typical Causes:

- Fouling in heat exchangers or piping
- Control valve degradation
- Changes in product specifications

Investigation Approach:

1. Compare current vs. baseline pressure drops
2. Analyze fouling indicators
3. Review maintenance history
4. Check product quality parameters

ALARM SYSTEM DIAGNOSTICS

Frequent nuisance alarms indicate:

- Incorrect alarm setpoints
- Process operating too close to limits
- Instrument problems or drift
- Control system tuning issues

Resolution Process:

1. Analyze alarm frequency and patterns
2. Review process operating window
3. Verify instrument calibration
4. Optimize control system performance

Advanced Diagnostics:

- Use statistical process control methods
- Implement predictive maintenance techniques
- Apply root cause analysis for recurring issues
- Develop key performance indicators for monitoring