

Transitioning to a Green Economy



The Bottom Line for Ontario's Businesses

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Transitioning to a Green Economy

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Executive Summary

The green economy is an emerging marketplace that strives to bring together sound environmental practice and the greater social good while continuing to bring a profitable service or product to consumers. Many Ontario firms have shifted towards “greening” their business by taking approaches that consider sustainability not only in what they bring to market, but also in how they get it there. This includes internal policies and processes such as recycling programs and daylight harvesting in head offices, product research and development that inspires innovative new products or product development approaches, and environmentally sound manufacturing methodologies and procedures – all of which have an impact on the organization and its brand as a whole.

Each year, Workforce Planning Ontario's local boards develop Trends, Opportunities and Priorities Reports and Integrated Local Labour Market Plans that identify key labour and workforce development priorities in their catchment areas. For the past few years, the local boards in the Central Ontario Region have identified a growing trend towards businesses “greening” their practices and, as a result, began a project that took a closer look at the impacts of this phenomenon on the economy and on the labour market. The first part of this effort resulted in the report *Greening the Economy: Transitioning to New Careers*, a collaboration between three local boards: Peel-Halton, Toronto and York Region. This second phase is a partnership between all five boards that make up the Central Ontario Region and looks specifically at local firms that are transitioning to green.

The local boards in Durham, Peel-Halton, Simcoe-Muskoka, Toronto and York Region, Bradford West Gwillimbury approached 10 local green businesses to conduct this research: Blue-Zone Technologies Ltd., ECO Building Resource, Fifth Light Technology, Grand & Toy Canada, Hubbell Canada, Husky Injection Molding Systems Limited, Oetiker Limited, Travelodge Barrie, Urbanspace Property Group and Your Solar Home.

The report asks key questions about what is leading firms to go green, what their current green practices are, how greening has benefited their business, what challenges they've faced, what training is required for new and changing occupations, and finally, how people's jobs have been affected by their shift to more sustainable approaches to how they do business.

What is a green business?

A green business is an enterprise that has the purpose of reducing negative impacts on the global or local environment, community, or economy. Green businesses strive to find a sustainable balance between people, planet and profit. For the purpose of this study, we considered a business as green by applying RBC Royal Bank's criteria to their operations:

- The business incorporates principles of sustainability into every business decision;
- It supplies environmentally friendly products or services that replace demand for non-green products and/or services;
- It is greener than its traditional competitors; and
- It has made an enduring commitment to environmental principles in its business operations.

While a green business is thinking environment and society, it is also considering profits. John Elkington, founder of SustainAbility, a sustainability consultancy, describes this as the "triple bottom line." The companies we spoke to were inspired by the greater good, but all of them transitioned to green because there is demand from consumers for green products and practices and because there are an increasing number of government incentives for greening (as well as regulations and legislation that require it).

Evidence shows that as companies transition to the green economy, they generally seek to accomplish five main objectives:

1. Improved efficiency and reduced consumption
2. The utilization of sustainable materials and elimination of waste
3. Compliance with environmental regulations and standards
4. The greening of products, equipment and services
5. Increased health and safety of staff, consumers and the community

Impacts of the Transition to a Green Economy on the Workforce

As we transition to a green economy there is a shift from traditional jobs to new jobs that require new skills. We have seen evidence of this most markedly in the manufacturing sector where there is a huge push (and many incentives in terms of funding, regulations and public policy) for research and development for new product lines and component parts, and where modes of production have made great strides for a variety of reasons, including sustainability and the greening economy.

In the manufacturing environment, this means that there are training requirements not only for operational green initiatives, but also in terms of how people do their jobs. At businesses like Husky Injection Molding Systems, investments have been made in various learning opportunities for staff, including Certified Energy Management training and energy awareness training that has increased workers' knowledge on energy issues and strategies.

Another example of a huge shift in how people need to approach their jobs exists in firms that have upgraded to electronic delivery and order management systems from paper-based systems. Such is the case at firms like Grand & Toy where training and new skills in software development and customer service have been necessary, in addition to the ongoing training staff have received on their various greening programs.

Companies generally cite that any new green initiative requires new training and internal communications programs that promote operational initiatives and staff buy-in.

As well, companies like Fifth Light say that new product offerings require intensive training on technology, installation, uses and benefits. Other firms like ECO Building Resource have a need for continual training on new regulations and policies, including Leadership in Energy and Environmental Design (LEED) requirements. The property and maintenance managers at Urbanspace and Travelodge Barrie both said that they have taken courses and studied environmental practices, and in the case of Urbanspace, maintenance for green roof gardens.

Businesses also foresee expanded occupational profiles and new job opportunities resulting from a shift to green. For example, Oetiker plans on developing new positions relating to energy auditing so that they may continue to expand their sustainability programs.

Many organizations are developing new training and new jobs related to their transition to green on an ad hoc basis. However, there is a need to anticipate workforce demand in a greening economy so that skills are developed in the labour force to meet the needs of Ontario's employers. As part of this Workforce Planning Ontario project, close to 100 Green Occupational Profiles have been developed. Profiles that match the businesses interviewed for the case studies included in this report can be found in Appendix A. They include:

- Building Supplies Distributor
- Chemical Engineer
- Director of Environment Health and Safety
- Electrical and Electronics Engineer
- Environmental Engineer
- Facility Operation and Maintenance Manager
- Property Manager
- Technical Product Specialist
- Sustainability and Social Responsibility Coordinator
- Solar Installers and Technicians

Challenges

Businesses that are a part of the green economy are trailblazers that are often doing something or offering something that is new and innovative. As a result, there are a series of challenges that are particular to firms that are either greening their practices or offering a green product, all of which are related to the fact that there are, in many cases, higher costs associated with bringing “green” to consumers. Contributing businesses cited the following challenges:

- Consumers are reluctant to make the change to environmentally friendly products either because these are more expensive, or because they do not understand the benefits of what is being offered;
- Long return-on-investment timelines can be cost prohibitive (i.e., some retrofits and upgrades to facilities, especially in the case of solar and wind energy);
- Huge investments of time and money are required for R&D on technology development;
- Technology is changing very rapidly;
- There is very little industry-related support or expertise in this area;
- Differing local, provincial, national and international policies, standards and regulatory environments make it difficult to bring manufacturing, operational and new product offerings to market;
- Changes in legislative policies are hard to keep up with;
- Financing innovative projects can be difficult because there are no best-practice models; and
- There are no real guidelines for what constitutes a “green” product.

Businesses that are a part of the green economy, however, tend to face these challenges by becoming involved in advocacy and advisory groups in their communities so that they can raise the profile of the green sector.

Benefits to Going Green

The green economy is about a “triple bottom line” where there is a balance struck between environment, society and profits. All of the firms we spoke to have transitioned to green because there is a demand for it in the marketplace and because their business realizes benefits for doing so.

Environment & Society

Reduced Carbon Footprint

Some companies are working towards reducing their carbon footprint by developing processes and programs that minimize their carbon footprint. Urbanspace has installed green roofs on its buildings to minimize the heat island effect and installed bike racks to promote its tenants to ride, instead of drive to work. Grand & Toy has initiated a program wherein deliveries are planned based on the most efficient routes, Hubbell Canada encourages staff to carpool and Husky has a bicycle transportation program on its campuses to help staff get from building to building.

Companies are also offering products or services that allow their customers to reduce their carbon footprints. Companies like Husky are working towards a zero footprint. Its TargetZERO project aims to get the firm to carbon neutrality by 2025.

Reduced Waste and Waste Diversion Programs

Most companies have some manner of waste reduction or diversion programs. Grand & Toy, for example, has implemented several internal paper initiatives that reduced paper consumption by 5,512 reams between 2007 and 2008 and achieved a 78% waste diversion rate across the company since 2009. Through its ThINK program, Grand & Toy also had 237,547 ink cartridges returned in 2007 alone.

Other companies have also been very successful with similar programs. Hubbell is ensuring that 75% of waste is not going to landfill, Husky has a waste diversion rate of 95% and Oetiker has reduced its landfill waste by 70.7%.

Reduced Energy Consumption

Because reduced energy consumption is also a huge money saving initiative, many companies are considering alternative energy sources and are implementing other low-cost energy saving programs. Fifth Light, for example, offers its customers products and services that reduce energy use and costs while also implementing these same programs as part of its green operations programs. In retrofit applications, the organization has reduced its clients' energy consumption by 60-80% by implementing lighting management systems including day harvest lighting and the installation of motion sensors.

Hubbell Canada, a manufacturer of high quality electrical and lighting products for industrial, commercial and telecommunications markets has itself experienced a 30% cost savings on energy as a result of changes to its warehouse lighting, which represents a reduction of 30,000 kWh per month.

Other firms say that as more solar and wind power options become available, they will consider these energy saving solutions.

Profits

Operating Cost Reduction

Businesses are always seeking to reduce costs to maximize profits and there are many opportunities to achieve this by going green. Reducing waste and energy consumption are very effective ways of reducing costs, but there are also other, innovative ways of doing so. For example, Blue-Zone Technologies has developed technology that captures unused anesthetics in health care environments and processes these medications for resale. This reduces emissions while also lowering costs to its customers.

Urbanspace's green roof is another example of how organizations can lower costs and provide benefit to the environment.

Employee Engagement

In each of the case studies, firms were developing green programs that engaged and involved staff. Green product development, manufacturing and programs require staff buy-in and input to be successful. Many companies that think green put staff at the core of their sustainability initiatives because they recognize that it is the human capital that creates a wholesome sustainability approach.

Customer Satisfaction/Brand Profile

Business is going green because there is demand for it. Increasingly, customers want to buy “green” and want to do business with socially responsible companies. This could mean a stronger consumer preference for environmentally conscious products or products that offer some form of health benefit as a result of their being green (i.e., they are non-toxic). In an oversaturated marketplace, where money is increasingly dear to consumers, differentiating a product by being green can be a huge advantage.

Trajectory of Green Economy

Green companies are investing resources into R&D, marketing, operational programs and manufacturing processes that have become deeply embedded in the philosophy of their firms. These organizations are committed to the programs and products that they have developed and believe in a transition towards a sustainable, green economy. Each of the companies we heard from said that their approaches and transition to green are part of an ongoing commitment.

Despite the challenges these green businesses face, they see a future in a green market. They are anticipating new skills requirements and working towards developing training approaches that will meet the needs of the workforce in their sectors. They are developing best practices, measures of success and standards that define the green sector and what it means to be a “green” product or business.

More than anything, green companies see that there are an increasing number of businesses joining the green economy and feel that there will be a huge benefit to them with this growth. Green business hopes that a broader green market will allow for more product differentiation, increased public (and consumer) awareness of sustainable products and methodologies, more consistent regulation and policy-making across the board. They also anticipate that prices for “green” products and manufacturing will go down as competition increases.

Introduction

In 2009, the Global Citizen Centre defined the green economy as an emerging marketplace that seeks to optimize the synergy among three sets of values: social, environmental and financial. Across the globe, there is evidence of increased demand for sustainable approaches to business and companies are reacting to this because they see value in developing modes of product development, manufacturing, operations and branding that represent this niche. The Greater Toronto Region is fast becoming a significant player in the emerging green economy, creating new opportunities in both traditional industries that are shifting towards a green, sustainable focus, as well as in emerging green sectors.

Green practices are new and evolving and many of the firms and companies that are embracing them are pioneers, experimenting with new and innovative policies and processes in the absence of industry standards and an environment of rapidly changing regulations and legislation. As businesses transition to the sprouting demand for a green sector, there is a pressing need to better understand the economic impact and influence the sector has on the labour market and how we can best prepare the workforce to meet the changing needs of employers.

In response to this need, Workforce Planning Ontario's Central Region boards (The Peel-Halton Workforce Development Group, the Toronto Workforce Innovation Group, the Workforce Planning Board of York Region and Bradford West Gwillimbury, the Durham Region Local Training Board and the Simcoe Muskoka Workforce Development Board) came together in 2009 to look at the issue and to examine the growth and impact of the green sector in the province. There were two phases to the "Greening Economy" project: The first phase resulted in a report that outlines emerging careers across key economic sectors in the province, and this, the second phase, takes a closer look at how businesses in Ontario are responding to the transition to Ontario's greening economy. Overall, the project has identified around 100 Green Occupational Profiles that are available through the local board websites.

This report highlights 10 companies that have committed to greening their product offering, their practice, or both. The companies that have contributed are carving a path to a "greener" Ontario and a more sustainable planet.

The five collaborators on this project are part of Workforce Planning Ontario, a broader provincial network consisting of 25 planning areas that work to identify significant labour market development challenges and opportunities at the local level. Operating as non-profit organizations and led by volunteer boards of directors, these organizations work within their communities to identify and address local labour market trends and issues.

Every year the local boards prepare reports of key local labour market priorities in their catchment areas - the Trends, Opportunities and Priorities Report or Integrated Local Labour Market Plans. Over the past few years, the boards in the Central Ontario Region have seen a trend towards an emerging green economy in their communities. Fluctuating economies and a rapidly changing global environment have increased pressure on businesses to remain competitive by unearthing new opportunities, while at the same time increased expectations from media, competitors, environmental activist groups, community groups, and government regulations are influencing the movement to "green". Put simply, companies are realizing that going green is good for business.

Since 2003, the Government of Ontario has invested more than \$600 million in research projects and companies that are focusing on green technologies and initiatives (Ministry of Research and Innovation, 2008). Incentives and subsidies are available to businesses supporting the implementation of sustainability initiatives or the development of green products and services. In May 2009, the Province of Ontario introduced the Green Energy Act, which is expected to stimulate increased investment in energy alternatives and create between 50,000 to 90,000 new jobs.

This transition is creating a wave of opportunity for businesses to implement "greener" policies and practices and sustainability policies are becoming common language around board tables and businesses. The transition to green has had varying and multiple results including reduced operating costs, enhanced public image, and evolving new approaches to marketing.

This report consists of 10 case studies of local businesses across the Central Ontario Region. These 10 companies have made decisions to "green" their product, process, or both – and in all cases, their green transition has become part of their brand. The research examines the reasons companies choose to make changes, the initiatives that they implemented, the challenges and successes along the way and future plans that build on lessons learned. Their examples will hopefully generate new ways of thinking about profitability and the transition to a "green" economy.

Report Scope and Structure

This report is the second phase of a collaboration between local Workforce Planning Ontario Boards in the Central Ontario Region. The first phase resulted in the report *Greening the Economy: Transitioning to New Careers*. The goal of this second phase research is to develop a deeper understanding of the economic impact and labour market influences of the sprouting green economy and to further expand Workforce Planning Ontario's Occupational Profiles tool, by contributing over 100 profiles related to the emerging green economy.

In order to accomplish this, each of the collaborating local labour boards, the Durham Region Local Training Board, the Peel-Halton Workforce Development Group, the Simcoe-Muskoka Workforce Development Board, the Toronto Workforce Innovation Group, and the Workforce Planning Board of York Region and Bradford, West Gwillimbury, identified businesses within their catchment areas that had demonstrated a commitment to becoming a green business. Collaborators conducted one-on-one interviews where businesses were asked to identify organizational policy and procedural changes that were part of their green transition. Secondary research was done to develop a thorough understanding of the transitioning process.

This report represents the culmination of these efforts over the past year. It is organized in two sections; the first section consists of 10 case studies, the second of 10 occupational profiles that exemplify some of the occupational shifts that have resulted from businesses adopting a sustainable, green approach (Appendix A).

ECO Building Resource

Toronto's only green building supply store

Address: 136 Wellington Street East, Aurora, Ontario, L4G 1J1

Interviewee: Kevin Royce, Owner

Website: www.eco-building.ca

Sector: Retail/Wholesale Trade (NAICS 42, 43-45)

Size of the Company: Small (1-49 employees)



The Source For Sustainability



Company Overview

ECO Building Resource (ECO) is an Aurora, Ontario based company, owned and operated by Kevin Royce. Founded in 2008, ECO sources and supplies environmentally friendly building materials to consumers, contractors and builders. Products and accessories available through this company include ECO insulation, stains and finishes, LED lighting, flooring, fencing and sealant and adhesives.

Motivated by the importance of finding and using environmentally friendly building materials, Royce decided to focus his business on providing products that, unlike their mainstream counterparts, contain no carcinogens or toxins. "Shelter is second only to food for survival," says Royce. "Choosing to pay attention to environmental issues and taking care of how we build and renovate can make a difference for generations to come. Now, more than ever, we have the power to lessen our impact on the planet by creating environmentally sound structures." Royce believes that the efficient use of resources reduces greenhouse gases and minimizes waste to landfills, both important elements in our global future.

At this point, ECO Building Resource's market is divided equally between retail and wholesale clients. Royce gained extensive knowledge of a wide range of products and product applications during his 25 years in the building materials industry. This experience led directly to his ability to readily source and review building materials to ensure they are safe for people and the planet.

Many of ECO Building Resource's customers choose healthier products as part of their commitment to the environment. Building green also contributes to a more comfortable, healthier indoor living environment. By lowering the off-gassing of Volatile Organic Compounds (VOCs) and other toxins, threats to the quality of life and life expectancy are reduced. ECO materials also places emphasis on appearance and function, helping consumers maximize their biggest investment (their home) while reducing costs by minimizing resource usage. This environmental benefit can contribute to higher resale values.

As a fairly young company, ECO is still sourcing a range of safer, more sustainable product offerings and works towards presenting its clients with a range of options for building "green".

Royce is currently the company's only full-time employee. ECO seeks the help of occasional part-time workers.

Transitioning to Green

ECO Building Resource was established in response to business opportunities in the green building market and its CEO's personal concern for environmental health and safety. While working as general manager of a major building supplier, Royce found that many customers had difficulty in sourcing environmentally safe building products and he received many inquiries about Leadership in Energy and Environmental Design (LEED) compliant products from builders and contractors. As well, Royce's experiences coaching youth hockey alerted him to the growing rates of asthma and allergies and the growing phenomenon of environmental sensitivity.

"Motivations for choosing green products change over time. Right now though, people are beginning to ask questions about the chemicals and toxins that you find in ordinary paint or insulation. The fact that green products don't contain harmful chemicals is a major selling point."

Since its inception, ECO Building Resource has sold only green materials and uses its own products and methodologies to run the business. For example, one of the company's flagship products is Ultra Touch, a natural cotton fibre insulator. It is made with nearly 100% natural fibres, including denim from recycled jeans. It contains no chemical irritants, requires no warning labels, does not encourage mold and mildew growth and can be handled without protective equipment. Because it enhances energy efficiency compared with traditional insulation, is made with cotton fibre and is 100% recyclable, Ultra Touch is a candidate for LEED credits and is recognized as environmentally friendly by The Canada Green Building Council. Royce says that these factors are all important to his customer-base.

"Offering products that help companies attain LEED accreditation was a central reason for starting ECO Building," says Royce. "LEED status has (also) become increasingly important for building owners, so I expect that the market for green building resources will continue to grow".

Current Green Initiatives

ECO Building Resource has not yet formalized its environmental policy but environmental awareness is at the core of its business operations and *raison d'être*. They are the first building supply store of this type in Toronto and want to set the standard as a green business.

ECO is integrating environmentally friendly policies and practices throughout its workplace. The company is using LED lighting in its retail store and keeps a minimal inventory to reduce warehousing. The firm has a recycling program for the office and reuses the boxes products arrive in. The company keeps no toxic products on site and maximizes the use of electronic communications to reduce printing.

ECO Building Resource is committed to sourcing, promoting and expanding its list of green products. For example, ECO is currently working promoting water-recovered plank flooring as an option for its clients. Because deep river water is oxygen-free, the wood lying at the bottom of Ontario's rivers has been protected from rotting and has been naturally preserved. Royce believes that this source of timber is superior to conventional sources.

Challenges



One of the major challenges ECO Building Resource faces is the reluctance of consumers to make the change to more environmentally friendly products and services. Over the past few years, public opinion has been slowly but steadily shifting towards a greater emphasis on environmental sustainability and green-friendly products. But the higher cost of these products coupled with a lack of awareness impedes more rapid adaptation of new products and approaches. Environmentally friendly products often cost more, and while they last longer and are often the most economical choice in the long run, that can be hard for consumers to understand. One example of this is environmentally sound insulation that is chemical free, maintains its quality and is a better insulator than fibreglass, but costs twice as much. Consumers may focus on the material's initial cost rather than calculating the long-term savings of using a different, more durable and effective product.

Another challenge ECO Building Resource faces is the lack of clearly articulated regulations and what constitutes a "green" product. This poses particular challenges where marketing and product positioning is concerned.

Success Stories

ECO Building Resource has celebrated two years of operation and continues to grow. Kevin Royce reports that ECO Building Resource has become the supplier of choice for many local builders, who recognize the demand for, and benefits of, using environmentally safe, green materials. This trend will continue to propel the company forward, growing its market share and profitability.

Future Plans

A significant part of ECO Building Resource's future success will depend on market awareness about the importance of using non-toxic building materials. As part of its efforts in this regard, the company participates in trade shows featuring green products and belongs to several groups, including Fleming College Program Advisory Committee for Sustainable Building Design and Construction, the Green-Connections networking and mentoring group and the Green Drinks Network. The company also advocates for greater regulation of green products to ensure that products that are advertised as "green" actually meet criteria for being less harmful to the environment.

Green Careers

ECO Building Resource is solely owned and operated by Kevin Royce, an entrepreneur. He controls the sales, marketing, shipping, accounting and inventory. Royce has been able to transfer his experience and skills as a general manager at a building supply company to a successful green business focused on making environmentally safe products available to a growing consumer audience.

Although he has no formal "green" certification, through training Royce has gained an enhanced understanding of LEED requirements. He participates in numerous trade shows and events to stay informed and knowledgeable about new and emerging "green" products.

ECO Building Resource foresees that the company will need to develop a Product Specialist position and other roles as it expands.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at ECO Building Resource include Building Supplies Distributor (Appendix A-I) and Technical Product Specialist (Appendix A-VIII).



Fifth Light Technology

Green and efficient every step of the way

Address: 1155 North Service Rd. West, Unit #7, Oakville, ON., L6M 3E3

Interviewee: Dr. Joseph Dableh - CEO & President

Website: www.fifthlight.com

Sector: Professional, Scientific and

Technical Services (NAICS 54)

Size of the Company: Small (1-49 employees)



Company Overview

Fifth Light Technology responds to concerns about energy consumption by developing lighting solutions that balance the need for electricity with the pursuit of energy sustainability. They do this by using technology that conserves energy, reduces waste and saves money.

Fifth Light was launched in December of 1997 by Dr. Joseph Dableh, the current President and CEO. Initially the company focused on conducting intensive research and product development to perfect its technology. In May 2004, the company began a three-year process to refine and improve its product. Since then, Fifth Light has installed over 75,000 lighting units for clients ranging from corporate campuses and hospitals to data centres, commercial offices and schools.

The core of Fifth Light's business philosophy is a commitment to environmental stewardship and sustainable development. The company's lighting technology is designed to respond to the stress that peak demand periods for electricity put on energy resources. The demand for electricity at annual peak times is so high in Ontario that there is not enough energy created in the province to support it. This additional demand for electricity puts pressure on power utilities to look for extra energy or to build peaking power plants, impacting the environment and raising the cost of energy.

In addition to reducing the power demand and the energy consumed by lighting systems, Fifth Light has improved the quality of lighting technology by improving its efficiency and eliminating the interference associated with traditional dimming systems. Traditional fluorescent tubes have a lifetime of 2,000 on-off switching cycles or a life of 24,000 hours. Fifth Light's technology increases the life of the tubes and extends their ability to last for 200,000 on-off switching cycles. This minimizes the solid toxic waste created by used light tubes as well as the costs associated with manufacturing and replacing these fixtures.

Fifth Light's long-term focus on research and development has led to several patented technologies for the lighting industry. Fifth Light took advantage of new technologies to market their own products, offering customized lighting solutions to consumers. The company analyzes each customer's lighting needs, designs a lighting system, manufactures the required hardware, installs the technology, handles quality control and service and offers a lighting management service.



The company pioneered work in several areas. They were the first to outfit a commercial office building in Canada larger than 500,000 square feet, installing individual dimming controls over each fixture. Fifth Light is the only company that offers 347V Digital Addressable Lighting Interface (DALI) dimmable electronic ballast for types of T8 and T5 Fluorescent tubes and was the first to install fully DALI dimmable lighting system in a hospital, achieving complete building integration with patient bedside control. All of Fifth Light's products are fully manufactured in Canada in an ISO 9001 certified facility.

Transitioning to Green

Fifth Light has demonstrated that effective lighting management can save a significant portion of energy in an economically feasible manner while improving the quality of light and simplifying the operation of lighting systems. The company's solutions are designed to make a positive contribution to the environment by decreasing greenhouse gas emissions and conserving valuable resources. As approximately 15% of all electricity generated in North America is consumed by indoor lighting systems of commercial, industrial and institutional facilities, this approach has the capacity to result in significant energy and cost saving.

Fifth Light technology reduces power consumption through "smart scheduling", automatically dimming lights in proportion to the amount of natural sunlight reaching an area. This technique is known as day harvest lighting. This saves energy by setting lights to a minimum level when the space is illuminated by natural light. Installing motion sensors to automatically dim the lights or turn them off when an area is vacant further increases energy savings.

By providing web-based control and management of a lighting system, Fifth Light's technology can have a major impact on energy consumption by making it easier to do simple things such as turning off lights when no one is in the room.

Current Green Initiatives

Fifth Light Technology uses their own products and technology to save money and energy as an organization. The company reduces their lighting to as low as 5% throughout their office building while also using motion sensors, photo sensors and smart schedules to turn lights off when they are not needed. These measures have allowed Fifth Light to reduce their energy consumption by 60%.

Fifth Light intends to automate and integrate their office systems and minimize the use of paper at their offices. The company relies on email for all communication and on automatic payroll deposits. Employees are encouraged to live close to work to reduce their commuting time and reliance on car transport. Approximately 50% of employees live within a five kilometre radius of work.

Every stage of Fifth Light's manufacturing process meets or exceeds the most stringent environmental practices and guidelines. The company finds local manufacturers to produce the hardware for their ballast and addressable switches and lighting control panels. This further reduces their energy consumption by decreasing the travel distances for goods and products as the transportation of materials is costly and damaging to the environment.

Challenges

As a new and innovative company, one of Fifth Light's main challenges was not having an existing model or technology to draw from. In addition to technological challenges, Fifth Light faced economic obstacles to achieving the acceptance of their products and services in the marketplace. This required innovative thinking in the cost of the technology and its manufacturing and in their approach to marketing and modeling the technology. Dr. Dableh's new objective is to make disruptive intelligent lighting technology the standard practice in new and existing buildings and the industry imperative.

Fifth Light found that the transition to widespread acceptance and use of green products has been slow, but is steadily progressing. The use and acceptance of environmentally safe products is changing as a result of education and awareness campaigns. Fifth Light clients constructing new buildings understand environmental benefits and economic savings generated by this technology. Still, some corporations involved in retrofitting existing buildings find it difficult to justify the initial capital cost of the system. This is particularly true when they have to address compulsory maintenance issues and manage the upgrades often needed in older buildings.

Success Stories

To date, Fifth Light Technology has completed over 25 projects and always has another 10 to 15 projects in progress. In retrofit applications, the company has reduced energy consumption by 60% to 80%. The uppermost range in savings was achieved in Plano, Texas at a 500,000 ft.² data processing centre. Fifth Light has delivered energy savings in the range of 40% to 60% in new buildings, above and beyond using the most energy efficient light sources. As this technology is adopted on a large scale, it will translate into a reduction of a few hundred megawatts of generating capacity.

Fifth Light has been awarded several grants by the federal and provincial governments. These grants represent the government's recognition of the company for its contribution to technological innovation, energy conservation, environmental benefits, job creation, the ability to positively impact the Canadian economy and its export capacity.



The sources of these grants include:

- The National Research Council of Canada (during the early stage of the company's R&D)
- The Scientific Research and Development Investment Tax Credit and the Ontario Innovation Tax Credit (for all stages of SR&RD)
- Sustainable Development Technology Canada (for the pre-commercialization phase of the technology)
- The Next Generation of Jobs Fund (for job creation and ongoing commitment to capacity building)

Future Plans

Fifth Light is currently expanding its markets across Canada and the United States and is planning to take its technology global. Fifth Light is simultaneously working to introduce new products to supplement the current line and continues to invest in research and development to maintain its leadership position in the field of light dimming and lighting management systems.

The company is recognized as a leader in web-based multi-user, multi-building lighting control systems that are accessible from Voice over IP (VoIP) telephones. They recently introduced a new line of DALI sensors that combines four sensors (light, motion, infrared, and temperature) into one unit. This will streamline the installation process and wiring requirements and reduce capital investment. Fifth Light plans to streamline every aspect of the process to deploy its technology in retrofit buildings so that it is more affordable and a more compelling product choice.

Fifth Light is setting new standards in lighting technology. The firm is moving into applying its technology to outdoor lighting as well as other commercial and industrial applications. As new government policies and regulations governing electricity use are implemented, Fifth Light stands to benefit from an interest in more efficient and greener lighting technology.

Green Careers

Fifth Light Technology began with a small group of people working on the company's initial research and development. The company has grown to over 45 employees and consultants, excluding the manufacturing and system installation jobs that are outsourced to local manufacturers and electrical contracting companies. Fifth Light's employees include engineers, software developers, accountants, electricians, technologists, research and development officers, sales and marketing personnel and administrative staff.



Due to their commitment to creating high quality jobs and growing their capacity, the company received funding from the Next Generation of Jobs Fund through the Government of Ontario. This will help them identify and hone their competitive advantage. Fifth Light plans to expand significantly, increasing the jobs available in all areas of the company.

Environmentally friendly practices are an integral part of Fifth Light's approach to business. All employees receive intensive training on the technology, its uses and its benefits, both economic and environmental. The company provides access to employee training and education to ensure that employees have appropriate qualifications and up-to-date skills.

Emerging Careers - Corresponding Green Occupational Profiles

Examples of emerging green occupations at Fifth Light Technologies include Electrical and Electronics Engineer (Appendix A-IV) and Environmental Engineer (Appendix A-V).



Grand & Toy

Nurturing responsible business practices by caring for the roots that connect us all: Business, Community and the Environment

Address: Head Office - 33 Green Belt Drive, Toronto, Ontario M3C 1M1

Interviewee:

Jamieson Saab, Sustainability and Social Responsibility
Coordinator, Marketing

Natasha Renaud, Director, Communications and Social
Responsibility, Marketing

Website: www.grandtoy.ca

Sector: Retail and Wholesale Trade (NAICS 42, 43-45)

Size of the Company: Large (200+ employees)



GRAND&TOY
Performance Enhancing Offices™



Company Overview

For over 128 years, Grand & Toy has been a provider of office solutions to Canadian businesses. Founded on the recognition that its business and the business of its customers are connected, Grand & Toy prides itself on the ability to provide great selection, service and value to any size business.

Since opening in 1882, the company has grown to include numerous retail stores across Canada, including 11 in the Greater Toronto Area. There is a large head office in Toronto, three call centres, 26 branches and seven distribution centres, with the largest in Vaughan, Ontario. Grand & Toy provides business needs such as office supplies, office furniture and electronics along with a variety of other services. The company has over 200,000 business customers across the country.

The Grand & Toy core values are:

- Honesty about our intent and delivery on our promises
- Continuous improvement and honouring brilliant execution
- Setting the bar high and embracing the challenges and outcomes of risk-taking
- Nurturing human potential
- Collaborating to build lasting relationships

Grand & Toy believes that each and every person has a responsibility to do their part to better themselves, their communities and the natural environment. In line with this philosophy, the company embraces social responsibility across every facet of its business. The organization fosters this through connections with clients, partners and other stakeholders.

Transitioning to Green

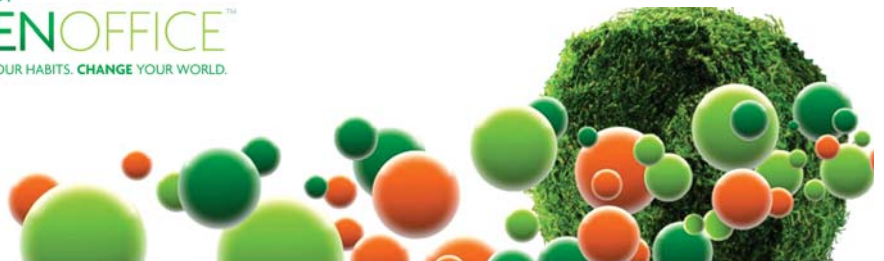
Grand & Toy strives to promote sustainability and minimize the adverse environmental impacts of their operations. The company sells products and solutions that are safe for their intended use, efficient in their use of energy, respectful of the environment and that can be reused, recycled or disposed of safely.

In 2007, influenced by customers and market demand, Grand & Toy partnered with a global leader in corporate social responsibility in order to define and implement goals to achieve its sustainability objective. As a result of this process, the company developed seven pillars of sustainability:

1. Environmental footprint
2. Products stewardship
3. Customer partnership
4. Sustainable/ethical sourcing
5. Impact on communities
6. Employment practices
7. Reporting and communication

Grand & Toy believes that its success depends on responsible environmental stewardship. The company is committed to continuing to build on a strong record of meeting environmental commitments. In order to maximize sustainability and achieve a higher level of environmentally-efficient practice, Grand & Toy changed their approach to "doing business". The company streamlined their ordering systems by implementing an innovative e-invoicing service. They introduced the ThINK national ink cartridge recycling program and 99% of the copy paper sold to customers is SFI, FSC, PEFC or Eco-logo certified. The company models these practices to clients as another way to achieve better results in their own businesses by ensuring that all products and systems meet sustainability standards.

Grand & Toy's new website - www.grandandtoy.com/greenoffice, allows the company to share information, resources and solutions to guide customers in making environmentally smart decisions. They have a procurement policy and Partner Code of Conduct that asks suppliers to sign an agreement stating that they are making a commitment toward ethics and environmental responsibility.



Green Initiatives

Grand & Toy has a company-wide approach to ensuring that their sustainability goals are achieved. Internal committees such as the Sustainability Steering Committee, Sustainability Project Champions and other Eco Committees assist the Director of Communications and Social Responsibility to further the company's goals by encouraging Grand & Toy's customers to achieve higher levels of environmental stewardship.

The company has corporation-wide policies related to the sustainability strategy. These include policies dealing with continuous improvement, regulatory compliance, monitoring, reviewing and communicating the company's environmental priorities, maintaining a safe and healthy workplace, community responsibility and environmentally friendly procurement practices.

The company implemented additional initiatives to meet their sustainability goals. These include: double-sided printing (a strategy that has reduced paper consumption by 26% nationwide for 2008/2009), switching from a paper-based delivery management system to one that allows customers to sign for shipments electronically and instructing drivers to map the most efficient routes for delivery in order to reduce gas emissions.

Some of Grand & Toy's other sustainability measures include:

- Scheduling deliveries at non-peak hours to reduce the time trucks spend on the road;
- Recycling 2,400 pallets each month ;
- Using reusable plastic totes for internal shipping;
- Using shipping boxes made from 85% recycled content; and
- Organizing community "clean-up" days in which Grand & Toy employees take on projects to improve their communities.

Through their services and initiatives such as their GREENOFFICE website, Grand & Toy helps customers understand the importance of the life cycle approach to procurement, which stresses the total cost of a product throughout its life rather than just its initial price. This is an example of how the company is trying to model their sustainability practices to their customers.

Success Stories

Grand & Toy has achieved the following:

- In 2007, through the THINK program, 237,549 empty ink cartridges were returned
- The company implemented several internal paper initiatives in 2008 that reduced paper consumption by 5,512 reams over 2007 figures
- Grand & Toy achieved a 78% waste diversion rate across the company in 2009
- Grand & Toy offers over 1,503 environmentally preferable products, 23% of the products in their ordering guide

Grand & Toy has had huge success with their streamlined process for large enterprises. They offer procurement analysis to ensure companies are as cost effective, efficient and environmentally responsible as possible through their procurement activities.

Future Plans

Grand & Toy thinks there is still much to accomplish. The company will continue emphasizing the greening of the supply chain and streamlining its own processes. As noted above, they are moving towards life cycle procurement in response to increasing customer demand.

Educating staff, clients and suppliers about environmental sustainability is a priority for Grand & Toy. Further developing online systems to help clients continue to minimize inefficiencies and working with suppliers to increase the availability of environmentally preferable office solutions and reduce product packaging are some of Grand & Toy's goals.

On a larger scale, the company intends to continue requiring ethical sourcing agreements with all suppliers and revamping third-party audits for private label products to include environmental criteria. They are examining the feasibility of creating standardized information systems for environmentally preferable products based on Life Cycle Analysis.

Grand & Toy strongly believes in continuous improvement. The company's goal is to continually evaluate their systems and learn from the past in order to improve in the future.

Green Careers

Grand & Toy employs over 200 people in the head office, over 300 people at the distribution centre, 50+ at the call centre and provides numerous full and part-time opportunities at retail stores. The company's transition towards sustainability has resulted in a shift in employment demands and all jobs have changed in some way to advance Grand & Toy's sustainable focus.

While employees do not receive formal training on sustainability, they are kept informed about the company's policies and efforts through corporate communications, newsletters and other means. The company plans to implement a formal training program.

The focus on sustainability led to the introduction of the new position of Sustainability and Social Responsibility Coordinator, Marketing. This person's job is to ensure the sustainability efforts of the company are carried out to further corporate social responsibility. The position of Director of Communications and Social Responsibility for Grand & Toy has changed to include a strong focus on sustainability efforts.

As Grand & Toy's transition toward environmental sustainability continues, all employees will have more responsibilities related to the company's goals. New opportunities are predicted to result from the changes Grand & Toy continues to implement.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Grand & Toy include Sustainability and Social Responsibility Coordinator (Appendix A-IX).



Hubbell Canada

Promoting an ongoing culture of environmental responsibility

Address: 870 Brock Road South, Pickering, ON Canada L1W 1Z8

Interviewee:

- R. Cousineau, Project & Technical Services Manager
- D. Drozda, Director, Marketing and Sales, Hubbell Lighting
- P. Kumar, Manager Project Marketing
- B. Smith, Assembly/Facility Manager

Website: www.hubbell-canada.com

Sector:

- Electrical Equipment, Appliance and
- Component Manufacturing (NAICS 335)

Size of the Company: Large (200+ employees)



Company Overview

Hubbell Canada manufactures high quality electrical and lighting products for industrial, commercial and telecommunications markets. The company focuses on providing its clients with lighting solutions, including Leadership in Energy and Environmental Design (LEED) certified options such as daylight harvesting technologies. Hubbell Canada conducts lighting audits for clients to evaluate their current lighting systems and identify ways in which they can reduce energy usage and long-term operating costs. Founded by Harvey Hubbell in 1888, the company has been an integral part of the growth of the electrical equipment industry and a pioneer in the development of new products and technologies.

Throughout its long history of new product design and manufacturing innovation, Hubbell has survived many economic ups and downs including the Great Depression of the 1930s. In 1960, the company entered a new period of rapidly expanding growth, largely resulting from internal product development. Additional growth came through an acquisition program in which Hubbell added other companies to its network. These acquisitions brought new products to the Hubbell inventory and opened up new market opportunities.

Hubbell operates manufacturing facilities in Canada, the United States, Puerto Rico, Mexico, Italy, Switzerland, Brazil, Australia and the United Kingdom. The company participates in joint ventures in Taiwan and the People's Republic of China and maintains sales offices in Singapore, Hong Kong, South Korea, the People's Republic of China, Mexico, and the Middle East.

The company believes in a strong tradition of quality, both in its products and operations. Hubbell defines quality as its focus in design, engineering, testing, and production. They work with a network of independent electrical distributors whose expertise is one of the most critical assets.

As the most adaptable form of energy, electricity is the energy source that Hubbell believes will power the future, from basic electrical equipment to the most advanced electronic devices.

Transitioning to Green

The move towards a green economy and greater stakeholder environmental awareness provided the incentive for Hubbell to examine its environmental practices and those of its clients. Becoming more environmentally sensitive allowed Hubbell to reduce its energy expenses and appeal to a market looking to reduce costs. With this in mind, Hubbell started working to reduce the company's carbon footprint.

In 2010, Hubbell launched the Hubbell Sustainability Initiative (HSI), an enterprise-wide commitment to develop sustainable products and business practices. The definition of sustainability from the U.S. Environmental Protection Agency (EPA) is "meeting the needs of the present without compromising the ability of the future generations to meet their own needs." The HSI incorporated this concept in the development of their plan to "achieve an ongoing culture of environmental responsibility with employees, the community, and industry by implementing educational programs and sustainable practices."

Hubbell is working with clients to help reduce their energy usage and more customers are recognizing the importance of sustainable practices and the long-term benefits – the ability to save tens of thousands of dollars per year in energy costs. Hubbell's GreenWise™ program provides leading edge, sustainable lighting solutions that reduce energy use without sacrificing illumination.

Green Initiatives

Hubbell believes it has a responsibility to focus on the needs of customers, consumers, employees and the people in the communities it serves. The company strives to minimize the environmental impact of its products, processes and services.

As part of this effort, Hubbell:

- Is the only lighting manufacturer with a U.S. Green Building Council (USGBC) LEED® Silver certified headquarters;
- Offers more light emitting diode (LED) fixtures than any other fixture manufacturer;
- Is reducing job site packaging waste by using job packs, engineered packaging solutions and converting to biodegradable packaging materials; and
- Is implementing recycling programs for defective returns and scrap.



Lighting accounts for 30% of a building's total electricity consumption and Hubbell advises its clients that this is the first place a building manager or owner should consider upgrading to conserve energy and lower operating costs. Hubbell's GreenWise™ lighting products minimize negative environmental impact and can help cut lighting costs by 50% or more. Installing lighting control systems also reduces energy usage.

According to the EPA, average energy savings with occupancy sensors that turn off or reduce lighting when no one is in the room can be 32% in private offices, 60% in restrooms, 44% in conference rooms, 55% in corridors and 63% in storage rooms.

Hubbell's sustainability initiatives are reflected in their internal practices. Hubbell's Pickering, Ontario facility in Durham Region has:

- Installed motion sensors and energy efficient lighting in the manufacturing warehouse, decreasing electricity usage by 30,000 kWh/month (a 30% cost savings);
- "Right sized" their air compressor and generator to maximize efficiency and reduce energy consumption;
- Explored alternative energy sources such as solar and wind power;
- Started a carpool program for employees living in the Durham region; and
- Examined a product afterlife recycling program to ensure that 75% of waste is not going to landfill (this initiative will be rolled out in 2011).

Hubbell participates in two local strategic initiatives, the Durham Strategic Energy Alliance and the Greater Toronto Marketing Alliance. The company provides training and updates on environmental programs to employees.

Challenges

The challenges Hubbell has faced in making the move towards becoming a greener company are similar to those experienced by many green manufacturers. Transition takes time and there is very little industry-related support or expertise. Also, the costs associated with initiatives such as changing to wind and solar energy are high. Hubbell would like to be self-sustaining in energy production and use, but the initial cost makes this goal hard to reach.

Hubbell experienced other difficulties, including the need to keep up with rapidly changing technology and regulations. End of life product care legislation differs from province to province, and because Hubbell sells nationally, managing varying provincial demands means that the company must be current in all legislative requirements. Furthermore, the expense of aftercare costs related to responsibly removing other companies' old products is significant.

Hubbell is discovering that the green movement fosters increasing competition, including companies that outsource "green products" and sell them in Canada. One of the company's most significant challenges is determining what qualifies as a green product.

Success Stories

Hubbell's Pickering, Ontario facility in Durham Region has seen significant energy savings of 30% annually as a result of changes to its warehouse lighting. This represents a reduction of 30,000 fewer kWh per month.

Internationally, Hubbell's commitment to cultivating green business practices has led to their:



- Earning a Silver LEED rating at the 185,000 square foot headquarters in Greenville, South Carolina. The new structure is 30% more energy efficient than a typical office building of this size.
- Implementing comprehensive recycling systems that currently recycle 90% of all paper products at their wiring systems manufacturing facility in Puerto Rico. The facility addresses recycling, reuse and proper disposal of plastics, scrap metal, batteries, discarded equipment, wood pallets and more, resulting in a 75% reduction of landfill disposal.
- Purchasing of recycled packaging materials, also at the Puerto Rico site, and a waste minimization program following EPA guidelines as part of the transition.
- Recovering over 980,000 gallons of water each year using condensed water from rooftop air conditioning units. A reconfiguration of the compressed air system, along with other energy saving practices at the Puerto Rico facility, saved nearly \$150K in kilowatt-hour costs.
- Working to reduce waste and increase efficiency through Lean Manufacturing production practices. Current solar energy and lighting initiatives are underway that are estimated to save over 76,000 watts per year.

Future Plans

Hubbell is committed to a policy of continuous improvement through ongoing investment in new technology and environmental practice. This is an important part of the company's belief in the benefits of sustainability.

In an effort to share its expertise and learn from others in the community, Hubbell participates in a number of local and national organizations, including membership in Canadian Manufacturers and Exporters and the Ajax-Pickering Board of Trade.

Green Careers

Hubbell has adopted a strong focus on sustainability over the past several years that included adjusting their internal policies on energy consumption and recycling. They are also making changes to their entire product line and this affects all employees. Employees have new policies to follow in the performance of their job functions and the company's environmental programs and manufacturing processes have been revised.

All of these changes have increased the need for employee training. Hubbell employees participated in courses aimed at helping to reduce the company's carbon footprint, and there have been numerous in-house training programs dealing with new manufacturing processes. The Hubbell engineering group is LEED certified and thus has been trained on LEED requirements.

The green transition has led Hubbell to create a strong, sustainable product line and resulted in increased employment for people in product development. Growth has occurred in the areas of research and development, engineering and manufacturing. One of the new positions that was created is that of Technical Product Specialist. These individuals are experts in the technical design and capabilities of the product offerings. Hubbell predicts that there will be significant demand for new skills in all areas of the business as the company continues to evolve and move forward in its sustainability plans.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Hubbell Canada include Electrical and Electronics Engineer (Appendix A-IV) and Technical Product Specialist (Appendix A-VIII).



Husky Injection Molding Systems Ltd.

Taking a longstanding commitment to environmental responsibility to the next level with an initiative to achieve carbon neutrality by 2025.

Address: 500 Queen St. South, Bolton, Ontario L7E 5S5

Interviewee: Ryan Fabi, Director of Environment, Health and Safety

Website: www.husky.ca

Sector: Manufacturing (NAICS 31-33)

Size of the Company: Large (200+ employees)

HUSKY®



Company Overview

Husky Injection Molding Systems Ltd., founded by Robert Schad in 1953, is the leading producer of high speed injection systems for thin wall containers. What began as a small machine shop in a Toronto garage is now the world's largest brand name supplier of injection molding equipment to the plastics industry.

Husky began by engineering a snowmobile – the “Huskymobile”. Soon after, Schad discovered the niche market of specialized mold making. Under his direction, Husky took a full systems approach to mold making, designing and manufacturing everything from injection molding machines to hot runners, robots, molds and fully integrated systems. As a leader in the industry, Husky supplies companies such as Coca Cola and Rubbermaid.

Husky reinvests a minimum of 4% of sales in research and development to develop the best and most efficient products. Fueled by Schad's original vision, Husky strives to be an honest and respected company.

In addition to producing quality products, Husky invests in its people, understanding that people are most productive in a safe, high quality, healthy work environment. Husky offers its employees an on-site state of the art fitness centre, daycare services and medical assistance. These practices demonstrate the company's belief in the importance of employee health and safety.

Transitioning to Green

Environmental responsibility has been one of Husky's core values since the company was founded. In 1980, Husky's Greenbook was published as a best practice guide to help customers who are building new injection molding facilities make decisions related to factory planning, energy efficiency, and machinery.

Husky's full-systems approach to mold making focuses on ensuring that clients are as environmentally focused as possible. Husky's processes emphasize energy efficiency, manufacturing efficiency and minimal resource consumption. As an example, Husky's green technology manufacturing system uses a combination of 50% virgin resin and 50% recycled resin.

In 1994, Robert Schadt turned his attention to minimizing the environmental impact of all areas of the company. Husky ensures its buildings fit into the natural landscape, utilizing efficient lighting, heating, cooling and insulation and maximizing the use of natural elements such as day lighting, ground cooling and solar energy. Husky participates in a wide range of recycling programs and has achieved a 95% waste diversion rate globally.

Husky is clear about their commitment to ensuring that their environmental impact is minimal. Being “green” is part of their core values and truly embraced throughout the company.

Current Green Initiatives

Fifteen years ago, Husky incorporated an official environmental policy. The policy articulates the company's views and goals in relation to minimizing environmental impact.

The recent introduction of Husky's trademarked TargetZERO initiative has taken its environmental focus to a new level. TargetZERO is a 15-year program aimed at reducing greenhouse gas emissions to achieve carbon neutrality by 2025. Husky aims to do this through:

- Reducing paper, energy and water consumption by installing LED lighting and motion sensors in an effort to reduce energy use, finding other sources for energy and using paper that is made with a minimum of 50% recycled fibre;
- Adjusting the manufacturing process to make it more sustainable and helping customers achieve maximum operating efficiency by streamlining processes and lowering energy consumption;
- Tracking recycling and performing audits to ensure that waste is being recycled properly and that vendors are handling waste properly; and
- Executing events and programs such as GreenShares, a companywide program launched in 2000, to encourage environmental responsibility. Employees are rewarded with “shares” for every environmentally friendly thing they do, whether at work or at home. Husky's on-site daycare centre teaches children about environmental impact, recycling and reducing greenhouse gases.



Husky has had a bicycle transportation program in place on their campuses for many years. This program allows staff to get from building to building by biking, rather than driving.

Husky participates in an on-demand response program with Hydro One in which the company tries to reduce energy use during peak times or during times of emergency. It also has a formal green procurement policy to promote suppliers that are making an effort to reduce their environmental impact.

Challenges

Husky has had similar experiences to other companies that had an early environmental focus. There was little industry-related information and few guidelines for the company to follow and few places within industry it could turn to for help. As a consequence, Husky has become the “go to” company for ideas, reinforcing the important contribution this company is making and how important it is for the company to continue to focus on planning and implementing environmental policies.

One strategy, the Green Team, is made up of facility managers from all of Husky's major campuses around the world. The Green Team focuses on energy efficiency projects throughout the entire company and implements energy challenges between the four main campuses. They are tasked with achieving TargetZERO goals, and ultimately greening global facilities.

Success Stories

Husky has been implementing policies and tracking their environmental impact for many years. Its ambitious TargetZERO campaign is intended to make the company carbon neutral by the year 2025.



Husky has seen significant financial gains due to the implementation of more environmentally/energy efficient products. Approximately half-a-million dollars in energy savings has been recorded annually over the past several years. In 2004, Husky's Shanghai Technical Centre was recognized as a state of the art facility using 40% less energy than the average amount required for a building of similar size. Over the past 17 years, Husky has achieved a global waste diversion rate of 95%. The TargetZERO program aims to decrease emissions by 3-4% globally on an annual basis.



Husky has been recognized for its efforts and has received international awards and accolades including:

- The Environmentally Sustainable Business Award from the Recycling Council of Ontario;
- The Gold Award for Environmental Leadership from the Financial Post in 1998;
- Recognition as one of the 50 most environmentally responsible companies in Canada by the Corporate Knights in 2002, 2003 and 2005; and
- Recognition as one of the Best Companies to Work for in Canada.

Future Plans

Ryan Fabi, the Director of Environment, Health and Safety at Husky, whose job is an example of the green career opportunities in the company, noted that the biggest surprise for him is how slowly other companies and industries adopt green initiatives.

This may be due to the length of the return on investment and the limited number of green energy sources. Wind and solar energy are expensive to implement and the return takes years to realize. Fabi also says that once energy efficient and environmentally friendly products are more accessible, he expects that many more businesses will change their approach.

Husky's future plans involve moving forward with TargetZERO and planning to be carbon neutral by 2025. The company has certified Energy Managers tasked with the goal of enhancing Husky's green programs and initiatives and monitoring their successes. Husky's new employee orientation and training program is focused on its green history and environmentally responsible policies and procedures.

Through constant research and investment in development, Husky works to reduce waste and energy use and improve efficiencies, not just for themselves but for their customers as well.

Husky supports other environmentally focused companies as they anticipate that once there is greater use of green products and suppliers prices will drop. The company supports organizations that focus on the development of sustainable technologies, practices and planning and the protection and restoration of wilderness and wildlife. In their charitable giving, they prioritize environmental programs that deliver a positive community impact and generate greenhouse gas offset credits for Husky. These include programs such as Earth Rangers, the Toronto and Region Conservation Authority, Haus van der Natur and the Animals Asia Foundation.

Green Careers

Over time, Husky has developed new strategies and policies and implemented new training programs, new requirements and new career opportunities.

New employees at Husky are required to complete an intensive orientation program on Husky's environmental policies and programs. This ensures that all new employees are aware of, and informed about, Husky's environmental focus.

Husky also invested in training Certified Energy Managers to examine energy usage in all their facilities and identify ways to improve energy efficiency.

New environmentally focused careers, teams and requirements have led to an increased need for knowledge. The company promotes knowledge sharing between sites consisting of training programs and varied learning opportunities for their staff. They recently invested in an energy awareness training program for over 1,000 of their employees. The purpose of the program is to increase workers' knowledge on energy issues and strategies.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Husky Injection Molding Limited include Chemical Engineer (Appendix A-II), Director of Environment Health and Safety (Appendix A-III) and Environmental Engineer (Appendix A-V).

Oetiker Limited

Practicing Environmental CPR - Continuous improvement, Pollution prevention and Recycling

Address: 203 Dufferin St. South, P.O Box 5500, Alliston, Ontario L9R 1W7

Interviewee: Craig Smith, Management Representative, Environment Health & Safety

Website: www.oetiker.com

Sector: Manufacturing (NAICS 31-33)

Size of the Company: Medium (120 employees in Alliston)



Connecting Technology

Company Overview

For more than 70 years, Oetiker International has been developing, producing and distributing Oetiker clamps and rings for customers around the world. The Oetiker Group is a multinational network of 17 subsidiaries, including Oetiker Limited in Alliston, Ontario. The company employs over 1,000 workers worldwide.

Oetiker started in Switzerland and expanded into Canada in 1963. The company's research and development is based in Switzerland, while the Alliston facility focuses on the manufacturing of metal clamps to support the automotive industry. Oetiker clamps are used to fasten hoses, pipes, cables, ropes and other objects, have the ability to connect things securely and permanently and can be used in a wide variety of areas and branches of industry. They are particularly suitable to a mass-production environment. The company produces a wide range of compressed air couplings and formed and stamped parts.

Oetiker's primary goal is to supply customers with high quality connecting technology products that are safe and reliable. All corporate activities are customer-oriented and meet industry standards. The Oetiker Group develops, produces and distributes the company's key products and the subsidiaries are responsible for the national markets. Strategic and tactical activities in the clamps department are directed at keeping and expanding the company's leading market position, while the couplings division concentrates on selected niche markets.

Transitioning to Green

Oetiker describes its approach to environmental stewardship as practicing Environmental CPR – Continuous improvement, Pollution prevention and Recycling. In addition to following ISO standards, Oetiker corporate policy pays careful attention to resource use and minimizing the use of chemical additives. The company uses natural resources, in particular energy and raw materials such as steel, as considerately as possible at all locations. They have implemented new processes and utilize energy efficient machines in the manufacturing process to reduce resource consumption.



"Going green" became a focus for the company in 1999/2000 when ISO 14001 was implemented and Oetiker's major customers, including Ford, GM, Chrysler and Honda, required their suppliers to be 14001 certified. In order to remain competitive and keep their largest clients, the firm put an emphasis on International Organization for Standardization (ISO) certification and environmental sustainability.

ISO 14001 is part of a family of 16 international ISO 14000 standards designed to assist companies to reduce their negative impact on the environment. The standard does not dictate environmental performance requirements but serves as a framework to assist organizations in developing their own voluntary environmental management systems. Organizations are responsible for setting their own targets and performance measures, and the ISO standard assists them in monitoring and measuring their success at meeting their objectives and goals.

The first Oetiker plant to be certified ISO 14001 was in Germany in 1996. Today all production companies of the Oetiker Group are certified according to ISO 14001 environmental norms as well as ISO/TS 16949 and ISO 9001 standards. To ensure success, Oetiker made use of external environmental consultants who audited their processes and provided feedback on what they were doing well and on areas for improvement.

The company is committed to improving its health and safety performance by preventing occupational illness and injury in the workplace and complying with the Occupational Health and Safety Act. Oetiker's health and safety policy is reviewed and updated annually along with the company's environmental objectives and targets. The company is dedicated to taking potential effects on employees, customers and the environment into consideration at all stages of the planning, production and sale of their goods.

Green Initiatives

As part of their ISO 14001 certification, Oetiker Limited enhanced their manufacturing processes utilizing the expertise of environmental consultants. Changes implemented as part of this review included:

- Reusing waste water in the manufacturing process;
- Upgrading their lighting to more energy efficient systems including motion sensors;
- Implementing a chemical reduction program to keep minimal inventory on site and source alternative products to reduce employee and environmental exposure;
- Ensuring compliance with WHMIS requirements concerning all chemicals and processes;
- Regularly analyzing the viability of future opportunities, such as renting company roof space for solar panels.

Oetiker has a waste matrix in place to track the materials they use from start to finish. This process helps to monitor the materials and control the introduction of new materials and chemicals that may not be necessary.

Oetiker participates in the Electricity Retrofit Incentive Program (ERIP). This program provides incentives and encourages companies to invest in equipment upgrades and take advantage of new technologies including lighting and motors. By reducing demand at peak times, participating businesses contribute to the increased viability of the overall electricity supply.

Remaining competitive with ISO 14001 certification was crucial to Oetiker's continued success. Implementing all of these process improvements and initiatives, as well as ensuring continuous improvement takes place, has led to significant financial gains in terms of reduced waste disposal costs and improved efficiencies for the company.

All Oetiker employees are engaged with the process and are asked to make suggestions about ways in which the company can improve. This push for continuous improvement is linked to the company's health and safety and environment plan. Oetiker has a direct link between their continuous improvement efforts and employee bonus structures.

Challenges

Implementing change at the best of times in any business can present challenges and Oetiker strives to maintain open lines of communication.

Diverting Styrofoam and certain plastics from landfill is another challenge, as they are not accepted in local recycling programs and insufficient volumes are generated to attract private recycling businesses, making proper disposal difficult.

Success Stories

As a result of Oetiker's efforts, between 2002 and 2009, the company decreased its landfill waste from 38,160 kg to 11,152 kg, a decrease of 70.7%. By implementing a waste water re-usage program, Oetiker decreased water usage from 3,321 m³ in 2001 to 825 m³ in 2009.

The company has noted reductions in the use of energy resources. In 2006, Oetiker used 2,700,000 kWh of electricity. They decreased this to 2,100,000 kWh in 2009, saving 600,000 kWh per year. New technology that improved the use of supplies allowed the company to reduce the amount of oil required in the manufacturing process, minimizing chemical outlay as well as the cost of supplies.



Future Plans

Oetiker Limited is focused on continuing to find ways to increase the efficient use of resources within the company. In the coming years, they plan to devote more attention to energy management and identifying sources of wasted energy. Oetiker will continue to provide employee training on environmental policies and practices and new manufacturing processes as they are required.

Because the company is conscious of their suppliers' environmental policies, Oetiker performs on-site assessments of suppliers to monitor their waste treatment and regulatory compliance.

Green Careers

Craig Smith, Oetiker Management Representative for Environment Health and Safety, explains that for the company, the idea of the "green economy" is about green jobs and green energy alternatives. The company wants to increase their focus on energy management and identify opportunities for improvement. This may lead to developing new positions related to energy auditing at their facilities.

Training is also an important part of the continued emphasis on environmental sustainability. Oetiker consistently improves their manufacturing process to ensure efficiency, which results in new machines, new processes, new job opportunities and new training. All employees are made aware of any changes to the environmental health and safety policies, objectives and procedures through training and awareness programs.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Oetiker Limited include Chemical Engineer (Appendix A-II) and Director of Environment Health and Safety (Appendix A-III).



Travelodge Barrie

Protecting the environment through the Green Key Eco-Rating Program

Address: 55 Hart Drive, Barrie, Ontario L4N 5M3

Interviewee: Monika Maizis, General Manager

Website: www.travelodgebarrie.com

Sector: Accommodation and Food Services (NAICS 72)

Size of the Company: Small (1-49 employees)



Company Overview

Travelodge/Thriftlodge, with 115 locations across the country, is the third largest accommodation brand in Canada. The company provides clean, comfortable rooms at convenient locations, with consistent quality and friendly, personal service, and is widely known and trusted by North American travelers.



As a privately owned location, Travelodge Barrie falls under the Travelodge/Thriftlodge umbrella, following the company's corporate policies and guidelines. All franchised locations benefit from the operational, sales and marketing support of the national organization. They participate in programs such as offering points for Guest Rewards members and providing bonus points for HBC Rewards holders. Travelodge Barrie has meeting rooms and business facilities; however, they focus primarily on the accommodations side of the enterprise.

Transitioning to Green

Travelodge Barrie follows an environmental policy connected with the Hotel Association of Canada's Green Key Eco-Rating Program. Travelodge Canada is in the process of adopting more environmentally friendly practices so that all hotels in the Canadian Travelodge/Thriftlodge system become active and committed to environmental sustainability. The change began four years ago and was initiated by the hotel association.

The Green Key Program is a graduated rating system designed to recognize hotels, motels and resorts that are committed to improving their fiscal and environmental performance. Based on the results of a comprehensive environmental audit, hoteliers are awarded a 1 to 5 Green Key rating and given guidance on how to "unlock" opportunities to reduce operating costs and environmental impacts through reduced utility consumption, employee training, and supply chain management.

The Green Key Program is voluntary. Travelodge's decision to implement the program was motivated by a variety of factors including the desire to be part of building a more sustainable future, understanding that it was a good marketing move, and knowing that implementing an energy retrofit could produce significant monetary savings over the long run.

Additionally, as support for sustainable development continues to grow, so does the demand for responsible accommodation. According to a 2009 Travel Intentions Survey conducted by Fleishman-Hilliard, environmental initiatives are important to almost 40% of both leisure and business travelers when they are selecting accommodations.

Travelodge recognizes that using resources efficiently and reducing excess waste are key factors for operating a successful business. This is especially true for the hospitality industry where the increasing cost and use of energy, water, and waste disposal have a significant impact on both the planet and on the company's bottom line. As part of their participation in the Green Key Program, hotels receive reports designed to help them identify ways to reduce operating costs through new technologies, supply chain management, employee awareness and guest participation.

The first step in the Green Key process is participating in an eco-audit consisting of five sections: Corporate Environmental Management, Housekeeping, Food & Beverage Operations, Conference & Meeting Facilities, and Engineering. After completing its environmental audit, Travelodge Barrie received a Green Key rating of four, based on its performance in the following nine areas of sustainable hotel operations:

- Energy conservation
- Water conservation
- Solid waste management
- Hazardous waste management
- Indoor air quality
- Community outreach
- Building infrastructure
- Land use
- Environmental management

A Green Key rating of four means that the Travelodge Barrie has shown national industry leadership and commitment to protecting the environment through wide ranging policies and practices. It has mature programs in place that involve management, employees, guests, and the public, and which have shown substantial and measurable results.

Green Initiatives

Hotels throughout the Travelodge/Thriftlodge chain have put a priority on implementing environmental initiatives. Roger White, Executive Vice President of Travelodge Canada, says that "as a brand, [Travelodge has] recognized the importance of sustainable and environmentally friendly business practices. The consumer demand for eco-friendly travel services is being driven by both business and leisure guests and Travelodge Canada is responding to this evolving travel preference."



As part of this process, participating Canadian Travelodge and Thriftlodge hotels continue to make green modifications to the way they operate, including energy conservation, water conservation and improving indoor air quality, to name a few. Guest participation is also a key part of the program as hotel visitors are encouraged to use in-room recycling and to request less frequent towel changes for long-term stays.

Travelodge Barrie has all of the national organization's measures in place and encourages guest participation to ensure it is doing the utmost to increase its sustainability measures.

Travelodge Barrie staff are offered training on environmental impacts and sustainability projects and detailed instructions on any programs or initiatives run by the hotel. These initiatives include:

- The recent introduction of a new energy-efficient furnace;
- Recycling bins in all guest rooms to make recycling more accessible;
- The use of environmentally friendly cleaning supplies to reduce chemical use;
- Giving longer stay guests the option to change towels and sheets every other day instead of every day;
- The use of recycled paper and double-sided printing wherever possible to minimize paper use; and
- Replacing lighting throughout the building with LEDs. The hotel also plans to install motion sensors as part of its lighting system in the future.

Travelodge Barrie is involved with the local Chamber of Commerce and participates on a green committee run by the City of Barrie.

Challenges

The initial cost of moving from traditional to more environmentally sustainable products, such as replacing all the toilets with models that use less water and installing energy-efficient lighting, were very high. While the hotel will see savings and recoup its investment in the long-term, initially, it did not receive much financial support. The hotel began making these changes at the height of the recession, adding extra financial pressure.

The lack of suppliers for green products is one of the factors that increased the hotel's costs. There are few environmentally focused soap and chemical suppliers and that makes these products significantly more expensive than traditional versions. Switching from Styrofoam to paper coffee cups, a change that increases costs by \$30 per case, is another example. The hotel anticipates that as more suppliers produce environmentally friendly products, prices will be driven down by increased competition.

Success Stories

Travelodge Barrie has received many positive comments from guests who are extremely happy with the hotel's efforts. The hotel has noticed increased participation from guests as they choose the option to delay linen changes and increase in-room recycling. Travelodge Barrie staff are engaged with the process and are committed to making it a success.

Future Plans

Travelodge Barrie is continuing to improve and implement new policies. The Barrie location will continue to follow guidelines from head office, but also plans to implement its own policies and procedures to increase its efficiency and improve sustainability.

As more environmentally friendly supplies become available and come down in price, the hotel also plans to make these products the standard and make use of them wherever possible.

Green Careers

Travelodge Barrie recognizes that in order to reduce environmental impact and operating costs, it is important to have employees on board. Part of the Green Key assessment process includes an action plan to focus employee resources and motivate behavioural change. As a result of these efforts, the hotel's on-site maintenance manager has become very involved in the process and has taken courses to improve his knowledge of sustainable and environmentally friendly practices, including a course on options to reduce the harmful chemicals used in the hotel pool.

Hotel General Manager Monika Maizis has become informed about environmentally friendly policies and practices. Part of her job is to ensure that the products purchased by Travelodge Barrie are as environmentally friendly as possible, as well as ensuring that the hotel has in place the required procedures to maximize its sustainability efforts.

Continuous education is an important part of Travelodge Barrie's philosophy. As its environmental efforts continue to evolve, all hotel employees will require more training around green practices and their jobs will change to include these new responsibilities.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Travelodge Barrie include Facility Operation and Maintenance Manager (Appendix A-VI).

Urbanspace Property Group

Focused on eco-restoration – activities that replace, rejuvenate or rebuild the natural ecology



Address: 401 Richmond St. West, Suite 111, Toronto, Ontario, M5V 3A8

Interviewee: Erin MacKeen, Director of Community Development & Communications

Website: www.urbanspace.org

Sector: Real Estate (NAICS 531)

Size of the Company: Small (1-49 Employees)

Company Overview

Urbanspace Property Group, a mission-driven developer, focuses on the preservation and restoration of historic and architecturally significant spaces. Their goal is the use of these buildings to provide affordable space and community for a diverse group of tenants. Sustainable and environmentally sound building practices in restoration, operation, and maintenance of all its properties is a key practice.

Urbanspace owns and operates two heritage buildings in downtown Toronto: 401 Richmond Street West and the Robertson Building at 215 Spadina Avenue. Both buildings provide space for the arts and social innovation communities, fostering the integration of commerce, culture and community. In keeping with the company's focus on sustainability, Urbanspace works to bring greenery to its properties, planting trees and using green roof technology and rooftop gardens.

The 401 Richmond property has been operated by Urbanspace for close to two decades. The site was transformed from the original f-structure of the Macdonald Manufacturing Company to a "U" shaped structure with a crosswalk or bridge connecting the north and south buildings.

From the beginning, Urbanspace's goal was to create a mixed-use building with a focus on the arts. As Margaret Zeidler, President of 401 Richmond explains, "when we first bought the building in 1994, our aim was to retain its current atmosphere and low rents while slowly making improvements. A synergy of people is something we wanted to expand upon, and so we came up with a few ways that would foster community spirit: a regular newsletter, periodic tenant get-togethers, central, communal spaces."

Urbanspace took an aged building with 30% occupancy and in 18 months transformed it into a fully-leased thriving cultural and commercial centre. Today the building has an eclectic tenant base that reflects the variety of artistic practices and entrepreneurial endeavors taking place in Toronto's cultural centre. The 200,000 square foot structure currently houses over 140 artists and entrepreneurs, including art galleries, fashion designers, filmmakers, jewelers, architects, animators, healers, communications specialists, graphic artists, milliners, charitable organizations and a Spanish dance school.

Urbanspace's second project, the Robertson Building, is a restored warehouse in downtown Toronto located at 215 Spadina Ave. This five-storey 100,000 square foot building was purchased by Urbanspace in 2002. The company spent the next two years restoring and renovating the building. Some of the building's features include perimeter walls constructed of solid brick and interior support structures of exposed Douglas fir post and beams. Ceiling heights between floors are 12 feet or more, and innovative green elements have been included in the renovation of the building.

In its renovated form, the building is home to a cluster of community businesses, social entrepreneurs, and non-profit organizations. Created by Urbanspace, the Centre for Social Innovation (CSI) occupies approximately 20,000 square feet on the first and fourth floors of the building (20% of the building's space) and provides shared workspace.

Transitioning to Green

Green building practices are at the center of Urbanspace Property Group's philosophy. The company has shown leadership both locally and nationally by supporting green projects that provide environmental and health benefits to private and public interests.

Projects designed to bring life into a sterile urban environment are the hallmarks of Urbanspace's work. Some of the elements added to the Robertson Building are good examples of the company's practice of eco-restoration. These are activities that replace, rejuvenate or rebuild the natural ecology that may have existed before a building replaced the natural elements.

In March 2004, a 250 square foot living, breathing plant wall (bio-wall) was installed in the lobby of the Robertson building. The bio-wall, designed by Air Quality Solutions Ltd., is composed of many varieties of native and exotic green and flowering plants. The plant species were selected for their ability to reduce indoor air contaminants generated from common causes of building off-gassing and from the steady flow of traffic on Spadina Avenue.

In June 2004, a 4,000 square foot green roof was installed over a quarter of the Robertson roof. The green roof, designed and installed by Gardens in the Sky, is supported by five inches of organic, lightweight planting media. A host of native plant species are thriving in this elevated ecosystem. To complement the green roof, a greenhouse and cedar viewing deck were installed for the use of tenants and guests.

The green roof provides important environmental benefits to Toronto, including a habitat for birds, insects and other plant species, a micro-climate that reduces the urban heat island effect, the retention of storm water when it rains to prevent sewer overflow into Lake Ontario, and the reduction of air pollutants by trapping and degrading contaminants. As well, the protection the roof membrane offers from harsh temperature changes guarantees greater longevity than a conventional roof. The green roof also acts as insulation so that heat-gain is minimized in summer and heat-loss minimized in the winter.



Green Initiatives

Urbanspace is responsible for other eco-restoration projects, such as a large tree planting project at 401 Richmond. In 2006, the company supplemented the building's existing trees by planting 15 trees around the perimeter of the parking lots to reduce the "urban heat island effect", heat from the sun absorbed by dark surfaces and then radiated back out. Greening these surfaces reduces this effect and cools the surrounding area. This results in potential energy savings by reducing the need for air conditioning and creates a more pleasant environment.

In July 2003, Urbanspace installed unique "vertical gardens", perpendicular hydroponic planting systems, in the roof garden. These vertical planters are attractive and support flowers and vegetables including lettuces, kale, cabbage, and cherry tomatoes. The vegetables are interspersed between species of flowering plants. The plants are fed a steady supply of reused water circulated from a submersible pump located in a reservoir below.

Vertical gardens are attracting interest in urban areas where ground level property for planting is diminishing. Like many historic urban buildings, 401 Richmond is covered in a more common type of ancient vertical garden in the form of climbing vines. Vine leaves provide a natural plant layer, shading the bricks beneath in the summer, and reducing the solar gain or high temperatures that normally flow through the wall to the inside of the building. Conversely, in winter, stems and twigs that remain after the loss of autumn leaves break direct wind patterns and redistribute cold air away from small cracks in the brick's mortar, thus keeping more of the cold outside.

Urbanspace started additional initiatives to promote sustainability. The company has a green procurement policy, sourcing environmentally friendly suppliers, and Urbanspace is willing to pay more for green products to use in the cleaning and maintenance of the buildings. At this point, solar energy panels are not within the company's budget, but solar panels are used for heating. There are bike racks at the company's buildings and Urbanspace was recently awarded the Bicycle Friendly Business Award from the City of Toronto.

Urbanspace has recycling and other waste diversion programs in place at both properties. The recycling program manages standard items like paper, cardboard, plastic and cans and also includes specialized programs for printer cartridges, batteries, cell phones and other electronics, as well as two e-waste collection weeks held annually. There is also a composting program managed by building staff at each location.

Challenges

Many of the challenges Urbanspace has encountered revolve around the higher costs associated with green initiatives. In some cases, there was a lack of understanding about how to retrofit a heritage building and work with newer technologies in a way that was respectful of the building's original features. At one point the company looked into

investing in solar energy, however they struggled to find a company that could put together a package that would work in a commercial application and the return on investment timeline was very long. Urbanspace encountered challenges in the lack of financial programs available to support restoration projects as available funding is often aimed at new building projects.



Success Stories

Urbanspace believes in quality rather than quantity and focuses on providing tenants and the surrounding community with better quality of life. Community feedback is excellent, and Urbanspace has been told that their public roof space at 401 Richmond is inspiring. The company is justly proud of its successes in keeping materials out of the landfill and maximizing existing resources. One example of this is that the company was able to maintain the original windows at 401 Richmond. After conducting an assessment of the building envelope, Urbanspace found that there was little benefit or cost savings associated with replacing the old windows and a restoration project was undertaken to preserve the original windows. This also preserves the embedded energy in the original materials.

Although awards are not the company's focus, Urbanspace has been recognized for a number of its projects, including receiving the 1999 Award of Merit from Toronto Heritage for outstanding adaptive reuse of a historic building for 401 Richmond, a Green Toronto Award for green roofs at 401 Richmond and 215 Spadina in 2008, and a Bicycle Friendly Business Award in 2007.

Future Plans

Urbanspace's future plans include becoming more "green". As supply options improve, the company plans to invest in solar panels, wind energy and other sustainability projects. Urbanspace is keeping a close eye on Leadership in Energy and Environmental Design requirements, and exploring other suitable building projects.

Green Careers

Urbanspace Property Group employs people in a wide range of occupations. Long-time employee and Property Manager, Mike Moody is an example of the increasing shift into green careers. Formerly an English teacher, he now manages and maintains both 401 Richmond and the Robertson Building.

Since starting the job, Moody has studied maintenance for green roof gardens and gained the skills required for restoration projects. One of the things that makes him such a good fit for the position is that he shares Urbanspace's values of restoration and preservation.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Urbanspace Property Group include Property Manager (Appendix A-VII).

YourSolarHome

Creating a sustainable future with renewable energy products

Address: 270 Industrial Parkway South, Aurora, Ontario, Canada L4G 3T9

Interviewee: Todd Kirkpatrick, President

Website: www.yoursolarhome.com

Sector: Machinery Manufacturing (NAICS 333)

Size of the Company: Small (1-49 Employees)



Company Overview

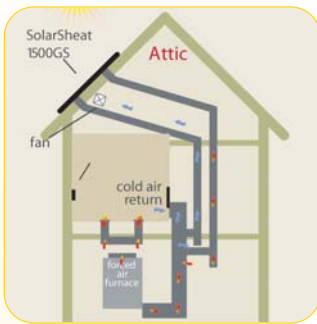
YourSolarHome Inc. focuses on renewable energy technologies for consumers and businesses. Founded in 2004 by Todd Kirkpatrick, the company's vision is to have solar heating in every home and building. The company's objective is to develop, build and provide renewable energy technologies that preserve our natural resources and sustain energy efficient living.

Kirkpatrick came to found the firm when, faced with the high cost of electric heating for his commercial horse farm in Muscodora, Ontario, he set out to reduce his energy use. Employing a combination of solar air collection walls integrated into the building and HRV (Heat Recovery Ventilation), along with a variety of other cost-saving measures, he was able to reduce his CO₂ emissions by 48 tonnes per year, as well as saving \$10,000 in annual electricity costs.

After this, Kirkpatrick embarked on 18 months of research and development before co-patenting the company's two types of solar thermal technology, SolarSheats. The first is a ventilation-based unit that brings fresh air in from the outside, heats up the air in forced convection, and then brings the heated air into the home. The second style is a glazed glass sheet that takes air from inside the home, heats it further and then re-circulates it. SolarSheats reduce energy consumption by 20-35% and in a typical house can reduce carbon emissions by one tonne.

A member of the Canadian Solar Industry, YourSolarHome controls the design, manufacturing, engineering, sales and installation of its products. The company operates out of a 20,000 square foot facility in Aurora, Ontario. YourSolarHome's products are available through over 200 dealers and distributors in North America and Europe. YourSolarHome's clients include Rodeo Homes, McGregor Homes, Garden Homes and Minto Group. Company sales in Canada and the United States are 45% and 55% respectively. Ninety-five percent of projects are residential applications; the remaining 5% are commercial.

SolarSheats typically pay for themselves in five to six years, while traditional roof-mounted solar panels that produce electricity may take up to 30 years to recoup the investment. Typical energy savings using SolarSheats are 60% for space heating, 25% for hot water, and 15% for electricity.



Transitioning to Green

YourSolarHome Inc. focuses on producing a green product. Kirkpatrick believes that a green economy is connected to local manufacturing, utilizes green products and promotes environmentally friendly regulations and conservation practices. He sees manufacturing as returning to its position as a key player in the Canadian economy and believes that making and growing new energy sources are the key to future success.

YourSolarHome uses sustainable products whenever possible and is consistently looking to improve efficiencies.

Green Initiatives

YourSolarHome provides its clients with the means to be more environmentally friendly and implements the same practices in their own facilities. The company's green initiatives include the following:

- Ensuring that materials used are at least 90% recyclable;
- Treating skids with environmentally safe pesticide;
- Implementing a recycling program to reduce waste;
- Increasing the use of local sources to minimize the transportation of products;
- Ensuring all packaging used is recyclable;
- Utilizing their own technology to reduce energy use in their facility;
- Utilizing energy efficient lighting throughout their facility;
- Controlling temperature and lowering the temperature at night; and
- Collecting all scrap metal and glass from the manufacturing program and recycling these materials through a third party.

Challenges

One of the main challenges Kirkpatrick encountered when starting YourSolarHome was building a customer base. As a result, the company's growth has been slow. While there are high-profile clients who purchase the company's products, big retailers have been hard to attract.

The initial costs of developing any new technology tend to be high and it can be a challenge to finance innovative projects. YourSolarHome faces competition from the industry's ten main companies.

Success Stories

Although it is still a young company, YourSolarHome has seen its share of successes. The company negotiated a commercial deal with the U.S. Department of Transportation and works with a number of Canadian home builders.

Future Plans

YourSolarHome anticipates a bright future as green products aimed at reducing energy consumption are increasingly available and in use. Demand for these products is expected to increase as consumer awareness of the value of renewable energy sources increases. This demand will also be influenced by the implementation of government regulations and price reductions for environmentally friendly technologies.

YourSolarHome plans to continuously develop its product and make it widely available. As the company continues to grow, it will pay greater attention to the policies of its suppliers, considering price and the environmental impact of products.

Green Careers

YourSolarHome employs five people in Canada and one in the United States. Employees perform a range of functions including sales and product research and development. Product installation is carried out by solar technicians with mechanical skills that are supplemented with on-the-job training for specific products.

Kirkpatrick and the company's CEO have transferred their skills from previous jobs into YourSolarHome's sustainability approach. Kirkpatrick himself is a former scientist and CEO in the high-tech industry.

Kirkpatrick says that it was a challenge to find his core team of employees. He decided to focus less on the potential employees' skills, which could be taught on the job, and tried to find candidates with appropriate attitudes. All employees at YourSolarHome receive in-house training on the company's processes and many employees are also trained on product installation.

As YourSolarHome continues to grow and expand it will continue to create new opportunities for employment.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at YourSolarHome include Environmental Engineer (Appendix A-V), Technical Product Specialist (Appendix A-VIII) and Solar Installers and Technicians (Appendix A-X).



Blue-Zone Technologies Ltd.

Greening anesthesia solutions

Address: 14 - 84 Citation Drive, Concord, ON L4K 3C1

Interviewee: Ms. Dusanka Filipovic, P. Eng., Vice-Chair and President

Website: www.blue-zone.ca

Sector: Professional, Scientific and Technical Services (NAICS 541)

Size of the Company: Small (1-49 Employees)



Company Overview

Blue-Zone Technologies Ltd. is a private Canadian company that has proprietary and patented technology to capture anesthetics through their Deltasorb® Anesthetic Collection Service. Established in 2001, Blue-Zone is currently commercializing Deltasorb® technology on a global scale.

For most businesses today, discovering more sustainable business practices is at the forefront of enlightened business thinking. This is no different for the hospital community as they face many of the same challenges as other businesses in terms of electricity usage, paper consumption, and waste reduction. In addition, given the unique services delivered in a hospital setting, they also face challenges not experienced in a traditional business environment. It is one such unique challenge that created a business opportunity for Blue-Zone Technologies Ltd.

During a surgery, less than 5% of the total administered anesthetic is metabolized by the patient; the remaining 95% is vented into the atmosphere via specialized operating room venting systems. These potent greenhouse gases have a 20 year global warming impact, up to 3,766 times greater than carbon dioxide (CO₂). They are seven times heavier than air, and drop down to ground level, having an adverse affect on air quality. In addition, prolonged exposure to these vented anesthetics potentially poses a negative impact to the health of people in the nearby community and furthermore, contributes to global warming because anesthetics are aggressive greenhouse gases.

In Ontario, these emissions are recognized as an Occupational Health & Safety hazard in operating rooms and pose risks to workers, visitors and patients. With no alternative to these anesthetics in sight, this concern is rising globally as the anesthetic market grows 10-15% per annum, thus doubling every 7-10 years.

Anesthetics are one of the most expensive drugs used in hospitals, with over \$1 billion spent worldwide every year. Capturing volatile anesthetic gases and then purifying them for resale represents a potential supply source that is cheaper and much more environmentally friendly than new production. Recognizing these issues and the demand for a solution is what drove Blue-Zone Technologies to find a solution to this problem.



Blue-Zone's globally innovative anesthetic gas collection and processing technology is patent-protected and currently the only commercially viable alternative to anesthetic gas venting. Blue-Zone's anesthetic manufacturing facility has been approved by Health Canada and the FDA and approval to market and sell anesthetics is now being pursued.

"We have prevented the losses of the anesthetic into the atmosphere so they are not wasted, and secured new sources of supply for general anesthesia," says co-founder Dusanka Filipovic. "The Blue-Zone process is kind of a closed loop for anesthesia."

The process includes a Deltasorb® canister that is installed into the operating room ventilation system. This canister uses a sieve-like filtering matrix to selectively absorb each anesthetic gas as it passes through the canister, preventing it from being vented into the atmosphere. When the canister is returned to Blue-Zone Technology, the captured anesthetics are extracted from the canister, liquefied and processed into medical grade anesthetics.

The Deltasorb® Anesthetic Collection Service offers hospitals a cost effective, efficient and environmentally friendly alternative to venting toxic anesthetics into the atmosphere. This service includes a weekly delivery and canister exchange service, installation and set-up of the Deltasorb® system and training for hospital staff. The service is done for a nominal monthly fee, with no initial capital outlay required, making it more attainable to a wider variety of clients.

As part of the Deltasorb® Anesthetic Collection Service, monthly reports are provided on how much anesthetic is captured in terms of prevented emissions. Hospitals may also qualify for potential carbon credit offsets, based on their reductions. This service is currently used in over 200 hospital operating rooms. The purified drug is sold to manufacturers, resellers and hospitals from Blue-Zone's fully operational plant, which processes and produces bulk pure anesthetic drug substance.

To date, the company has raised about \$15 million from private investors and various government programs, including government-based Sustainable Development Technology Canada. The \$15 million includes a \$5 million research investment from Praxair. Blue-Zone is currently seeking more investments for 2011, which would be used to secure matching funds for a loan to build a commercial-scale production facility in Toronto, where the company's pilot facility is located. Approval for a \$3 million forgivable loan has already been confirmed for this. Blue-Zone is also looking to invest in sales and marketing, Canadian expansion, finalizing strategic partnerships, and its U.S. market launch.

Deltasorb®

ANESTHETIC COLLECTION
SERVICE

Saving our neighbourhoods... every day!

Transitioning to Green

At Blue-Zone, the green economy is believed to be more sustainable and more cost effective, benefiting businesses in many ways. The growth of the green economy and demands for green technology is stimulating innovation which in turn helps businesses prosper.

Founded in 2001, Blue-Zone Technologies has been environmentally focused since its inception. The main goal of the company is to help hospitals transition to green by reducing the environmental impacts of the anesthetics used in operating rooms.

Blue-Zone began as a result of a recognized need to address the worldwide issue of venting harmful anesthetic gases. Blue-Zone, therefore, has "Greened Anesthesia" as its solution to this global issue.

The Environmental Protection Act (EPA) is a set of regulations aimed at preventing pollution and protecting the environment and human health. Every area and country has a different set of guidelines and regulations, but most regulate toxic emissions and carry stiff penalties for those who violate them. The Deltasorb® Anesthetic Collection technology enables hospitals to comply with EPA toxic release regulations and Occupational Health & Safety Standards. Hospitals will be able to showcase their green community partnership with little or no capital outlay. Plus, hospitals may qualify for monetary incentives in the form of Carbon Offset Credits and Raw Material Contribution Payback.



Blue-Zone's branded Deltasorb® technology selectively captures the inhalation anesthetics before they enter the atmosphere through a filtration process. The self-sterilizing drugs are then extracted, liquefied, and used as raw materials to produce bulk anesthetic drugs. They can be sold back into the manufacturing market to pharmaceutical companies at less than what it costs these companies to make them.

Green Initiatives

Blue-Zone aims to assist the health care industry in greening anesthesia. While its main purpose is to assist other institutions with their green initiatives, the company takes sustainability very seriously and aims to have a "no waste" facility at its Concord location. Blue-Zone has strict recycling policies, conducts chemical monitoring and ensures that the entire processes comply with pharmaceutical company standards. Furthermore, Blue-Zone places a large emphasis on the initiatives of its suppliers and vendors and has environmental policies around supplier agreements that each supplier must sign and agree to.

The elimination of inevitable losses of anesthetics during their administration and subsequent extension of their life cycle also reduces the greenhouse gases from the companies producing anesthetics through conventional energy intensive synthesis.

Blue-Zone's responsible cradle-to-cradle® solution reduces the amount of anesthetics that need to be produced from scratch, thus minimizing wastes and emissions from these manufacturers. The same is true when future production of premium anesthetics is considered to meet the supply requirements of emerging markets, such as developing countries and countries in transition.

Challenges

Blue-Zone has seen its fair share of challenges since its inception in 2001. The company is pioneering a very new and innovative technology that requires education on the issue of anesthetic emissions so that potential customers understand the benefit and value that Blue-Zone's product offers the hospital community. Effectively portraying its product and service to governments, pharmaceutical companies, anesthetic gas machine manufacturers, hospitals and the general public, as well as getting their buy-in, is one of the main challenges the company has had to face.

As with any innovative product and service, the initial stages of research and development and production are very expensive. Obtaining funding to ensure the company can move forward with its product has also been challenging because of broader economic and political pressures.

Success Stories

Dusanka Filipovic, Vice-Chair and President of Blue-Zone, believes that one of the biggest successes the organization has had thus far is the adoption of its technology by leaders in the health care sector. Hospitals are welcoming the solution and perhaps people understand how much anesthetic is wasted and the negative impact this poses to the environment.

Blue-Zone has successfully implemented the Deltasorb® Anesthetic Collection Service in over 200 operating rooms across Ontario. In the five-year period up to September 2009, Blue-Zone had installed its system in 21 operating rooms at Toronto's Sunnybrook Health Sciences Centre, which they believe has prevented an estimated 634 tonnes of CO₂ from entering the atmosphere.

In 2010, Blue-Zone Technologies won the Waste Minimization Gold Award from the Recycling Council of Ontario.

Future Plans

Since 2001, Blue-Zone has also developed new patents which, along with patents on the core technology, have been extended for another 20 years. The company is now in scale-up and commercialize mode.

Going beyond the benefits of collection today, Blue-Zone Technologies plans to provide the medical community with an increased supply and a viable alternative source for anesthetics.

Blue-Zone's intellectual property for processing and purifying captured anesthetic gases is patent-protected, and its manufacturing facility is approved by both Health Canada and the FDA.

Pending approval for the marketing and sales of anesthetics, Blue-Zone Technologies will soon offer a full-scale anesthetic waste collection, recovery, reconstitution and reuse program for the practice of anesthesia worldwide.

The company plans to establish a Canadian base throughout the country's 4,400 operating rooms, as well as expansion to the United States and globally. The global pharmaceutical market is highly regulated and dominated by a small number of suppliers. Blue-Zone plans to form a strategic alliance with one or more of these corporations, either selling the captured anesthetics to its partner in bulk, or packaging the gases under a generic brand.

Green Careers

Blue-Zone Technology currently employs a broad range of skill sets, including Chemical Engineers, Mechanical Engineers, Quality Control Specialists and Business Development personnel. Many of the duties and occupations throughout the organization are highly specialized, requiring extensive education and relevant experience.

At Blue-Zone, all employees are required to place emphasis on sustainability and green practices. As the company continues to develop its product and expand into new markets, it anticipates having a growing need for new, highly skilled employees, creating a wave of new jobs and new job demands.

Emerging Careers – Corresponding Green Occupational Profiles

Examples of emerging green occupations at Blue-Zone Technologies include Chemical Engineer (Appendix A-II).



Career Opportunities in the Green Economy

The green economy is capturing the attention of business, government and educators. In Ontario, it has been dramatically impacted by the enactment of Ontario's Green Energy Act 2009. Since 2003, the Government of Ontario has invested more than \$600 million in research projects and companies working on green technologies and initiatives (Ministry of Research and Innovation, 2008). These kinds of investments help create demand for a highly skilled and competitive workforce centered on supporting the emergence of the green economy.

According to the United Nations Council on the Environment, a green job is "work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contributes substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect the ecosystems and biodiversity; reduce energy, materials and water consumption through high efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution".

Green occupations are emerging in many industries and businesses. The growth of sustainability initiatives and "green" companies are transforming traditional jobs and resulting in new skill demands. Employers are increasingly focusing on human capital development that can support this transition and better position an organization to remain competitive and sustainable. Traditional jobs are evolving and new positions are being created to address changing processes and use of new "greener" materials. Some of these new jobs are predicted to focus on grid integration, wind energy manufacturing, waste diversion and recycling. These jobs will be high value and demand new skills and applications. This trend will have long-term impacts on the workforce as workers transition across economies or prepare for employment in these growing industries.

As the case studies demonstrate, employers are implementing processes and approaches through training, implementation and monitoring. As these shifts occur, the skills demand for existing and future employees shifts to accommodate new expectations.

To complement the business case studies presented on the preceding pages, 10 green occupational profiles have been highlighted in Appendix A as follows:

REFERENCE	OCCUPATIONAL TITLE
A-I	Building Supplies Distributor
A-II	Chemical Engineer
A-III	Director of Environment Health and Safety
A-IV	Electrical and Electronics Engineer
A-V	Environmental Engineer
A-VI	Facility Operation and Maintenance Manager
A-VII	Property Manager
A-VIII	Technical Product Specialists
A-IX	Solar Installers and Technicians
A-X	Sustainability and Social Responsibility Coordinator

The local workforce planning boards in the Central Ontario Region have developed close to 100 Green Occupation Profiles as a tool to help job seekers, counsellors and organizations who provide training better understand the new opportunities that exist across sectors in the green economy.

The Profiles outline:

- the skills and aptitudes required for the occupation;
- salary ranges;
- employment requirements and educational programs that meet these needs;
- sectors where these new jobs exist; and
- areas of the province where positions are currently available.

Green Occupational Profiles can be accessed free on-line through the following websites:

Durham Region Local Training Board	www.drltb.com
Peel Halton Workforce Development Group	www.peelhaltonworkforce.com
Simcoe Muskoka Workforce Development Board	www.labourtrends.ca
Toronto Workforce Innovation Group	www.workforceinnovation.ca
Workforce Planning Board of York Region and Bradford, West Gwillimbury	www.wpboard.ca

Conclusion

The 10 companies that contributed to this report were all at different stages of “greening” their businesses and represented a range of sectors such as Manufacturing, Retail and Wholesale Trade, Professional, Scientific and Technical Services, Hospitality and Tourism and Real Estate. They ranged in size from small sole proprietorships to large multinational companies.

While some firms had long-standing, deeply embedded philosophies and approaches in relation to sustainability, other organizations were either just beginning to build their green product offerings or in the process of developing green business practices. All the contributing firms were committed to advancing their current programs to include fulsome green approaches at all levels of the company's operations.

Each of the businesses had realized benefits as a result of going green and each identified a trend towards increased consumer demand for, and awareness of, green, sustainable approaches and products. As a result, they were philosophically dedicated to building a “green” brand and promoting concepts related to sustainability in the long-term.

These 10 companies are examples of the many firms and establishments in central Ontario that have “greened” their practices. With the advent of Ontario's Green Energy Act, many more companies will make the transition to more environmentally aware products and practices. The five local workforce development boards in Central Ontario Region, the Durham Region Local Training Board, the Peel Halton Workforce Development Group, the Simcoe Muskoka Workforce Development Board, the Toronto Workforce Innovation Group and the Workforce Planning Board of York Region and Bradford, West Gwillimbury hope to use these case studies as a way to support the transition to a green economy in Ontario.

Acknowledgements

The five local workforce development boards in Central Ontario Region, the Durham Region Local Training Board, the Peel Halton Workforce Development Group, the Simcoe Muskoka Workforce Development Board, the Toronto Workforce Innovation Group and the Workforce Planning Board of York Region and Bradford, West Gwillimbury would like to thank the following for their contribution to this report.

Contributing local businesses:

ECO Building Resource
Fifth Light Technologies
Grand & Toy Canada
Hubbell Canada
Husky Injection Molding Systems Limited
Oetiker Limited
Travelodge Barrie
Urbanspace Property Group
YourSolarHome
Blue-Zone Technologies Ltd.
And: Employment Ontario and our Boards of Directors

Credits:

Research and interviews: Deanna Parsons
Editing: Karen Lior and Alex Kollo
Design: Kilroy & Smith

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Appendix A

Profiles

A-I	Building Supplies Distributor
A-II	Chemical Engineer
A-III	Director of Environment Health and Safety
A-IV	Electrical and Electronics Engineer
A-V	Environmental Engineer
A-VI	Facility Operation and Maintenance Manager
A-VII	Property Manager
A-VIII	Technical Product Specialists
A-IX	Solar Installers and Technicians
A-X	Sustainability and Social Responsibility Coordinator

A-I Building Supplies Distributor

NOC 0015

Senior managers in this unit group plan, organize, direct, control and evaluate, through middle managers, trade, broadcasting and other service companies not elsewhere classified. They formulate policies which establish the direction to be taken by these companies, either alone or in conjunction with a board of directors. They allocate material, human and financial resources to implement organizational policies and programs; establish financial and administrative controls; formulate and approve promotional campaigns; and approve overall personnel planning. As the demand for environmentally friendly products increases, so do the number of businesses focused solely on environmentally friendly products and services, thus increasing the demand in this unit group.

Places of Employment¹:

- Self-employed
- Various industries
- Government

Employment Requirements¹:

- A university degree or college diploma in business administration, finance or other discipline related to the service provided is usually required.
- Several years of experience as a middle manager is usually required.
- Specialization in a particular functional area or service is possible through specific university or college training in that area or through previous experience.
- Education and training requirements vary from one management position to another. However, a combination of formal education and experience in an appropriate field generally qualifies an individual for work in management.

Local Educational Programs:

Program	Length	Certification	Institutions
Business Administration	4 years	Degree	Ryerson University, University of Toronto, University of Trent, York University
Business Administration	3 years	Diploma	Georgian College, Humber College, Durham College
Business Administration	4 years	Bachelor of Commerce	University of Ontario Institute of Technology
Environment & Health	4 years	Bachelor of Science	University of Toronto
Environmental Public Health Leadership Certificate	N/A	Certificate in Environmental Public Health Leadership	Ryerson University
Environmental and Health Studies	4 years	Bachelor of Arts	York University
Masters of Business Administration	Masters Program	Masters	University of Ontario Institute of Technology

The most important Essential Skills for this occupation are²:

- Organization
- Problem solving
- Oral communication
- Document use

A-I Building Supplies Distributor

NOC 0015

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	0	15	0	60	40	115
25 – 44 years	135	1,190	230	1,870	820	4,245
45 years and over	265	2,700	305	3,450	1,640	8,360
Total Employees	400	3,905	535	5,380	2,500	12,720
% 45 years +	66.25%	69.14%	57.01%	64.13%	65.60%	65.72%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 154,383
Peel Halton	\$ 176,468
Simcoe Muskoka	\$ 129,066
Toronto	\$ 210,883
York Region BWG	\$ 163,616
Ontario	\$ 162,084

Top Industries of Employment for 5 regions^{4,5}:

Across all five regions, there are 12,720 building supply distributors employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
417 Machinery, equipment and supplies wholesaler-distributors	1,550	12.19%
414 Personal and household goods wholesaler distributors	1,250	9.83%
561 Administrative and support services	1,100	8.65%
418 Miscellaneous wholesaler-distributors	910	7.15%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Managers in Retail Trade (NOC 062)
- Other Services Managers (NOC 0651)
- Managers in Art, Culture, Recreation and Sport (NOC 051)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Builders' Supplies Limited
7361 Pacific Circle
Mississauga, Ontario L5T 2A4
www.builderssupplies.ca

ECO Building Resource
136 Wellington Street East
Aurora, Ontario, L4G 1J1
www.eco-building.ca

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

A-II Chemical Engineer

NOC 2134

Chemical engineers research, design, and develop chemical processes and equipment, oversee the operation and maintenance of industrial chemical, plastics, pharmaceutical, resource, pulp, and food processing plants and perform duties related to chemical quality control, environmental protection and biochemical or biotechnical engineering¹.

Places of Employment¹:

- Manufacturing companies
- Processing industries
- Consulting firms
- Research and educational institutions
- Federal, provincial/territorial, and municipal government departments

Employment Requirements¹:

- A bachelor's degree in chemical engineering or in a related engineering discipline is required
- A master's degree or doctorate in a related engineering discipline may be required
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.)
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination
- Supervisory and senior positions in this unit group require experience

Local Educational Programs:

Program	Length	Certification	Institutions
Biochemical Engineering	4 years	Bachelor's Degree	York University
Chemical Engineering	4 years	Bachelor's Degree	Ryerson University, University of Toronto, York University
Chemical Engineering Technology	3 years	Advanced Diploma	Durham College, Seneca College, Sheridan College
Environmental Chemistry	4 years	Bachelor's Degree	Trent University
Environmental Engineering	4 years	Bachelor's Degree	University of Toronto
Environmental Engineering Science Certificate	N/A	Certificate	Ryerson University
Environmental and Resource Studies	4 years	Degree	Trent University
Environmental Technician/Technology	2-3 years	Diploma/Advanced Diploma	Durham College, Georgian College, Seneca College
Environmental Techniques/Technology	2-3 years	Diploma/Advanced Diploma	Durham College, Georgian College
Materials Science Engineering	4 years	Bachelor's Degree	University of Toronto

The most important Essential Skills for this occupation are²:

- Numeracy
- Analytical Skills
- Problem solving

A-II Chemical Engineer

NOC 2134

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	0	15	0	10	15	40
25 – 44 years	65	480	25	390	185	1145
45 years and over	65	290	20	305	135	815
Total Employees	130	785	45	705	335	2,000
% 45 years +	50.00%	36.94%	44.44%	43.26%	40.30%	40.75%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ³ :	
Durham	\$ 78,063
Peel Halton	\$ 78,943
Simcoe Muskoka	\$ 62,866
Toronto	\$ 73,130
York Region BWG	\$ 67,876
Ontario	\$ 79,542

Top Industries of Employment for 5 regions⁴:

Across all five regions, there are 2,000 Chemical Engineers employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
541 Professional, scientific and technical services	820	41.00%
325 Chemical manufacturing	240	12.00%
326 Plastics and rubber products manufacturing	145	7.25%
221 Utilities	85	4.25%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Applied chemical technologists and technicians (NOC 2211)
- Metallurgical and materials engineers (NOC 2142)
- Drafting technologists and technicians (NOC 2253)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Blue-Zone Technologies Ltd.
14 - 84 Citation Drive
Concord, Ontario L4K 3C1
www.bluezone.ca

Husky Injection Molding Systems Ltd.
500 Queen St. South
Bolton, Ontario L7E 5S5
www.husky.ca

Oetiker Limited
203 Dufferin St. South, P.O. Box 5500
Alliston, Ontario L9R 1W7
www.oetiker.com

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

A-III Director of Environment Health and Safety

NOC 2263

Environmental health and safety directors evaluate and monitor health and safety and environmental impact. They develop strategies for protecting public and employee health and safety and for improving sustainability. They also administer and enforce provincial legislation related to environmental health and provide the necessary support to minimize health and safety and environmental hazards. They inspect restaurants, public facilities, industrial establishments, municipal water systems and other workplaces to ensure compliance with government regulations regarding sanitation, pollution control, the handling and storage of hazardous substances and workplace safety. Environmental health officers are focused on prevention, consultation, investigation, and education of the community regarding health risks and maintaining a safe environment¹.

Places of Employment¹:

- National, provincial and municipal governments
- Hospitals
- Educational institutions
- Consulting firms
- Self-employed

Employment Requirements¹:

- A bachelor's degree or college diploma in a discipline such as food science, environmental studies, chemistry or health and safety is usually required
- In some establishments, several years of related work experience and the completion of in-house training courses may substitute for formal education
- Occupational health and safety officers may require certification with the Association for Canadian Registered Safety Professionals

Local Educational Programs:

Program	Length	Certification	Institutions
Environment & Health	4 years	Degree	University of Toronto
Environmental Public Health Leadership Certificate	N/A	Certificate	Ryerson University
Environmental and Health Studies	4 years	Degree	York University
Masters in Sustainability Studies	Masters Program	Masters	Trent University

The most important Essential Skills for this occupation are²:

- Oral communication
- Document use
- Problem solving
- Working with others

The most important High School subjects are³:

- Math
- Mechanics
- Physics
- Chemistry
- Biology

Number of Employees by Age Range⁴:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	30	30	15	45	25	145
25 – 44 years	170	630	105	515	135	1,555
45 years and over	175	395	75	330	145	1,120
Total Employees	375	1,055	195	890	305	2,820
% 45 years +	46.67%	37.44%	38.46%	37.08%	47.54%	39.72%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 71,682
Peel Halton	\$ 60,312
Simcoe Muskoka	\$ 53,264
Toronto	\$ 64,807
York Region BWG	\$ 76,330
Ontario	\$ 65,066

A-III Director of Environment Health and Safety

NOC 2263

Top Industries of Employment for 5 regions^{4,5}:

Across all five regions, there are 2,820 Environment, Health and Safety Directors employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
913 Local, municipal and regional public administration	495	17.55%
912 Provincial and territorial public administration	470	16.67%
541 Professional, scientific and technical services	260	9.22%
221 Utilities	145	5.14%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁶:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Natural and Applied Science Policy Researchers, Consultants and Program Officers (NOC 2262)
- Engineering Inspectors and Regulatory Officers (NOC 2262)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

The Town of Oakville
1225 Trafalgar Road, P.O. Box 310
Oakville, Ontario L6J 5A6
www.oakville.ca

Husky Injection Molding Systems Ltd.
500 Queen St. South
Bolton, Ontario L7E 5S5
www.husky.ca

Oetiker Limited
203 Dufferin St. South, P.O. Box 5500
Alliston, Ontario L9R 1W7
www.oetiker.com

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Service Canada. Job Futures – National Edition. 2007. www.jobfutures.ca.

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁵Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

A-IV Electrical and Electronics Engineer

NOC 2133

Electrical and electronics engineers design, plan, research, evaluate and test electrical and electronic equipment and systems. Electrical and Electronics Engineers may also be involved in regulatory procedures that review facilities to ensure they are complying with environmental policies and guidelines¹.

Places of Employment¹:

- Utilities companies
- Communications companies
- Manufacturers of electrical and electronic equipment
- Consulting firms
- Manufacturing, processing and transportation industries
- Government

Employment Requirements¹:

- A bachelor's degree in electrical or electronics engineering or in an appropriate related engineering discipline is required
- A master's or doctoral degree in a related engineering discipline may be required
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practice as a Professional Engineer (P.Eng.)
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination
- Supervisory and senior positions in this unit group require experience

Local Educational Programs:

Program	Length	Certification	Institutions
Electrical Engineering	3 years	Advanced Diploma	Georgian College
Electrical Engineering	4 years	Bachelor of Engineering	University of Ontario Institute of Technology
Electrical Engineering and Management	4 years, 5 year Industrial Internship Program	Bachelor of Engineering	Ryerson University
Electrical Engineering and Management	4 years	Bachelor of Engineering and Management	University of Ontario Institute of Technology
Electronics Engineering Technician/Technology	2 years (technician) 3 years (technology)	Diploma Advanced Diploma	Durham College, Centennial, Georgian College, Humber College, Seneca College, Sheridan College
Electronics Engineering Technology	3 years	Advanced Diploma	Durham College
Electromechanical Engineering Technician/Technology	2 years regular 3 years Co-op	Diploma Advanced Diploma	Durham College, Centennial College, George Brown College, Sheridan College
Energy Systems Engineering Technician/Technology	2 years (technician) 3 years (technology)	Diploma Advanced Diploma	Centennial College
Environmental Engineering	4 years	Bachelor of Engineering	University of Toronto
Environmental Technician/Technology	2-3 years	Diploma/Advanced Diploma	Durham College Georgian College
Environmental Techniques	1 year	Certificate	Durham College

The most important Essential Skills for this occupation are²:

- Reading text
- Writing text
- Document use
- Numeracy

A-IV Electrical and Electronics Engineer

NOC 2133

The most important High School subjects are³:

- Math
- Electronics
- Sciences
- English

Number of Employees by Age Range⁴:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	10	80	10	80	45	225
25 – 44 years	290	1,140	80	1,765	930	4,205
45 years and over	345	1,090	55	1,225	780	3,495
Total Employees	645	2,310	145	3,070	1,755	7,925
% 45 years +	53.49%	47.19%	37.93%	39.90%	44.44%	39.05%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 87,705
Peel Halton	\$ 76,895
Simcoe Muskoka	\$ 75,316
Toronto	\$ 72,666
York Region BWG	\$ 84,697
Ontario	\$ 81,868

Top Industries of Employment for 5 regions^{4,5}:

Across all five regions, there are 7,925 Electrical and Electronics Engineers employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
541 Professional, scientific and technical services	2,660	33.56%
334 Computer and electronic product manufacturing	1,245	15.71%
221 Utilities	925	11.67%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Computer engineers (except software engineers and designers) (NOC 2147)
- Electrical and electronics engineering technologists and technicians (NOC 2241)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Fifth Light Technology
1155 North Service Rd. West, Unit #7
Oakville, ON., L6M 3E3
www.fifthlight.com

Ridgewood Electric Ltd.
120 Rutherford Road South
Brampton, Ontario L6W 3J5
www.ridgewood-electric.com

Hubbell Canada
870 Brock Road South
Pickering, ON, L1W 1Z8
www.hubbell-canada.com

For a more complete listing of potential employers please visit
www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Service Canada. Job Futures – National Edition. 2007. www.jobfutures.ca.

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁵Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

A-V Environmental Engineer

NOC 2131

Environmental engineers plan, design, develop and manage projects for the construction or repair of buildings, earth structures, powerhouses, roads, airports, railways, rapid transit facilities, bridges, tunnels, canals and dams, systems related to highway and transportation services, water distribution systems, sanitation systems and more. Environmental engineers are also often involved in regulatory procedures that review facilities to ensure they are complying with environmental policies and guidelines. They may also specialize in a specific area such as solid and hazardous waste management, air or water quality, foundation analysis, building and structural inspection, surveying, geomatics and municipal planning¹.

Places of Employment¹:

- Environmental engineering consulting firms
- Federal, provincial/territorial, and municipal government departments
- Colleges, universities, and research institutes
- Property management companies
- Industrial companies
- Self-employed

Employment Requirements¹:

- A bachelor's degree in civil, environmental or chemical engineering or in a related engineering discipline
- A master's degree or doctorate in a related engineering discipline may be required
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practice as a Professional Engineer (P.Eng.)
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination

Local Educational Programs:

Program	Length	Certification	Institutions
Civil Engineering	4 years	Bachelor's Degree of Toronto	Ryerson University, University
Civil Engineering Technician/Technology	2 – 3 years	Diploma/Advanced Diploma	Durham College, George Brown College, Georgian College, Humber College, Seneca College
Environmental Engineering	4 years	Bachelor's Degree	University of Toronto
Environmental Engineering Science Certificate	N/A	Certificate	Ryerson University
Environmental and Resource Studies	4 years	Degree	Trent University
Environmental Technician/Technology	2-3 years	Diploma/Advanced Diploma	Durham College, Georgian College
Environmental Techniques/Technology	2-3 years	Diploma/Advanced Diploma	Durham College, Georgian College
Geomatics Engineering	4 years	Bachelor's Degree	York University
Industrial Engineering	4 years	Bachelor's Degree	Ryerson University, University of Toronto
Masters in Sustainability Studies	Masters Program	Masters	Trent University
Mechanical Engineering Technician/Technology	2 years	Diploma	Centennial College, Durham College, George Brown College, Georgian College, Seneca, Sheridan

The most important Essential Skills for this occupation are²:

- Document use
- Numeracy
- Computer use

The most important High School subjects are³:

- Mathematics
- Physics
- Chemistry
- Calculus
- Biology

A-V Environmental Engineer

NOC 2131

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	15	70	0	120	55	260
25 – 44 years	175	1,115	210	1,785	860	4,145
45 years and over	130	1,065	160	1,500	805	3,660
Total Employees	320	2,250	370	3,405	1,720	8,065
% 45 years +	40.63%	47.33%	43.24%	44.05%	46.80%	45.38%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 84,242
Peel Halton	\$ 67,048
Simcoe Muskoka	\$ 72,140
Toronto	\$ 62,402
York Region BWG	\$ 75,241
Ontario	\$ 77,262

Top Industries of Employment for 5 regions^{4,5}:

Across all five regions, there are 8,065 Environmental Engineers employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
541 Professional, scientific and technical services	4,435	54.99%
236 Construction of buildings	830	10.31%
913 Local, municipal and regional public administration	510	6.34%
237 Heavy and civil engineering construction	340	4.22%
912 Provincial and territorial public administration	290	3.60%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁶:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Land Surveyors (NOC 2154)
- Civil Engineering Technologists and Technicians (NOC 2231)
- Mechanical Engineering Technologists and Technicians (NOC 2232)
- Industrial Engineering and Manufacturing Technologists and Technicians (NOC 2233)
- Construction Estimators (NOC 2234)
- Architectural Technologists and Technicians (NOC 2251)
- Drafting Technologists and Technicians (NOC 2253)
- Land Survey Technologists and Technicians (NOC 2254)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Fifth Light Technology
1155 North Service Rd. West, Unit #7
Oakville, ON., L6M 3E3
www.fifthlight.com

Husky Injection Molding Systems Ltd.
500 Queen St. South
Bolton, Ontario L7E 5S5
www.husky.ca

Solarsheat - Your Solar Home Inc.
270 Industrial Parkway S.
Aurora, Ontario L4G 3T9
www.yoursolarhome.com

For a more complete listing of potential employers please visit
www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Service Canada. Job Futures – National Edition. 2007. www.jobfutures.ca.

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁵Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

A-VI Facility Operation and Maintenance Manager

NOC 0721

Facility operation managers plan, organize, direct, control and evaluate the operations of commercial, transportation and recreational facilities and the included real estate. Maintenance managers plan, organize, direct, control and evaluate the maintenance department within commercial, industrial, institutional, recreational and other facilities. Facility operation and maintenance managers are also responsible for ensuring energy efficiency, conducting or organizing energy audits and carrying out initiatives to ensure energy efficiency¹.

Places of Employment¹:

- Public facilities such as universities, schools and sports facilities
- Manufacturing and other industrial establishments
- Airports
- Shopping centres
- Convention centres
- Warehouses
- Office buildings

Employment Requirements¹:

- Facility operation managers require completion of a college or university program in business administration or in a discipline related to facility operation and maintenance or an equivalent combination of technical training and experience in administration or maintenance.
- Maintenance managers require completion of a college or university program in electrical or mechanical engineering or in another discipline related to building maintenance or an equivalent combination of technical training and experience in building maintenance.
- Several years of supervisory experience in facility operations or maintenance are usually required.

Local Educational Programs:

Program	Length	Certification	Institutions
Business Administration	4 years	Degree	Ryerson University, University of Toronto, University of Trent, York University
Business Administration	3 years	Diploma	Georgian College, Humber College, Durham College
Building Environmental Systems Facility Manager	2 years	Certificate	Seneca College
Facilities Maintenance Mechanic Apprenticeship	2 years	Certificate	Durham College

The most important Essential Skills for this occupation are²:

- Oral communication
- Document use
- Problem solving
- Working with others

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	10	80	10	90	60	250
25 – 44 years	250	1,540	170	1,600	840	4,400
45 years and over	250	1,475	300	1,540	635	4,200
Total Employees	510	3,095	480	3,230	1,535	8,845
% 45 years +	49.02%	47.66%	62.50%	47.68%	41.50%	47.48%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 69,751
Peel Halton	\$ 63,139
Simcoe Muskoka	\$ 57,690
Toronto	\$ 57,332
York Region BWG	\$ 66,646
Ontario	\$ 61,966

A-VI Facility Operation and Maintenance Manager

NOC 0721

Top Industries of Employment for 5 regions^{3,4}:

Across all five regions, there are 8,845 facility operations and maintenance managers employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
713 Amusement, gambling and recreation industries	580	6.56%
531 Real estate	520	5.88%
561 Administrative and support services	505	5.71%
913 Local, municipal and regional public administration	440	4.97%
417 Machinery, equipment and supplies wholesaler-distributors	405	4.58%
493 Warehousing and storage	400	4.52%
541 Professional, scientific and technical services	360	4.07%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Medical Technologists and Technicians (Except Dental) (NOC 321)
- Aircraft Mechanics and Aircraft Inspectors (NOC 7315)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Durham District School Board
400 Taunton Road East
Whitby, Ontario L1R 2K6
www.durham.edu.on.ca

Hilton Toronto
145 Richmond Street West
Toronto, Ontario M5H 2L2
www.hilton.ca

Travelodge Barrie
55 Hart Drive
Barrie, Ontario L4N 5M3
www.travelodge.com

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

A-VII Property Manager

NOC 1224

Property managers perform administrative duties and coordinate activities related to the management and rental of investment property and real estate on behalf of property owners. They coordinate the implementation of repairs, maintenance and renovations carried out on buildings and monitor progress and cost of work for property owners. They also compile and maintain records on operating expenses and income, prepare reports and review rents. Property managers also coordinate the sustainability and energy efficiency efforts undertaken at the properties they manage¹.

Places of Employment¹:

- Property and real estate management companies
- Property development companies
- Business
- Government

Employment Requirements¹:

- Completion of secondary school is required.
- Completion of training courses or a vocational program in property management or real estate may be required.
- Several years of administrative experience as a property clerk, contract clerk, or administrative officer are usually required.
- Trade or general maintenance experience may be required

Local Educational Programs:

Program	Length	Certification	Institutions
Business Administration	4 years	Degree	Ryerson University, University of Toronto, University of Trent, York University
Business Administration	4 years	Bachelor of Commerce	University of Ontario Institute of Technology
Business Administration	3 years	Diploma	Georgian College, Humber College, Durham College
Real Property Administration	2 years	Diploma	Seneca College

The most important Essential Skills for this occupation are²:

- Oral communication
- Problem solving
- Organization
- Job Task Planning

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	25	55	25	185	25	315
25 – 44 years	165	615	90	2,475	350	3,695
45 years and over	185	995	280	3,670	560	5,690
Total Employees	375	1,665	395	6,330	935	9,700
% 45 years +	49.33%	59.76%	70.89%	57.98%	59.89%	58.66%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 51,783
Peel Halton	\$ 52,072
Simcoe Muskoka	\$ 39,364
Toronto	\$ 72,885
York Region BWG	\$ 66,928
Ontario	\$ 56,167

A-VII Property Manager

NOC 1224

Top Industries of Employment for 5 regions^{3,4}:

Across all five regions, there are 9,700 property managers employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
531 Real estate	7,955	82.01%
561 Administrative and support services	365	3.76%
541 Professional, scientific and technical services	255	2.63%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Building superintendents (NOC 6663)
- Property clerks (NOC 1441)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Real Property Management Service
3046 Bloor St W
Toronto, Ontario M8X 1C4
www.rpmservicetoronto.com

TransGlobe Property Management
5955 Airport Road, Suite 223
Mississauga, Ontario, L4V 1R9
www.gotransglobe.com

Urbanspace Property Group
401 Richmond Street West, Studio 111
Toronto, Ontario, M5V 3A8
www.urbanspace.org

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

A-VIII Technical Product Specialists

NOC 6221

Technical product specialists sell and provide support for a range of technical goods and services, such as scientific and industrial products, electricity, telecommunications services and computer services, to governments and to commercial and industrial establishments in domestic and international localities. With the wave of environmentally focused products and technologies emerging, demand for technical product specialists who have environmental training or expertise is rising. Technical product specialists who are supervisors are included in this unit group¹.

Places of Employment¹:

- Industrial equipment manufacturers
- Engineering firms
- Pharmaceutical companies
- Computer service firms
- Hydroelectric companies
- Self-employed

Employment Requirements¹:

- A university degree or college diploma in a program related to the product or service is usually required
- Experience in sales or in a technical occupation related to the product or service may be required
- Fluency in a specific foreign language, and/or foreign work or travel experience may be required for technical product specialists seeking employment with companies that import or export technical goods or services
- Technical product managers require experience as a technical product specialist

Local Educational Programs:

Program	Length	Certification	Institutions
Business	3 years	Advanced Diploma	Centennial College, Durham College, George Brown College, Georgian College, Humber College, Seneca College, Sheridan College
Business administration	4 years	Bachelor of Business	Ryerson University, University of Toronto, York University, Trent University
Certificate in Sustainability		Certificate in Sustainability (CKSS)	Ryerson University
Environmental Resource Science	4 years	Degree	University of Trent
Environmental Studies: Interdisciplinary Approach	N/A	Certificate	Humber College
Environmental Studies Preparation Certificate	N/A	Certificate	Centennial College
Environmental Techniques	1 years	Certificate	Georgian College
Environmental Technology	3 years	Diploma	Durham College, Georgian College
Green Business Management	1 year	Graduate Certificate	Seneca College
Innis Environmental Studies Programs	4 years	Bachelor of Arts Degree/ Bachelor of Science	University of Toronto
Thinking Environmentally	N/A	Certificate	Humber College
Renewable Energy Technician	2 years	Diploma	Durham College

The most important Essential Skills for this occupation are²:

- Reading text
- Writing
- Oral communication
- Document use
- Thinking skills

The most important High School subjects are³:

- Marketing
- Business
- Computer related courses
- English
- Math

A-VIII Technical Product Specialists

NOC 6221

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	45	225	0	275	170	715
25 – 44 years	195	2,835	125	2,570	1,540	7,265
45 years and over	105	1,920	135	1,240	1,040	4,440
Total Employees	345	4,980	260	4,085	2,750	12,420
% 45 years +	30.43%	38.55%	51.92%	30.35%	37.82%	35.75%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 80,082
Peel Halton	\$ 83,341
Simcoe Muskoka	\$ 78,051
Toronto	\$ 80,664
York Region BWG	\$ 98,153
Ontario	\$ 80,227

Top Industries of Employment for 5 regions^{4,5}:

Across all five regions, there are 12,420 technical product specialists employed.

The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
417 Machinery, equipment and supplies wholesaler-distributors	5,380	43.32%
541 Professional, scientific and technical services	2,430	19.57%
414 Personal and household goods wholesaler-distributors	2,005	16.14%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Additional Information¹:

- Extensive company training programs for technical product specialists may be provided by employers
- Progression to product management positions is possible with additional training or experience

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Sales Representatives - Wholesale Trade (Non-Technical) (NOC 6411)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Hubbell Canada
870 Brock Road South
Pickering, ON
Canada L1W 1Z8
www.hubbell-canada.com

Export Development Canada
150 York Street, Suite 810
Toronto, Ontario M5H 3S5
www.edc.ca

Solarheat - Your Solar Home Inc.
270 Industrial Parkway South
Aurora, Ontario L4G 3T9
www.yoursolarhome.com

For a more complete listing of potential employers please visit
www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Service Canada. Job Futures – National Edition. 2007. www.jobfutures.ca.

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁵Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

A-IX Solar Installers and Technicians

NOC 7441

Workers in this unit group install and service a wide variety of interior and exterior prefabricated products such as windows, doors, electrical appliances, solar panels, water heaters, fences, play structures and septic systems, at residential or commercial properties. With the increase in demand and availability for energy efficient products such as solar panels, solar ventilation systems, solar furnaces and varied other energy efficient products, the demand for technicians with this type of specialized knowledge is rising¹.

Places of Employment¹:

- Companies specializing in specific product installation and service

Employment Requirements¹:

- Some secondary school education is usually required.
- On-the-job training and several months of related installing, repairing or servicing experience are usually required.
- A driver's licence may be required.

Local Educational Programs:

Program	Length	Certification	Institutions
Heating, Refrigeration and Air Conditioning Technician	3 years	Diploma	Durham College, Humber College
Electronics Engineering Technician	2 years	Diploma	Centennial College, Durham College, Humber College, Seneca College, Sheridan College

The most important Essential Skills for this occupation are²:

- Oral communication
- Document use
- Problem solving
- Working with others

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	232	265	170	275	195	1,137
25 – 44 years	330	575	375	585	375	2,240
45 years and over	100	215	175	295	150	935
Total Employees	662	1,055	720	1,155	720	4,312
% 45 years +	15.11%	20.38%	24.31%	25.54%	20.83%	21.68%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 33,344
Peel Halton	\$ 33,180
Simcoe Muskoka	\$ 37,214
Toronto	\$ 38,012
York Region BWG	\$ 32,472
Ontario	\$ 33,190

A-IX Solar Installers and Technicians

NOC 7441

Top Industries of Employment for 5 regions^{3,4}:

Across all five regions, there are 4,312 solar installers and technicians employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
238 Specialty trade contractors	2,730	63.31%
236 Construction of buildings	875	20.29%
561 Administrative and support services	395	9.16%
337 Furniture and related product manufacturing	285	6.61%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Medical Technologists and Technicians (Except Dental) (NOC 321)
- Aircraft Mechanics and Aircraft Inspectors (NOC 7315)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Solsmart Energy Solutions Inc.
1159 Dundas St East, Suite 157
Toronto, Ontario M4M 3N9
www.solsmart.com

YourSolarHome
270 Industrial Parkway South
Aurora, Ontario, L4G 3T9
www.yoursolarhome.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

A-X Sustainability & Social Responsibility Coordinator **NOC 4161**

Sustainability and social responsibility coordinators conduct research, prepare reports, provide consultation and advice and administer programs in a variety of areas related to environmental sustainability and social responsibility¹.

Places of Employment¹:

- Federal, provincial and municipal government
- Educational institutions
- Research organizations
- Consulting firms
- Environmental and conservation organizations
- Self-employed

Employment Requirements¹:

- A bachelor's degree or college diploma in a related scientific or technical discipline is usually required for occupations in this unit group
- A master's degree in a related scientific discipline may be required
- Certification in environmental sustainability may be required

Local Educational Programs:

Program	Length	Certification	Institutions
Certificate in Sustainability	N/A	Certificate in Sustainability (CKSS)	Ryerson University
Energy and the Environment	4 year	Degree	University of Ontario Institute of Technology
Environment and Behaviour	4 years	Degree	University of Toronto
Environment and Energy	4 years	Degree	University of Toronto
Environmental Engineering	4 years	Degree	University of Toronto
Environmental Ethics	4 years	Degree	University of Toronto
Environment and Health	4 years	Degree	University of Toronto, York University
Environment and Science	4 years	Degree	University of Toronto, York University
Environment and Society	4 years	Degree	University of Toronto
Environmental Policy and Practice	4 years	Degree	University of Toronto
Environmental Resource Science Studies	4 years	Degree	Trent University
Environmental Studies Program	4 years	Degree	York University
Environmental Studies Preparation Certificate	N/A	Certificate	Centennial College
Environmental Technology	3 years	Diploma	Durham College, Georgian College, Humber College
Innis Environmental Studies Programs	4 years	Degree	University of Toronto
Masters in Sustainability	Masters	Masters	Trent University
Sustainable Energy	4 years	Degree	University of Toronto

The most important Essential Skills for this occupation are²:

- Reading text
- Writing
- Document use
- Communication

The most important High School subjects are³:

- English
- Sciences
- Business
- Math

A-X Sustainability & Social Responsibility Coordinator **NOC 4161**

Number of Employees by Age Range³:

Age Range	Durham	Peel Halton	Simcoe Muskoka	Toronto	York Region BWG	Total
15 – 24 years	10	30	0	50	25	115
25 – 44 years	50	370	60	725	250	1,455
45 years and over	80	180	40	375	140	815
Total Employees	140	580	100	1,150	415	2,385
% 45 years +	57.14	31.03%	40.0%	32.61%	33.73%	34.17%

Source: Statistics Canada, 2006 Census

Average Salary

Based on 2006 Census Data ⁴ :	
Durham	\$ 75,679
Peel Halton	\$ 72,303
Simcoe Muskoka	\$ 56,662
Toronto	\$ 72,127
York Region BWG	\$ 56,697
Ontario	\$ 72,431

Top Industries of Employment for 5 regions^{4,5}:

Across all five regions, there are 2,385 sustainability and social responsibility coordinators employed. The top industries of employment are:

Industry (NAICS)	Number of People Employed	% of Total
541 Professional, scientific and technical services	1,000	41.93%
912 Provincial and territorial public administration	495	20.75%

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

There are no direct occupations linked to this occupation based on the matrix of skills transferability. However, the following have been identified as related occupations:

- Business Development Officers and Marketing Researchers and Consultants (NOC 4163)
- Judges, Lawyers and Quebec Notaries (NOC 411)
- Psychologists (NOC 4151)
- Managers in Public Administration (NOC 041)

Local Employers:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Grand & Toy
33 Green Belt Drive
Toronto, Ontario M3C 1M1
www.grandtoy.ca

Green For Life
401 Magnetic Drive, Unit # 20
Toronto, Ontario M3J 3H9
www.greenforlife.ca

The Scheinman Group
80 Fulton Way, Suite 202
Richmond Hill, Ontario L4B 1J5
www.scheinmangroup.com

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml.

³Service Canada. Job Futures – National Edition. 2007. www.jobfutures.ca.

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁵Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009. www.statcan.gc.ca.

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.



www.peelhaltonworkforce.com

PEEL HALTON



www.workforceinnovation.ca

TORONTO



www.wpboard.ca

YORK REGION



www.drltb.com

DURHAM



www.labourtrends.ca

SIMCOE MUSKOKA

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