

Spark plugs

by Roland Michaud

Electricity market generates new technologies

IN THE SIXTIES electricity was plentiful and affordable, whether supplied by rivers or by fossil fuels, and nuclear reactors demonstrated their ability to supplement production where additional power was needed. Renewable energy sources like wind, waves and solar languished as demonstration projects for lack of economic incentives.

The 1973 oil crisis forced people to realize that fossil fuels were not renewable, and industrialized countries realized that low cost energy could not last. The time had come to look for sustainable alternatives, but even with the threat of shortages, energy costs remained relatively low. Industry was still far from developing commercial alternate energy solutions.

The turn of the century, however, saw a resurgence of interest in creating innovative energy solutions, not only in academia and government but also in the commercial arena. Fluorescent lighting is now more efficient and light emitting diode (LED) technology, although not widely used for building lighting yet, offers significant power savings and promises to be the lighting solution of the future. LED technology is now used in a variety of electronic products, flashlights and decorative lighting, and is starting to be used by the auto industry.

In the area of conservation, sophisticated monitoring technology systems like those developed by Canadian company Triacta Power Technologies, Inc. of Almonte, Ontario (triactapower.com) provide circuit-by-circuit breakdowns of where energy is being consumed. Managers can identify wasteful practices like unused equipment left powered on, and spot equipment that needs replacement or repair because of abnormal power consumption. On the generation side, another Canadian company, Power-Spar, headquartered in Ottawa (power-spar.com), recently developed a solar concentrator, which converts the sun's energy into heat, hot water and

electrical power for everyday and emergency use.

The Canadian and provincial governments have expressed their commitment in supporting the move toward greater energy efficiency, as well as sustainable and "greener" energy solutions. For example, Natural Resources Canada has a 10-year wind energy program in partnership with companies across Canada interested in producing electricity from wind-powered turbines for commercial distribution via the grid. Through its Office of Energy Efficiency (OEE), Natural Resources Canada offers substantial financial support to commercial, industrial, institutional and municipal energy consumers for any eligible energy efficiency retrofit project. In 2004, the Ontario government announced its intention to produce five percent of Ontario's total energy capacity from renewable sources and achieve a five percent reduction in electricity demand by 2007.

Procurement officers and energy managers in industry and the public sector are faced with the challenge of keeping energy consumption and costs as low as possible and reducing the risk of collectively exceeding the capacity of the grid. Distributed generation (also known as co-generation or micro-generation) produces energy using local backup generating stations powered by the wind or sun. However, distributed generation is not for everybody, so what are the options that are feasible, proven and currently available?

Some solutions are readily available and can offer significant savings. This technology has been offered for several years and is available from manufacturers in Canada and in the US. Any electrical installation, whether old or new, can be retrofitted with technology to reduce electricity consumption in lighting, motors, refrigeration and air conditioning. Recent energy conservation projects performed on different installations (including a car dealer, a warehouse and a water filtration plant)



have yielded a 10 percent electrical energy reduction in each case with a payback of approximately four years. Several energy conservation companies in Canada offer electrical energy savings to achieve those savings.

One such company is Ottawa-based Optimal Energy Inc., which also operates a demonstration lab. Using power measurement instruments, the company can demonstrate how to significantly reduce the power consumption of various power consuming elements such as motors and old or new generation fluorescent lighting units. ■■■

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