# Tuning and Loop Performance – Default Setting

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Gain</th>
<th>Reset</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>0.3</td>
<td>5</td>
<td>--</td>
</tr>
<tr>
<td>Temperature</td>
<td>1.3</td>
<td>300</td>
<td>60</td>
</tr>
<tr>
<td>Level</td>
<td>2</td>
<td>600</td>
<td>--</td>
</tr>
<tr>
<td>Gas Pressure</td>
<td>10</td>
<td>600</td>
<td>--</td>
</tr>
</tbody>
</table>
Tuning of a PI controller applied to a self-regulating process can be quickly establish as follows:

1. Place the controlled and manipulated parameters on trend.
2. Place the controller in manual and allow the process to reach steady state.
3. Impose a step change in OUT and observe the response.
4. Set the RESET to match the sum of the process deadtime plus the time constant.
5. Place the loop on automatic control using conservative GAIN.
6. Make small changes in Setpoint and observe the response. Adjust only the GAIN to achieve the desired response.
Tools to Automate Tuning

- Example base on DeltaV Insight
Impact of Sticky Valve

- Setpoint (SP)
- Controlled Parameter (PV)
- Implied Valve Position (OUT)
- Stem Position

Value vs. Time graph showing the impact of a sticky valve on the system's performance.
Use of Signal Characterizer to Compensate for Non-linearity