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**Customer reference case**

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Pulp and paper

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Pulp mill critical assets

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SKF condition monitoring solutions

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## SKF helps pulp mill eliminate unpredicted failures for an entire year

*Since it started using the SKF Automated Diagnostic System in 2006, Canada's Zellstoff Celgar has also protected its bottom line from an estimated \$6.5-7.5 million in unplanned downtime-related losses.*

Located some 600 kilometers east of Vancouver in British Columbia, Zellstoff Celgar is one of the largest, most modern continuous process pulp kraft mills in North America. Every year it produces about 500,000 air-dried metric tons of woodpulp and generates over 400,000 MWh of renewable energy. In 2012, Celgar did both without a minute of unplanned downtime, by using almost 70 SKF tools and technologies to monitor 856 critical assets.

For a large, continuous process pulp mill, it's an unheard of achievement. Pulp production requires numerous pumps, motors, mixers, gearboxes, agitators and rolls. Most of the assets are very large, rotate very slowly, and rely on variable frequency drives. If just one piece of equipment goes down unexpectedly, so does production, for a potentially long and costly interval.

All of these factors make pulp mill equipment hard to monitor and maintain. So how did Celgar manage to run 856 such assets with no unpredicted, unplanned downtime, for a full year?

The SKF logo, consisting of the letters 'SKF' in white on a blue rectangular background with a red horizontal bar at the bottom.



## On the path to predictive maintenance

It all started when Dragan Trivanovic joined Celgar as the mill's Predictive Maintenance Manager in 2006. He immediately put several SKF Microlog data collector/analyzers into the hands of his maintenance technicians. Previously a Reliability Manager with a mining and metals company, Trivanovic had wide experience and success using SKF condition monitoring solutions.

His maintenance team started integrating the Micrologs into their daily maintenance routines, beginning a multi-year effort to use SKF technologies to reduce unplanned downtime and improve process management.

By 2009, Celgar was using 51 SKF Multilog WMx monitoring units linked together to form a wireless, online monitoring system. Each WMx unit collects key vibration, speed, temperature and bearing condition data, then automatically uploads it for viewing, alarm evaluation, and analysis into the SKF @ptitude Decision Support system.

## SKF @ptitude Decision Support is key

This dedicated decision support software is what would ultimately enable the mill's unprecedented uptime. SKF @ptitude Decision Support links a range of data sources including ERP and EAM/CMMS to facilitate accurate and timely decision-making and work order notification. Replacing labor-intensive data analysis, SKF @ptitude Decision Support provides an automated process that identifies the probability of specific faults within an asset or process and then recommends corrective actions.

By 2011, Celgar had also started an Operator Driven Reliability (ODR) program using SKF Microlog Inspector handheld units, and had outfitted its turbine generators and wood room chippers with dual monitoring/protection systems. In all, the mill was capturing more than 250,000 data points per day. Without SKF @ptitude Decision Support, analyzing such a mountain of data then communicating corrective actions almost instantaneously would have been impossible. With the system, the mill was able to save several million dollars in unplanned downtime costs in just one incident.

## Unprecedented uptime and savings

Powered by SKF @ptitude Decision Support software, an SKF Multilog DMx on-line system monitoring Celgar's newest turbine generator detected a failing bearing, allowing the mill to correct the problem before catastrophic failure occurred. The fix prevented severe damage to the turbine rotor, which would have required a 60-day outage and wait for replacement parts, with a staggering revenue loss of \$6 million, plus repair costs.

Looking to improve upon its record of running 856 critical assets with zero unplanned downtime for a year, Celgar is already planning its next SKF condition monitoring hardware additions: 4 more SKF Multilog IMx-M online monitoring/protection systems for its lime kiln.

### SKF condition monitoring tools and technologies

- Reduce or eliminate unplanned downtime
- Increase productivity and profitability
- Reduce maintenance and ownership costs
- Improve process management
- Achieve a more sustainable operation
- Extend asset lifecycles

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