

Origin Organic Farms Inc.

Steady progress toward adopting ISO 50001

ISO 50001 Energy Management Systems standard

The ISO 50001 Energy Management Systems standard provides organizations a structured framework to manage energy in such a way that they can increase energy efficiency, reduce costs and improve energy performance. This standard is based on the common elements found in all the ISO management systems standards, assuring a high level of compatibility with ISO 9001 (quality management) and ISO 14001 (environmental management). It integrates energy efficiency into management practices by making better use of existing energy consuming processes. Based on the Plan-Do-Check-Act cycle, this standard integrates both technical and managerial activities.



CASE STUDY SNAPSHOT

Industry: Organic greenhouse farm

Energy Management System (EnMS) guidance/standard:
CAN/CSA-ISO 50001

Improvement focus: Energy performance improvements with a focus on the efficient use of natural gas and efficient plant operations

Location: Origin Organic Farms, Langley and Delta, British Columbia, Canada

Products: Organic produce

2016 expected energy savings:
1,250 gigajoules (GJ)

Number of employees: 20, plus seasonal workers

Energy sources: Natural gas, electricity, propane, diesel and gasoline

2015 energy management objective:
Prepare for ISO 50001 setup and reduce energy use by installing fixed screens and upgrading gas condensers

2016 energy management objective:
Reduce energy use by 1,250 GJ and implement ISO 50001

Energy management system overview

Origin Organic Farms Inc. has been committed to energy efficiency for many years. But it was not until the company hired an expert partner to conduct a formal energy assessment that a realistic plan began to take shape. Today, with help from Carnotech Energy, Origin is working toward compliance with the ISO 50001 Energy Management Systems standard.

Origin has already implemented several impressive energy efficiency projects and educated their enthusiastic staff to become everyday energy managers – not supporting just the big-ticket, big-payback projects, but also attending to the little things, like turning off the lights.

Company profile

Origin Organic Farms Inc. is a greenhouse organic vegetable producer with two greenhouse operations in British Columbia: one in Langley and another in Delta. The company began in 1997 as a 10-acre greenhouse operation and has since expanded to 23 acres with a gross revenue of roughly C\$14 million per year. That places it squarely among the largest organic greenhouse operations in North America.

Origin produces about 500,000 cases of premium organic vegetables a year. Product lines include several types of tomatoes, sweet bell peppers and English cucumbers, all of which are certified organic by the Fraser Valley Organic Producers Association. Origin also develops its own organic soil and fertilizer in-house and has created a unique organic growing system that reliably produces high-quality vegetables. The company employs 20 full-time management staff and hundreds of seasonal staff and distributes its products under the OriginO™ brand throughout North America and the world.

A clear business case for reducing energy use

The greenhouse industry is a huge consumer of energy, and companies are continually looking for ways to reduce. For most greenhouses, energy is the second highest cost (labour costs for growing and harvesting being the highest). This cost is high because greenhouses must consume large quantities of natural gas during cold Canadian winters to protect delicate produce that is growing under glass.



Propagation Facility in Langley

Origin's energy costs are 20 to 25 percent of its operating costs, which keeps Origin keenly focused on reducing its energy use. Natural gas provides 97 percent of its energy. The company has expanded significantly over the past decade. Today it spends \$1.1 million on energy alone and has plans to grow its business. Ensuring that it continues to refine its operations and reduce certain built-in costs will be key to its future success.

“As a management group, we have always been motivated to reduce our energy use,” says company president Raymond Wong. “We needed to do a better job in tracking and quantifying our improvements, because without proper tracking, you cannot be sure which improvements are working and which ones are not.”

In 2013, Origin made the important decision of hiring an energy efficiency contractor who would help guide the company in its first formal efforts to develop an energy efficiency framework. Origin hired Carnotech Energy to undertake an energy assessment and produce a report for management. “At the time, we were exploring different sources of energy, such as geothermal. But these are big investments so we wanted to be sure we were investing in the right areas.”

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Enter ISO 50001

Carnotech Energy is an energy engineering and resource development company that builds green energy systems for businesses and homes. Nima Mousavi, vice-president of business development at Carnotech, notes that when his team assessed Origin's energy efficiency profile, they found plenty of room for improvement. "We found that Origin was doing about 15 percent of what it could to be energy-efficient." Carnotech undertook a gap analysis and developed a comprehensive energy-planning workbook with strategies for managing and monitoring the company's energy consumption. This provided Origin with a fundamental framework for success.

"Before we had this energy assessment done, our efforts were scattered and uncoordinated," says Wong. "We had big ideas for managing our energy use but without a framework, we were not necessarily working toward the same goals."

Carnotech made a key recommendation that has fundamentally transformed how Origin approaches energy management. The company was advised to pursue ISO 50001 compliance. Origin is therefore committed to implement ISO 50001. "Now we will be able to put some numbers and a framework behind what we are doing so we can see tangible results," says Wong.

A cost-sharing initiative from the Office of Energy Efficiency (OEE) at Natural Resources Canada provided 50 percent of funding for ISO 50001 implementation. For each of Origin's two greenhouse locations, implementation is costing roughly \$78,000. Although Wong mentions that he would likely have done the work regardless, he admits that OEE's support made the decision much easier.

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A framework for success

An early step in building an ISO 50001 framework was to set a baseline of energy consumption as the company implemented energy-saving strategies. With Carnotech's help, Origin established its baseline in 2015.

Next, Carnotech helped the company set a series of objectives and then identified "mini-projects" to achieve the objectives. The medium-term objectives

are ambitious yet achievable for the organic grower. It has pledged to reduce its energy use to 15 percent below 2015 levels by 2020. Over the shorter term, it has set three very specific objectives:

- Reduce natural gas use at the Delta facility by 700 GJ in 2016.
- Reduce natural gas use at the Langley facility by 550 GJ in 2016.
- Achieve ISO 50001 compliance in 2016.

To achieve these targets, Origin upgraded the condenser on its boiler system to be more energy-efficient and installed temporary plastic film insulation on the glass roofs of its greenhouses in winter to keep the heat inside. It will calculate the savings for those projects later in 2016, and Wong is convinced they will demonstrate success.

Getting buy in

Carnotech created a training and awareness plan specifically for Origin. Various groups of management personnel and workers were taught the general principles of ISO 50001 EnMS implementation and the specific energy-saving techniques that each worker must understand. For example, Origin taught growers and boiler engineers about optimizing energy in the heating systems at the Delta and Langley greenhouses.

"In the past, if a grower came up with an idea, he would just do it on his own," says Wong. "Now we have scheduled team meetings to talk about energy efficiency improvements." Wong notes that regular meetings have been key to creating a culture shift toward energy efficiency and to establishing buy in across the organization. This institutional support, combined with established guidelines for success that ISO 50001 strategies have provided, has created great enthusiasm for the company's future goals.

Projects planned for years to come

While Origin is still at the beginning of its ISO 50001 compliance journey, it has plenty of future projects planned. Many of them seem small when viewed in isolation. So the key will be to ensure that everyone across the organization recognizes the importance of creating a large sum from individual energy saving actions.

Small projects that Origin has either begun or planned in 2016 include:

- Reducing the use of secondary forms of energy such as air conditioners, heaters and fans.
- Reducing obstructions to flow in pipes wherever they occur – plugged filters and regulators, throttling valves, pipe restrictions.
- Minimizing heat loss by repairing damaged insulation and maintaining vent operating mechanisms.
- Eliminating slipping belts and couplings, pressure reliefs, blow-offs, leaks and dirty heat exchangers.
- Ensuring that all lights, fans, pumps, heaters and computers, etc. are turned off when they are not needed (weekends, shutdowns, breaks, etc.).
- Repair water leaks.
- Close doors and vents in cold weather.

Bigger projects with higher paybacks

Origin will also invest in major energy efficiency upgrades that provide large paybacks. Carnotech provided Origin with a series of options, which range from the three medium-term ones (ISO 50001 implementation and natural gas reductions in Delta and Langley) to implementing a data logging system and switching to geothermal heating.

Thanks to its new ISO 50001 EnMS framework, Origin knows for each intervention what investment it must make; precisely how and when to monitor progress; and the payback period and the eventual savings that will result. The system enables Wong and his team to view their investments, progress and payback, year after year. “It gives us a tangible sense of our achievement, which helps sustain a culture of enthusiasm across the organization,” notes Wong.

More avenues for savings

Although Wong says Origin’s main priority is to maintain ISO 50001, the company has also targeted many energy-saving projects – some scheduled and others with open-ended implementation dates. Potential projects include continuing to upgrade and replace boilers at both greenhouse locations and installing and fixing screens in all greenhouses. “My goal, ultimately, is to ensure that we are not squandering money in any area of the business.

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Challenges and barriers

Wong found it challenging to train staff to keep reliable records for ISO 50001 compliance. It required substantial changes in habit and therefore took some time. “When the staff would have an idea for improving something, they would not write it down. But if something does not get written down, it generally does not get done in the end.” Wong said that regular, scheduled ISO 50001 meetings were the best tool for creating change.

Business benefits

Wong says that while it is too early to tell whether the company will achieve its energy-saving objectives, the exercise of implementing ISO 50001 principles has created an intense awareness at Origin. “It has really helped with the little things like getting people’s cooperation with turning off lights and computers when we are not in the office. The simple act of being aware helps tremendously. It sets us up for future success.”

Key results

The clearest results at this early time are that the company has embraced the concept of ISO 50001 implementation and that staff are generally positive about Origin’s compliance in 2016. Other specific goals for 2016 – saving 1,250 GJ of energy across Origin’s two greenhouses – are also expected to succeed.

“I expect to see more savings and awareness across the company as our culture of energy conservation takes hold,” says Wong. “As we save money, I plan to continue to upgrade the equipment we have and get even more savings. This has become a top priority.”

Keys to success

- Everyone in the organization needs to buy in to the project. If only the owners or only the managers want it, it will not work, says Wong. “Getting everyone on board is important, and some people need a lot of evidence before they are willing to get on board. The ISO 50001 framework gave us that.”
- Regular education and reinforcement is another key. Without it, enthusiasm can quickly wane. And without enthusiasm, compliance will soon decline. Origin posts its energy policy on information boards and other locations throughout its Delta and Langley facilities. This communicates Origin’s commitment to use energy efficiently and continually improve energy performance.



Tomato Crop in Delta

Lessons learned

- Administration is extremely important in ISO 50001 implementation. “There is a good deal of paperwork to ensure that all the analysis and monitoring is getting done, so somebody has to own it,” notes Wong.
- The whole company needs to think about ISO 50001 implementation and maintenance as a long-term project. “People cannot expect quick fixes or payoffs. Even though we are only in the beginning phases of adopting ISO 50001, I can see already that patience is essential.”
- “You cannot just tell people you are saving energy. You have to prove it.” Wong says that this principle is important, not just for convincing people in the organization of the merits of energy efficiency, but also to attract government investments for making substantial upgrades.
- Everyone in the company has a role to play in identifying and reducing energy waste and in identifying and reporting energy performance opportunities.



Grading and Packing Facility in Delta

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