

Repulper Rotor Reduces Energy Costs by 23 Percent

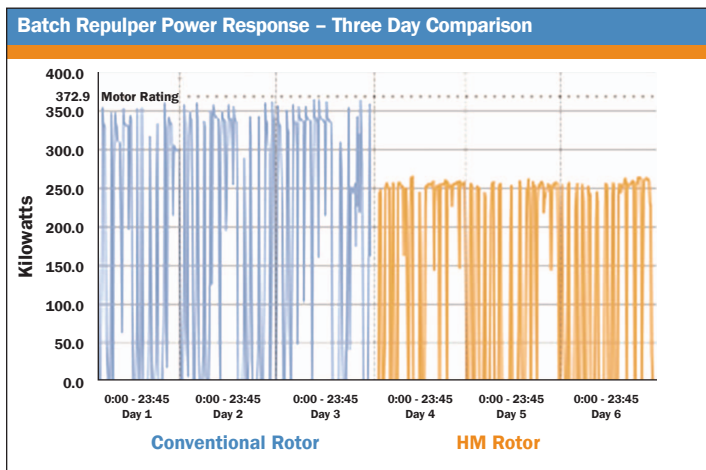
THE OPPORTUNITY

Wausau Paper, located in Rhinelander, uses 50 percent hardwood and 50 percent softwood in its process furnish mix. The mix consists of all virgin fiber (non-recycled) purchased in the form of dried pulp bales. The mill had a goal of trimming its repulping costs, without compromising production. The company considered installing a new energy efficient Voith HM repulper rotor, but had questions about the energy savings claims and the potential risk to product quality.

THE SOLUTION

Focus on Energy, Wisconsin's energy efficiency and renewable energy program, offered a study grant of \$10,000 to verify the energy savings of the new energy efficient repulper rotor. Wausau Paper agreed to install and test the new rotor. The project was metered with the assistance of Wisconsin Public Service Corporation, the utility serving Rhinelander, to verify energy savings. Focus on Energy also provided technical support for the study.

The new 500 hp HM rotor reduced the demand and energy by an estimated 23 percent when compared with a new conventional HOG rotor under similar process situations (see **Figure 1**).



Courtesy: Voith Paper and Wisconsin Public Service Corporation

Figure 1. Pulper Power Draw at Wausau Paper

Typically, repulpers run continuously, 24 hours per day, with little or no downtime. The repulper at Wausau Paper runs an estimated 60 percent of the time. Based on the metered data of this study, a typical mill can expect similar savings that will likely result in a one to two year payback. See **Figure 2** for this analysis. Savings values are extrapolated by assuming continuous batch operation at 24 hours per day.

Metered Data		
	Conventional Rotor	HM Rotor
Average kW*	187	146
Peak kW	368	265
Estimate for Continuous Operation (extrapolated from metered data)		
Average Consumption (kW)	336	259
Motor Operation (hrs/day)	20.8	20.8
Daily Consumption (kWh)	6,989	5,387
kWh / year (350 days)	2,446,150	1,885,450
Energy Savings (kWh/Year)	-	560,700
Annual Cost Savings	-	\$28,035
Payback Range (years)	-	1 - 2

* Includes off-times - see Figure 1 graph.

Figure 2. Expected Energy Savings for Typical Mill

Voith and Wausau Paper also closely examined defibering time, freeness and final product attributes. The same size batch was used for both pre- and post-testing. The defibering time was the same for each test. The new energy efficient rotor defibered the pulp furnish to the same degree as the conventional rotor, with no effect on fiber quality.