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## Regulvar invests in **energy efficiency**

Due to the many systems buildings need to function—heating, ventilation, air conditioning (HVAC), lighting and hot water—they are energy guzzlers ★. Whether the systems are powered by electricity, natural gas or fuel oil, they generate significant GHG emissions and their operating costs are often high. As a result, government authorities, researchers and companies try to optimize the systems' energy efficiency and adopt new technologies and methods. Building automation plays a key role given how fundamental it is to achieving

a building's full performance potential. For instance, through smart control and predictive analysis, building automation is used to implement strategies such as regulating ambient conditions based on occupancy, automatically adjusting lighting or motorized blinds based on daylight, as well as measuring, accumulating and redistributing energy.

Regulvar's expertise and extensive experience are in high demand, and the Company believes it is important to participate in various research projects and contribute to the advancement of knowledge and technologies in the field. It is within this context that Regulvar works closely with various researchers and supports many projects.

★ **Did you know** that residential and commercial buildings consume about 30% of the total energy and about half of the electricity used in Canada



Source : Natural Resources Canada

30%

### Regulvar and Concordia University : **BUILDING** the **FUTURE** together




The relationship between Concordia University and Regulvar goes back a long way. Company founder Yves Harel, Eng. received part of his engineering training at Concordia, and the Company has carried out many projects at the university, namely the design and integration of the HVAC systems in the John Molson School of Business.

For about 10 years, Regulvar has supported the work of **Dr. Andreas Athienitis**, a professor in Concordia University's Department of Building, Civil and Environmental Engineering, and a recognized researcher in the fields of solar energy and energy efficiency. Through

donations in the form of material, expertise and financial support, Regulvar has supported many projects, including the **Solar Buildings Research Network**, the **Smart Net-Zero Energy Buildings Strategic Research Network** and the **Industrial Research Chair in Optimized Operation and Energy Efficiency**. These collaborative initiatives will without a doubt accelerate the adoption of new methods and generate greener buildings.


From 2006 to 2011, the **Solar Buildings Research Network** (SBRN) of the Natural Sciences and Engineering Research Council of Canada (NSERC) conducted work on design techniques and technologies aimed at integrating solar energy in residential, institutional and commercial buildings. A first in Canada, it brought together 24 researchers

in solar energy from 11 universities, experts from Natural Resources Canada (NRCan), the Canada Mortgage and Housing Corporation (CMHC) and Hydro-Québec, as well as approximately 15 industrial partners, including Regulvar. With the objective of testing the strategies studied, the team participated in demonstration projects, including the EcoTerra house. The team designed the solar energy system and worked with Regulvar to develop the control system. The house was one of three winners of the EQuilibrium™ competition organized by the CMHC. 


The NSERC Smart Net-Zero Energy Buildings Strategic Research Network (SNEBRN)  will be active from 2011 to 2016. Its work will be based on that of the SBRN and will be led by 29 researchers, with the support ►



of government and industry partners, including **Regulvar**. The objective of the SNEBRN is to find better ways to achieve an average annual net-zero energy consumption in buildings and neighbourhoods by controlling various factors, including the building enclosure, the integration of the solar energy systems and **the use of smart control**.

In 2013, Dr. Athienitis was awarded the **NSERC/Hydro-Québec Industrial Research Chair in Optimized Operation and Energy Efficiency: Towards High Performance Buildings**.  The purpose of the research program is to develop new knowledge and innovative solutions designed to significantly improve building performance. With financial contributions from NSERC, Hydro-Québec, **Regulvar** and NRCan, the program will have a budget of \$2 million over five years (2013-2018). Regulvar will also help develop **new centralized control strategies** that are more versatile, effective and powerful.

## Regulvar Canada SUPPORTS RESEARCH AT Carleton University



Dr. Liam O'Brien is an Assistant Professor for the Architectural Conservation and Sustainability Engineering program in Carleton University's Department of Civil and Environmental Engineering in Ontario. In 2012, Dr. O'Brien approached **Regulvar Canada** regarding a research project designed to demonstrate the possibility of generating energy savings through effective, automated control of motorized blinds and to study the effect on heating, air conditioning and lighting systems. **Regulvar Canada** has carried out many different projects at **Carleton University**, and given that the focus of this project was also building automation, the company agreed to contribute sensors, blinds, equipment and data-collection software, in addition to any necessary technical support. Consequently, in a laboratory completely isolated from the rest of the university with regard to the electrical power supply and, if necessary, the HVAC systems (to simplify parameter management and the interpretation of the results), Dr. O'Brien and his team prepare forecasts, establish scenarios and carry out simulations. They use their own algorithms to analyze the data gathered, allowing them to assess potential energy savings created by the optimal and automated control of blinds. Clearly, their conclusions will be of interest to many stakeholders in the building sector. 

## Regulvar Canada sponsors **TEAM ONTARIO** for the **SOLAR 2013 DECATHLON**

In 2002, the U.S. Department of Energy launched the Solar Decathlon, a biennial competition that challenges participants to design, build and operate a solar-powered, net-zero energy house that is cost-effective, energy-efficient and attractive. In October 2013, the event brought 20 teams to California from around the world, including two teams from Canada. One of them, **Team Ontario**, was comprised of three teachers and 100 students from Queen's University, Carleton University and Algonquin College (several members are associated with the

Courtesy of  
Team Ontario - 2013 Solar Decathlon



NSERC Smart Net-Zero Energy Buildings Strategic Research Network). It took over three years to carry out this project and the funding was provided by several partners, including **Regulvar Canada**, which donated the required material for the building automation systems. Their home, which they called **ECHO (ECological HOme)**, finished 6<sup>th</sup> overall, but 1<sup>st</sup> in the coveted Engineering Contest, as well as the Hot Water Contest and the Energy Balance Contest. Congratulations!  

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## Celebrating partnership

The Association pour le développement de la recherche et de l'innovation du Québec (ADRIQ) and the NSERC paid tribute to the **Solar Buildings Research Network (SBRN)** during the 2012 Celebrate Partnerships! evening event. Based on the outstanding research partnership between Dr. Athienitis, Hydro-Québec, Natural Resources Canada, **Regulvar Inc.** and Murs EcoTerra, the SBRN was recognized as a model for collaborative research between academia and industry.

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