

Energy Management System Helps Inco Make More Nickel for Less



Manitoba Division of Inco Limited, one of the most successful mining companies in the world. Intensive energy demand, growing competition, and harsh climatic conditions are among the reasons why the company is in the market for a proven energy management system.

Inco Limited Manitoba Division, in Thompson, has installed a comprehensive computerized energy management system that is set to save the company \$1.5 million a year on its electricity bill.

“As the biggest consumer of electricity in the province, we pay roughly \$30 million a year for electricity,” says Dave Armstrong, superintendent of utilities at Inco.

“Anything we can do to cut that down is crucial to our success.”

The Power of Pegasys

The energy management system, known as Pegasys, monitors all major

electrical distribution feeds throughout the operation for comprehensive coverage of consumption.

It was set up and customized for Inco by Manitoba Hydro’s energy systems engineers following a plant scoping study that identified opportunities to reduce energy costs, improve power quality, and keep the operation running smoothly.

Bill Johnson, an energy systems expert at Manitoba Hydro, designed and developed the Pegasys system based on Inco’s energy management needs.

The system draws on data from more than a hundred major power

consumers at the mine, from hoists to blast furnaces.

It records, tracks, and presents power consumption data real-time for a moment-by-moment picture of where Inco’s electricity dollars are going.

“We know exactly how much power we are consuming—every second of the day,” says Dave Armstrong. “And that is the key to effective energy management.”

“It shows us when electrical peaks are shaping up. With that information, we can control energy intensive activities and make informed judgements on which loads we can shed to avoid a peak.”

“The name of the game is achieving a flat line—no peaks,” says Armstrong, pointing to the roughly flat line displayed on-screen, signifying peak-free electrical consumption.

“We pay our bills based on peaks. Avoiding them keeps our costs down. If consumption suddenly jumped by, say, 1200 kV·A for even a quarter of an hour, that hiccup would add another \$6800 to our monthly bill.”

Ways of achieving a flat line in power consumption may be surprisingly simple, says Armstrong.

“For example, a look at daily charts produced by the system showed us a ‘burp’ in consumption when heaters switched on to produce hot water for the miners to shower at the end of a shift. Pegasys gave us a choice of loads we could shed to flatten out the ‘burp’ and keep our bills down.

“When we produce more nickel, we use more electricity. But regardless of the amount of nickel we produce, Pegasys helps us make that nickel for less.”

Improving Efficiencies

In addition to giving Inco the data it needs to avoid peaks in consumption, the system also flags excessive consumption in other parts of the operation.

“It may show us the electrode furnaces in the smelter are drawing

excessive power or running unevenly, causing inefficient operation and a lower quality product. The system polices those inefficiencies, giving operators the real-time energy cost information they need to use energy wisely,” says Armstrong.

Pegasys also tracks the efficiency of loads to give a clear indication of wear, setting the stage for proactive maintenance.

It replaces an older load management system that was not upgradeable to current data processing and communications needs.

“Pegasys now offers us the same reliability but much greater flexibility and capability,” says Armstrong.

“Just one of the 35 meters that the new system uses to monitor and condition power consumption data has the capability of replacing the entire old system.”

Upgrades Planned

Plans for Pegasys include adding more monitoring points, for an even broader picture of power consumption.

Dan Chevrier, an energy systems specialist at Manitoba Hydro, completed the detailed programming required for the initial installation.

He is currently programming the system for remote switching of Inco’s water treatment plant and other loads, including HVAC for the ore gallery at



Dan Chevrier, energy systems specialist at Manitoba Hydro, checking a Pegasys power meter. The meter is one of 35 that gather the intelligence needed to manage loads efficiently throughout Inco’s complex.

nearby Birchtree mine, refinery make-up air, the mill steam heating system, and heating of the main shops, warehouse, and other auxiliary buildings at the site.

Meeting the Challenge

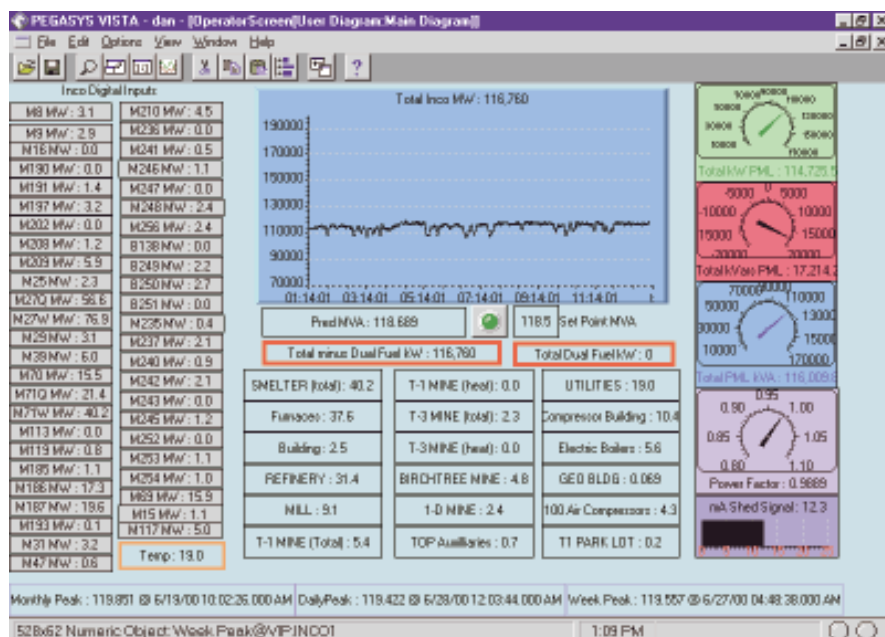
Armstrong sits on a divisional energy team that includes staff from all major areas at Inco, as well as Manitoba Hydro key account officer Larry Mestdagh.

“Our team has been given the mandate to reduce energy consumption at Inco by \$3 million a year,” says Armstrong.

He points out that Manitoba Hydro has helped previous efficiency teams at Inco by providing Power Smart® performance optimization services at the subsystem level, for savings in the millions.

“With the help of Hydro’s expertise in energy management and industrial retrofits, we are confident we can meet that mandate.”

Main screen in Pegasys showing power consumption at Inco. The system runs on a PC platform in a Windows NT environment.



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