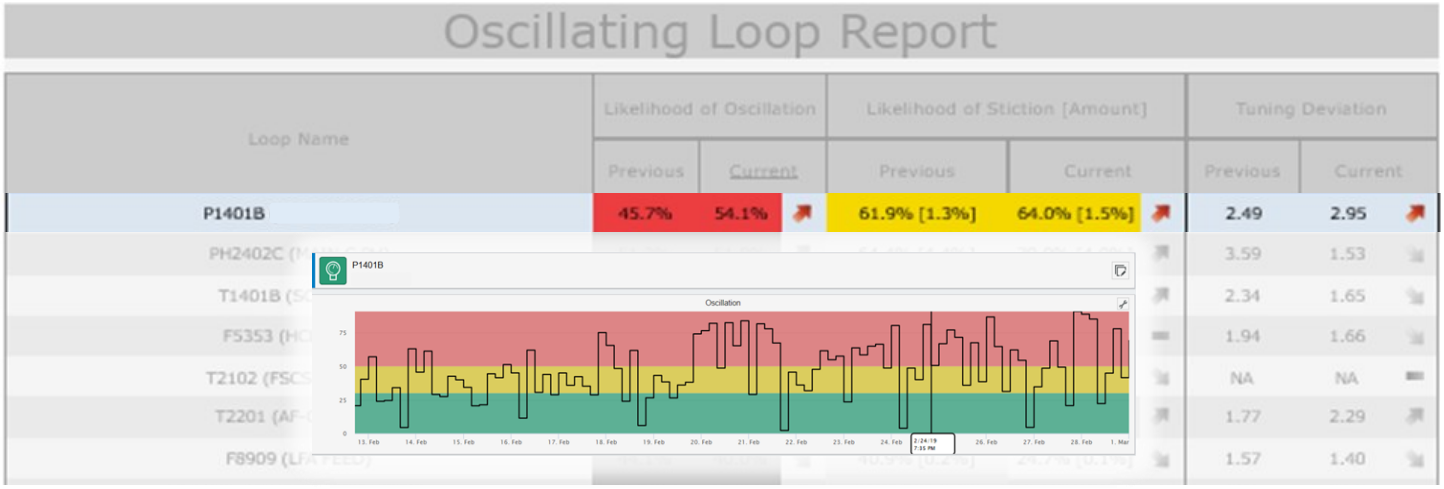
PLANT E.S.P

Catch of the Month

Food & Beverage:

Avoiding Issues with Actionable Reporting

While some PID controllers can operate loosely most control loops have strict limits within which they have to operate. That can be especially true for controllers deployed in the Food & Beverage sector. Tight control is often essential to maintaining high quality standards and to satisfying the requirements of industry regulators. When one Mid-Western facility operated by a global process manufacturer reviewed their initial PlantESP report, the site's engineering team was surprised by what they learned. Among dozens of performance issues the team was immediately made aware of a key process loop that showcased oscillatory behavior and trended toward instability. Specifically, the PID controller regulating seed crystallizer pressure recorded an oscillation probability value that rose by ~20% over a span of just two weeks. Proper pressure is necessary to maintain crystal sterility and to provide a motive force for the associated slurry. Poor control can result in contamination of the batch and loss of raw materials. Additionally, lost output could hamper productivity due to idling of the facility's downstream fermentation process. Fortunately PlantESP made staff aware, provided essential details, and recommended an appropriate corrective action. As the saying goes: Timing is everything!



PlantESP reports provide a regular assessment of plant-wide control and they can be used to set weekly performance tasks. Each control loop listed is hyperlinked so that essential details are no more than a click away. PlantESP utilizes stop light trends to clearly show how a given PID controller performs over time. Trends for each of PlantESP's core KPIs help to place complex data into a more simplified context.

What was the cause?

Stiction is a mechanical issue that affects many industrial control valves. Stiction describes the restricted movement of a valve as it responds to incremental changes in position. A valve affected by Stiction frequently moves in such a manner that oscillatory behavior results. In the case of the seed crystallizer pressure loop Stiction had prevented the controller from making subtle adjustments and the condition worsened over time. If left uncorrected the increased wear and tear can result in premature failure.

How did PlantESP find it?

PlantESP includes numerous reports that highlight changes in control loop performance. The initial Oscillating Loop Report captured the attention of engineers onsite. It listed the seed crystallizer pressure loop among those with a high and steadily increasing probability of oscillatory behavior. Clicking thru to the control loop's details, PlantESP showcased a trend that exhibited the steady increase in Oscillation and it recommended an assessment of the valve. Other KPIs confirmed the presence of 1.5% Stiction in the valve.