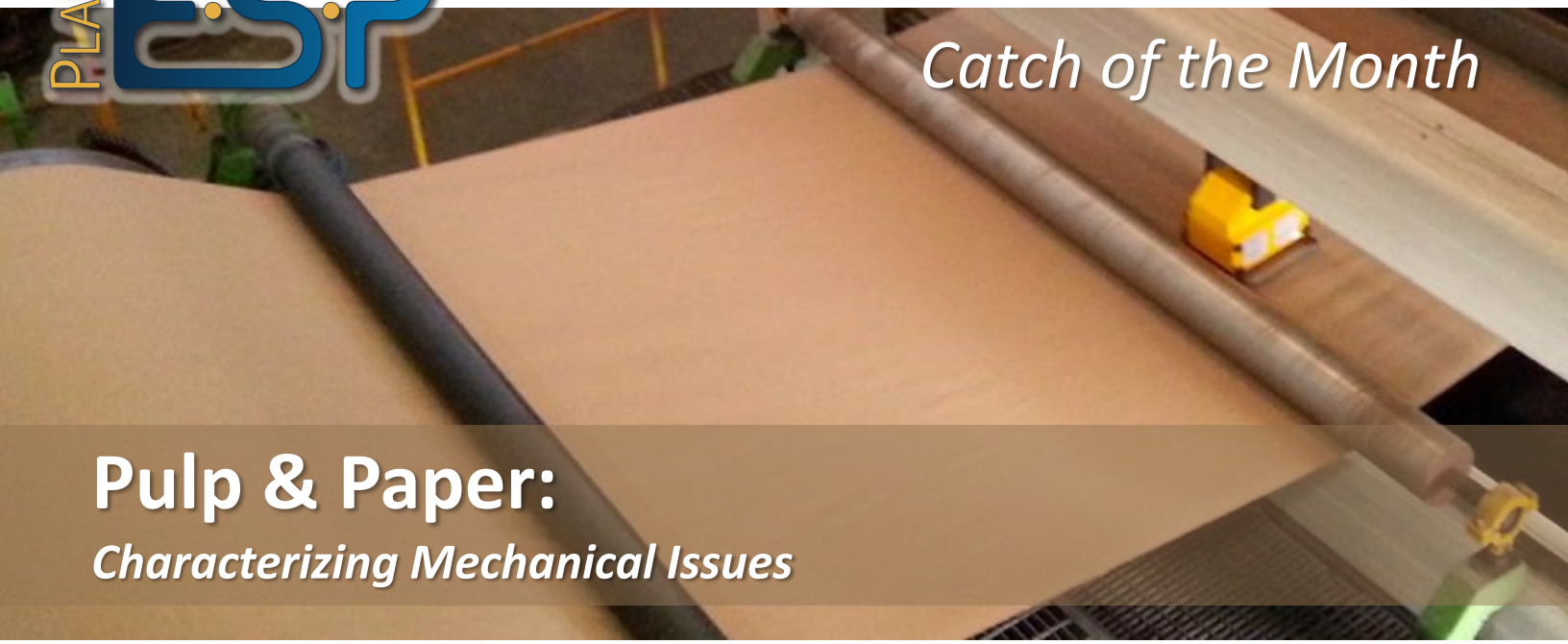
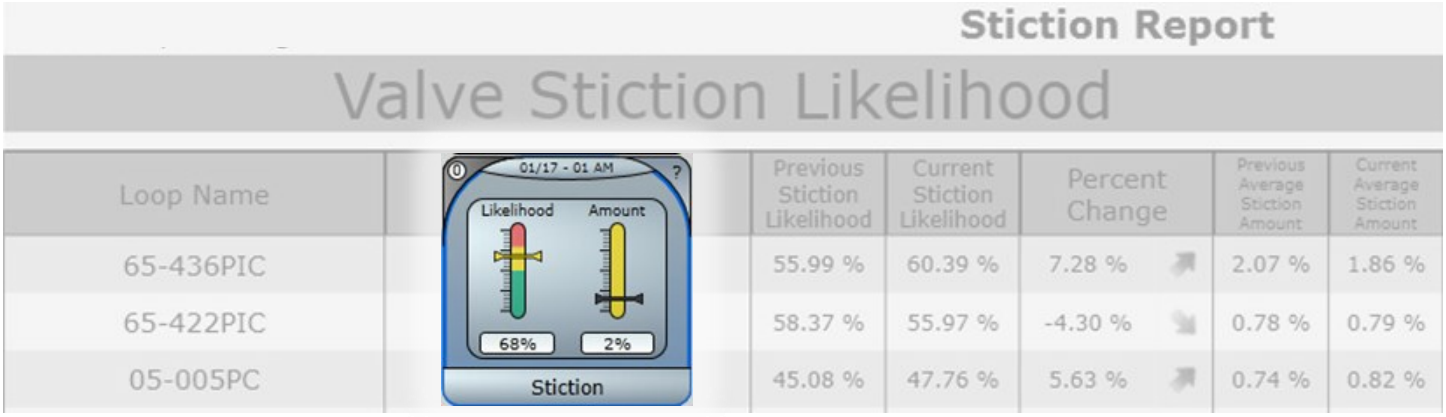


Catch of the Month

Pulp & Paper:

Characterizing Mechanical Issues

It's one thing to know the likelihood that a valve has Stiction. It's another thing to know just how much Stiction there is. Fortunately for this manufacturer of specialty papers PlantESP detailed both. Engineers routinely rank Stiction as the leading mechanical issue affecting mill production because it can be difficult both to isolate and to quantify. Stiction — *or "sticky friction"* — generally results when a valve is packed too tightly such that the valve's stem cannot respond without the use of excessive force. Unfortunately that excessive force typically requires the valve to shift back-and-forth as it opens too much, then closes too much, and on and on. If not identified and corrected, Stiction accelerates wear-and-tear on equipment and it undermines a process' ability to maintain effective control. Unfortunately most control loop diagnostic tools only indicate the possibility of Stiction. However, in the case of this PlantESP user the software calculated a 68% probability of 2% Stiction — more than what the mill deemed allowable. What's more, PlantESP documented a sizeable increase in both the probability and amount from the previous week's report. Bingo!



Stiction Report

Valve Stiction Likelihood

Loop Name		Previous Stiction Likelihood	Current Stiction Likelihood	Percent Change	Previous Average Stiction Amount	Current Average Stiction Amount
65-436PIC		55.99 %	60.39 %	7.28 %	2.07 %	1.86 %
65-422PIC		58.37 %	55.97 %	-4.30 %	0.78 %	0.79 %
05-005PC		45.08 %	47.76 %	5.63 %	0.74 %	0.82 %

Most valves are affected by some amount of Stiction. The condition frequently results from the use of excessive packing during either initial installation or maintenance, and it prevents the free or unrestricted movement of a valve. PlantESP assesses Stiction and other mechanical issues on a plant-wide basis, generating automated reports that quantify both the Likelihood and Amount of Stiction. Report data hyperlinks directly to a detailed analysis of a given loop's performance.

What was the cause?

It's not uncommon for a valve to be packed too tightly or for the packing itself to become increasingly tacky. In this instance the increase in Stiction was attributed to a seasonal uptick in humidity. Analysis facilitated by PlantESP showed that the valve was unresponsive to incremental adjustments to the loop's Controller Output (CO). Outsized CO changes were required, resulting in a data trend that showcased the squared-tooth profile which is typical of Stiction. Further analysis using PlantESP revealed that the valve's poor performance was negatively impacting other downstream processes.

How did PlantESP find it?

A Stiction Report aggregated performance data from across the mill for the PlantESP user, and it ranked the results based on the likelihood of Stiction. Among the control loops that stood out was a pressure loop for which the probability had steadily increased week after week. With a simple click on the hyperlink provided the mill's engineers saw trended data that reinforced PlantESP's assessment and justified the scheduling of a PM. While the team knew Stiction was problem, they didn't know how to isolate it let along quantify it. Fortunately for the mill's staff, PlantESP does both!