

Success Story

Control Performance Monitor Cuts Controller Variation in Half



Challenge

Alberta-Pacific Forest Industries (Al-Pac) was uncertain about the performance of the control loops in the Kamyra digester of their Kraft pulp mill. Some of the control loops hadn't been tuned in some time and, in general, Al-Pac didn't know how well the control loops were performing.

Solution

Al-Pac used Control Performance Monitor to assess the performance of key control loops. The results of the assessment helped Al-Pac to identify and prioritize opportunities for improvement in the digester area. By tuning some of these control loops, Al-Pac was able to significantly reduce process variability.

Advantage

- Improved overall stability
- Reduced process variability by 50%
- Improved controller performance monitoring

Control Performance Monitor is Powered by Matrikon, which represents vendor neutrality. This product works with third-party control systems and applications.

Assessing Controller Performance

Alberta-Pacific Forest Industries (Al-Pac) needed to assess control loop performance in their Kamyra digester in order to determine the amount of controller variation.

Controller interactions are complex in a Kraft pulp mill. The cooking process starts in the digester area and instability there can affect all consecutive stages of processing. To further complicate production, the controllers in the digester area are often tuned only after a noticeable degradation in performance.

However, if the interaction of controllers is not understood or considered, tuning one controller can lead to unpredictable effects later in the process. "We didn't know how well the loops were performing because some of them hadn't been tuned for a long time," explained Ivan Trush, process control systems engineer for Al-Pac.

Identifying Problem Controllers

Control Performance Monitor enabled Al-Pac to identify and prioritize opportunities for improvement in the digester area. This information allowed control personnel to focus on the key control loops that had the greatest impact on the production process. The performance assessment used routine closed-loop data. Poorly performing loops were identified using the following criteria:

- Flows and pressure loops with a performance index of 0.75 or higher were acceptable.
- Level controllers used for surge control with high performance indices were considered detuned.

Performance assessment offered the advantage of comparing controllers against three types of benchmarks:

- minimum variance
- reference data sets
- settling time

After comparing controllers against the benchmark, plant staff could identify opportunities for improvements using a performance index that was expressed between 0 and 1.0. The higher the performance index, the better the controller was operating. Personnel could then tune key control loops appropriately. Performance assessment took the guesswork out of the tuning process.

“Variation in pressure control was cut in half. That really surprised us. Getting pressure control variation down was important. We had previously tried tuning the controllers to bring variation down, but we just couldn’t get it there.”

Ivan Trush, process control systems engineer

AI-Pac Controller Variation Cut in Half

The assessment performed with Control Performance Monitor identified and prioritised opportunities for AI-Pac to improve key controllers within the digester area. By comparing the before and after cases, plant personnel could quantify improvements in controller performance.

Once the key parameters in digester pressure control were identified, AI-Pac was able to reduce variation significantly. Improvements in digester controls meant improvement to blow flow control and overall digester stability. Stable process operation enabled operators to move closer to the equipment and process constraint limits and increase feed rates reliably.

“Variation in pressure control was cut in half. That really surprised us. Getting pressure control variation down was important. We had previously tried tuning the controllers to bring variation down, but we just couldn’t get it there.” Ivan Trush, process control systems engineer.

AI-Pac is now interested in using Control Performance Monitor for process modeling. “We’re going to look at using Control Performance Monitor for process modeling because the software has such good multi-variable analysis tools,” Trush said.



POWERED BY
MATRIKON

‘Powered by Matrikon’ symbolizes that this product/solution is system and application independent.

For more information:

For more information about Control Performance Monitor, visit our website www.honeywell.com/ps or contact your Honeywell account manager.
www.matrikon.com
cpm@matrikon.com

Honeywell Process Solutions

2500 W. Union Hills Dr.
Phoenix, AZ 85027
Tel: 877.466.3993 or 602.313.6665
www.honeywell.com/ps

Honeywell