Success Story

Control Performance Optimizer Assists OSB Manufacturer Stabilize Flake Drying

Challenge

A Canadian Oriented Strand Board (OSB) manufacturer needed to develop a control strategy to improve product quality and process stability and chose to focus on their rotary dryers. Process variability causes a number of issues. High temperatures can result in a higher rate of sparking and fluctuations in flake feed and temperature can affect flake quality.

Solution

The OSB manufacturer chose Control Performance Optimizer to design, develop and simulate the best control strategy offline before applying it to plant processes. The control strategy stabilized dryer pressure and temperature, reducing the probability of sparking and improving flake quality.

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

Advantage

- Improved throughput
- Improved product quality
- Consistent dryer operation

Poor Dryer Control Impacts Product Quality

A large Canadian Oriented Strand Board (OSB) manufacturer produces over 500 MMsf (3/8") of OSB annually. The production of OSB involves several main stages of processing, including debarking, flaking, drying, resin application, forming and pressing. The drying process is usually performed in a rotary dryer that uses high temperature gas or steam to reduce the wood moisture content to 3 or 4%.

The manufacturer needed to develop a control strategy to improve product quality and process stability in their rotary dryers. They chose Control Performance Optimizer to design, develop and simulate the best control strategy offline before applying it to plant processes.

Rotary dryers employ high temperature convective drying to dry large volumes of flakes with a short residence time.

However, high temperatures provoke higher rates of sparking than lower temperatures. Furthermore, rapid irregular changes in flake feed rate, hot gas flow and temperature disturb the performance of the dryer, thereby affecting product quality and process stability.

Additionally, implementing new control strategies online without prior testing can be dangerous and expensive (lost production due to poor quality or trips). The company chose Control Performance Optimizer to design, develop, simulate and implement an enhanced control strategy that would improve product quality and process stability.

Improvements in rotary dryer control provide a better quality flake and allow operations to focus on maintaining the production.

Improving Dryer Control Strategy

An enhanced control strategy provided a reduction in variability of the outlet temperature, ensuring a consistent temperature differential across the dryer, thus a constant drying rate and flake moisture content at the outlet. Better temperature control also reduces pressure variability, thus stabilizing the cyclone separation.

Using Control Performance Optimizer's dynamic process simulation capabilities, a number of control strategies were developed, simulated and tested offline. The strategies developed were evaluated based on a number of criteria before final implementation, including:

- performance at steady state
- disturbance rejection
- performance during start up and shut down
- maintainability
- simplicity

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Benefits: Quality and Throughput

Not only did Control Performance Optimizer provide a control strategy for stabilizing the dryer operation through improved control of both temperatures and pressures, a number of control objectives were met. These objectives included reducing the probability of sparking, and improving the flake quality.

The original control strategy displayed an outlet temperature variability of ±10°F (±6°C) and swings of ±20°F (±12°C) during feed rate changes. Implementation of enhanced control reduced the variability two-fold and negated the impact of feed disturbances. Figure 1, shows the results of the implementation of the advanced controller.

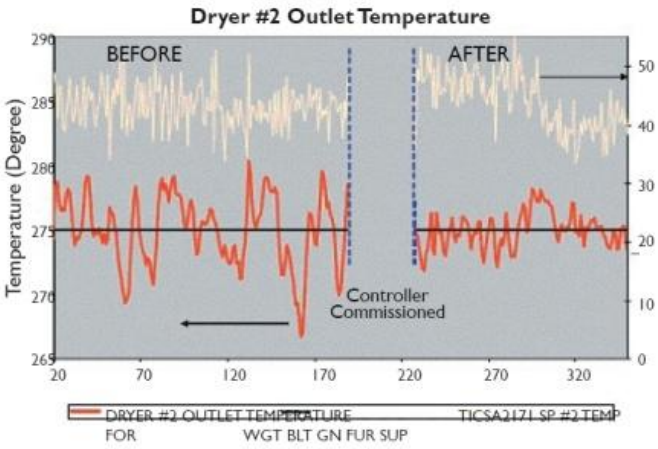

Figure 1 - Comparison of the temperature deviation before and after controller implementation.

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

For more information:

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