

New Dryer Management System Dries Up Energy Costs

THE OPPORTUNITY

Stora Enso North America located in Stevens Point, Wisconsin wanted to reduce paper drying costs and improve the paper production process control without sacrificing throughput or product quality.

THE SOLUTION

Kadant Johnson (formerly Johnson Corporation) introduced its new dryer management system™ (DMS) to Stora Enso. The company then partnered with Focus on Energy, Wisconsin's energy efficiency and renewable energy program, for project support. A feasibility study was initiated for Paper Machine No. 34 (PM34) which was metered to determine energy savings. The results proved much higher energy savings than originally estimated; 4,500 pounds of steam per hour, which results in \$360,000 in annual energy cost savings. Additionally, the company saw significant improvement with product quality and throughput. Based on the success of the project, Stora Enso is converting several more of its Wisconsin machines to the energy efficient DMS. The project also identified ways to reduce paper drying costs and better manage the control process without compromising production or quality.



Figure 1. DMS at Stora Enso's Biron Mill Courtesy of Stora Enso

NEW DRYER MANAGEMENT SYSTEM

The new Dryer Management System™ (DMS), pictured in **Figure 1**, reduces sheet breaks and allows quicker re-starts, producing less off-quality paper. These production benefits are a major component of the economic benefit of this new system and help achieve a payback of less than 1.5 years.

The calculated drying rates of various wood-free, fine paper grade machines, including PM34, are shown in **Figure 2**. Each triangle represents the results for one machine. The red squares indicate PM34's performance levels before and after the rebuild. Well performing machines are above the solid line. PM34's performance improved by reducing steam temperature from 248°F to 231°F and by increasing the drying rate from 4.5 pounds of water per square foot per hour to 4.8 pounds of water per square foot per hour. The DMS moves the dryer into an acceptable range of performance and saves 4,500 pounds of steam per hour.

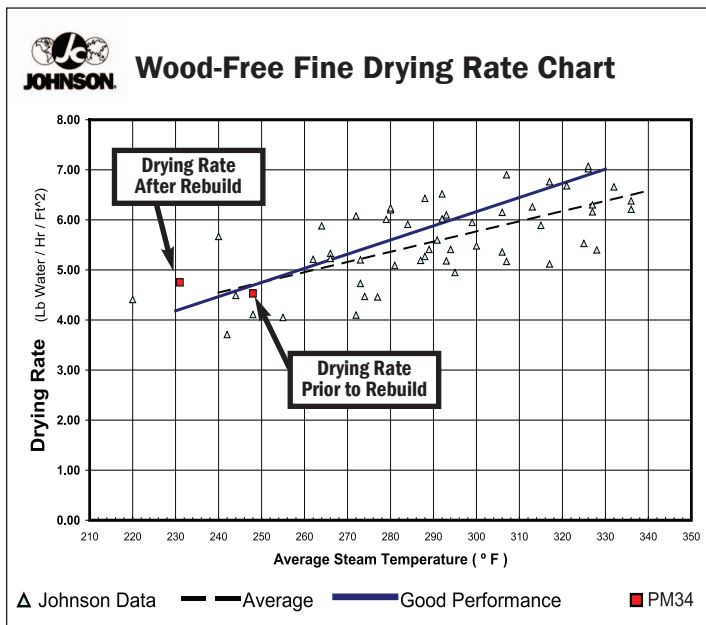


Figure 2. Calculated Drying Rates of Several Paper Machines
Courtesy of Kadant Johnson

PROJECT SUMMARY	
Steam Savings	4,500 lbs per hour
Avoided Natural Gas	452,000 therms
Installed Cost	\$1,000,000
Energy Cost Savings (@ \$0.80/therm)	\$360,000 per year
Focus Study Incentive	\$5,900
Focus Project Incentive	\$24,000
Energy Payback	2.8 years*

* Does not include increased production benefits.