



Industry innovators work to address sustainability concerns

Canadians are deeply concerned about climate change, but are second only to the United States in per capita energy consumption and emissions. That paradox presents a substantial challenge to the energy industry: how to produce the power Canadians need while meeting the public's environmental expectations.

In the oilsands, greenhouse gas pollution and destruction of wildlife habitat are primary concerns. "This is a very energy- and habitat-intensive means of extracting oil," says Marlo Raynolds, executive director of the Pembina Institute, who notes that oilsands production is three to four times more intensive than traditional oil and gas production.

"The oilsands are the single fastest-growing source of greenhouse gas in Canada; at the same time, planned development is currently valued at somewhere between \$30 billion and \$40 billion, creating a tremendous opportunity for improvement through investment in sustainable technologies," he says.

In its 2006 report Carbon Neutral 2020, Pembina investigated the potential financial impact of investments in sustainable technologies. "We found that 60 to 70 per cent of emissions can be reduced through carbon capture and sequestration alone," says Dr. Raynolds. "In total, it will cost on the order of \$3 per barrel to become carbon neutral in the oilsands."

While some promising technologies, such as hydrogen energy, may be some time away from widespread commercial implementation, powerful solutions are available today. Variable speed drives developed by power and automation technologies maker the **ABB Group**, for example, are a seemingly prosaic technology with enormous potential. ABB's systems help industry improve production efficiency and reduce environmental impact.

"In industry, the standard way of running a motor is to run it at full speed," says Marcus Toffolo, ABB vice president, Chemical, Oil and Gas, "and if you need to control the process, you control a valve to reduce

the flow. With variable speed drives, you reduce the speed of the motor, extending the life of the equipment." He notes a motor running at half-speed uses only one-eighth of the energy.

On a global basis, industrial use of variable speed drives has reduced CO₂ emissions by 68 million tonnes per year and saved enough energy to heat about half of Canadian homes. Surprisingly, these drives are currently used in about five per cent of their potential applications.

ABB, which counts Shell, Suncor and Encana among its Canadian energy customers, also offers elegant solutions that reduce the environmental impact of industrial processes. ABB electrical substations, for example, use 50 per cent less space than traditional substations. These pre-tested modular units are built in urban areas and then deployed wherever needed, reducing both customer cost and impact on ecologically sensitive areas.

Similar benefits are achieved with remote control technologies.

From a central location, engineers can control processes, whether they are offshore at Sable Island or in Fort McMurray. Encana, for example, uses ABB technologies to monitor its sequestration of carbon dioxide in Weyburn, Saskatchewan. There, Encana is injecting CO₂ into nearly depleted oil wells to push oil to the surface and trap the greenhouse gas underground in the process.

Dr. Raynolds notes that U.K. economist Sir Nicholas Stern has demonstrated that the costs of not dealing with greenhouse gases far outweigh the costs of reducing pollution. "The science is unequivocal – climate change is a constraint that all economies and businesses must bear, and in a market-based economy, there will be winners and losers," he says. "The businesses that invest in sustainable technologies now will be the winners."

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