



Canadian
Industry
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INNOVATIVE FINANCING CASE STUDY

SEPTEMBER 2001



Innovative Financing Means Energy Savings: Energy Performance Contracting at DuPont Canada

The Company

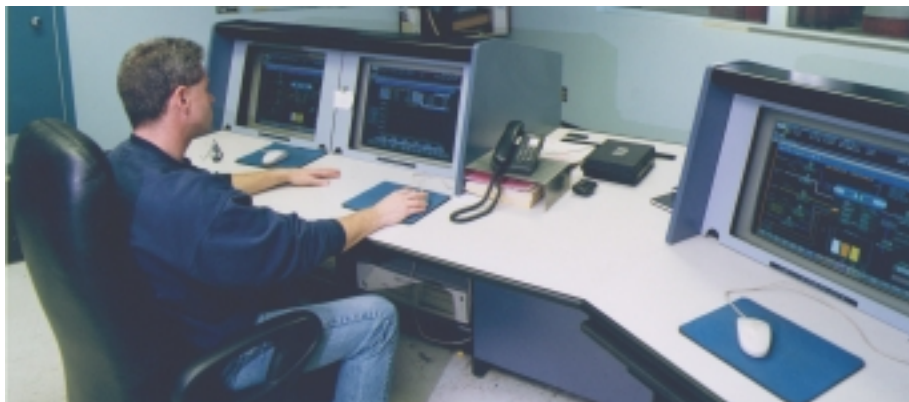
DuPont Canada Inc. is a science company with six manufacturing sites – five in Ontario and one in Quebec – which produce a broad range of products for the manufacturing, automotive, textiles and food industries. Among the company's core values are safety; concern and care for people; protection of the environment; and personal and corporate integrity.

DuPont Canada's commitment to environmental protection is exemplified in part through a company-wide policy of good energy management.

"The raw materials we use in making most of our products are derived from crude oil, so finding ways to reduce energy use has been a company policy for over 25 years," explains Peter Chantraine, Manager of Energy and Environmental Affairs at DuPont

Canada in Kingston, Ontario, and chair of the company's Manufacturing Energy Management Team. "It goes back to the oil crisis in the 1970s, when there was fear about crude oil shortages. Then rising energy costs became an issue. Since the mid-1990s, climate change has been one of the main corporate drivers for conserving energy."

Energy consumption by Canada's manufacturing sector is a major source of carbon dioxide and other greenhouse gas (GHG) emissions that are contributing to climate change. Companies like DuPont Canada are voluntarily taking steps to help Canada achieve its target under the Kyoto Protocol of reducing GHG emissions to six percent below 1990 levels by the period between 2008 and 2012.



Stationary Engineer Paul Loyst at the controls of the Kingston Site Powerhouse. The newly installed DCS controls will improve energy efficiency by one percent through the computer optimization of boilers and air compressors.



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By improving the efficiency of their operations, these companies are also cutting costs and improving their bottom line.

The Energy Efficiency Challenge

DuPont Canada's commitment to energy efficiency is unmistakable – the company is an Industrial Energy Innovator, an active member of the Canadian Industry Program for Energy Conservation (CIPEC), a Gold Level Champion Reporter with Canada's Climate Change Voluntary Challenge and Registry Inc. (VCR Inc.), and a winner at Canada's Energy Efficiency Awards, hosted by Natural Resources Canada's Office of Energy Efficiency. But there can be challenges to putting that commitment into practice.

"DuPont Canada is a growth-oriented business focused on expanding its market share and providing a superior return to investors," says Mr. Chantraine. "This means capital dollars for energy management projects are scarce. We want to invest capital in things that will grow the company, not things that are related to infrastructure."

So when DuPont's Manufacturing Energy Management Team wanted to undertake major energy efficiency projects, it had to find an innovative way to get the job done. Mr. Chantraine thought he finally had the answer when he attended a climate change conference in 1996. One of the topics was energy performance contracting, as pioneered through the Government of Canada's highly successful Federal Buildings Initiative.

Energy Performance Contracting

The concept of energy performance contracting is simple – an energy service company (ESCO) audits a company's facilities and operations to find energy-saving opportunities. Depending on the results of the audit, the two parties may enter into a contract that commits the ESCo to undertaking energy efficiency projects using its own finances. The ESCo recovers its investment over the next few years from the resulting measured energy savings. In short, energy performance contracting is a creative way for companies, including those in the industrial sector, to finance large energy efficiency projects without paying cash up front.

"When I attended the 1996 conference, I heard that the [Federal Buildings Initiative] process could



Spinning Technician Gord Blenderman verifies the operation of a high-speed winder in a nylon-yarn spinning operation at the Kingston site.

be used anywhere," recalls Mr. Chantraine. "But when I tried to implement it at DuPont, I kept running into problems – undefined barriers that blocked us from moving forward. I finally hooked up with people in our finance department who told me the problem centred around keeping the project off the balance sheet."

Mr. Chantraine learned that if a project is structured correctly, a company does not have to report the investment as a debt on its balance sheet. This practice – known as "off-balance sheet" financing – can be appealing for companies that want to maintain an attractive return on equity, an important measure of business success.

To remain off-balance sheet, a project must meet certain criteria, including the following:

- the company makes no capital investment in or capital commitment to the project;
- the ESCo, not the company whose facilities are being modified, must assume all risks for the project. The ESCo only receives a financial return in the form of a specified share of the energy savings, if and when realized;
- the agreement between the ESCo and the company cannot include a commitment to make fixed monthly payments. Payments vary depending on measured and realized energy savings;
- the resulting monthly payments made by the company to the ESCo are treated as expenses (the same as other utility payments) and are not recorded as repayment of debt or capital investment in assets; and

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- no asset can accrue to the company at the end of the contract – the ESCo must either abandon or remove equipment installed at the company’s facilities at the end of the contract.

In mid-1998, Mr. Chantraine began working with the company’s finance department and the Industrial Energy Innovators Initiative of the Office of Energy Efficiency (OEE) to define how DuPont could keep major energy efficiency projects off-balance sheet. At the same time, DuPont began to look for an ESCo partner. From a list of 12 potential partners, Alliant Energy Integrated Services – Cogenex (Alliant Cogenex), of Lowell, Massachusetts, emerged as the preferred contractor (www.alliantenergyisco.com).

“We worked with Alliant Cogenex for about a year to negotiate a Master Energy Services Agreement (MESA), which was signed in December 1999,” says Mr. Chantraine. “The MESA had to be accepted by DuPont’s finance and taxation officials in Canada and the U.S., as well as our auditors. The accounting firm of PricewaterhouseCoopers, LLP, was deeply involved in finding the legal and financial structure that would keep the project off-balance sheet.”

DuPont’s Energy Efficiency Projects – The First Wave

Once the MESA was signed, Alliant Cogenex was able to start auditing DuPont’s manufacturing sites, beginning with a pilot project in Ajax, Ontario. Although the opportunities identified at the Ajax site were too minor to warrant immediate action,

the project did help the two parties build a working relationship. Equally important, it encouraged DuPont to focus on its largest sites – at Kingston and Maitland, Ontario – which account for some 90 percent of the company’s manufacturing energy consumption. (Mr. Chantraine says the company will take another look at the smaller sites in the future.)

In the first wave of projects, Alliant Cogenex is investing \$13 million in new process technology at DuPont’s plant in Maitland, with the goal of reducing the amount of steam energy needed to make adipic acid (a raw material for nylon polymers and other products) by 30 to 60 percent. The new system will be commissioned in the fall of 2001.

Five smaller opportunities, requiring an estimated total investment of about \$9.1 million, have been identified at the Kingston site. These projects, which are expected to be in construction by the end of 2001, include the following:

- installing small commercial boilers to provide heat to an office building (to replace a decaying underground steam pipe);
- retrofitting lighting;
- installing a new condensing economizer on the main steam boilers to recover heat from flue gases;
- installing a closed-circuit glycol loop to recover process heat and use it for space heating in winter; and

Projected Energy Savings Through Energy Performance Contracting*

Project	Approximate Investment	Estimated Energy Savings	Estimated Emissions Reductions (tonnes of CO ₂)
Kingston Site			
Process heat recovery	\$5.1 M	127 TJ/year	8 023
Waste finish process change	\$0.5 M	23 TJ/year	1 162
Lighting retrofit completion	\$1.0 M	2 750 MWh/year	220
New boilers to save steam	\$0.7 M	33 TJ/year	1 853
Condensing economizer	\$1.8 M	70 TJ/year	3 585
Maitland Site			
Process heat recovery	\$13.0 M	542 TJ/year	33 165

* Energy performance contracts as of September 21, 2001
 TJ/year = terajoules per year
 MWh/year = megawatt hours per year

- recovering and recycling waste vegetable oils – another raw material used by the company – rather than incinerating them.

Energy savings from the projects at Maitland and Kingston are expected to be equivalent to six to eight percent of total energy consumption across the company. The projects will thus make a major contribution to DuPont Canada's goal of reducing per-unit energy consumption by 15 percent between 1995 and 2005. And Mr. Chantraine is quick to point out that the current projects are "only the start of the opportunities for energy efficiency that exist in the company."

All projects at the Kingston and Maitland sites are based on a 10-year contract with Alliant Cogenex. The contract has been structured so that a portion of the monthly energy savings will go to DuPont (thereby providing a positive cash flow) and a portion to the ESCo. As well, the contract stipulates that DuPont owns any emissions credits that may

arise from the energy efficiency projects. DuPont can apply the emissions credits to its own VCR Inc. targets or sell them to other companies.

Conclusion

As the cost of energy increases and awareness grows about the need for all sectors of the Canadian economy to take action on climate change, more and more companies are looking for ways to reduce their energy consumption and improve their bottom line. While there may be several ways to achieve these goals, innovative financing techniques can make the difference between whether a project proceeds or dies in the planning stage.

"The barriers will be different in every company," says Mr. Chantraine. "I think the key for energy managers is to figure out what those barriers are and who in the company needs to be engaged in finding a solution. You need to talk to people in your legal department, in finance and taxation, and in operations and plant maintenance."

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The Office of Energy Efficiency of Natural Resources Canada strengthens and expands Canada's commitment to energy efficiency in order to help address the challenge of climate change.



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