■by Peter Mitham

Best space on Earth

From design to energy monitoring, clean construction raises the bar

David Helliwell, co-founder of Pulse Energy: helping managers monitor energy use

3383 Gilmore Way, commonly known as DiscoveryGreen, is a landmark, and not just because it stands in a prominent location in Burnaby at a corner of Canada Way that overlooks Highway 1. It has earned significant environmental ratings: platinum certification for its core and shell from the Canada Green Building Council's Leadership in Energy and Environmental Design (LEED) program.

Bunting Coady Architects and engineering firm CDML contributed to the building's efficiency, while more generally, energy providers such as gas distributor Terasen Gas Inc. and BC Hydro have been joining the trend toward optimizing the performance of buildings. Terasen's Innovative Technology Fund is offering companies $8 million through 2011 for new energy-management technologies. BC Hydro's Continuous Optimization Program offers software from three companies, including Vancouver-based Pulse Energy, Inc., to establish a baseline for energy use in buildings of more than 50,000 square feet and to identify areas where retrofits could improve energy use.

"We see ourselves as an energy-information company," says David Helliwell, who launched Pulse in 2006 with Greg Kerfoot, co-founder and former chief executive officer of Crystal Decisions.

Pulse had its initial break in helping the sustainability office of the University of British Columbia track energy use in campus buildings, but the arrangement with BC Hydro introduced its software to a broader range of clients. It now serves the majority of the 60 participants in BC Hydro's optimization program.

The software is linked to building retrofits: a company must install the software for a minimum of nine months, after which retrofit recommendations are made. The retrofits are designed to repay the companies' investments within two years, and companies that don't undertake them lose the tracking software.

"We allow them to ensure [that] the savings are being generated by their retrofit programs," Helliwell says. "It's really common to do an energy-efficiency project and everything looks really good, and then, just over time, the savings get eroded because something gets changed here, you change a heating setting there and a cooling setting there, and before you know it, you have heating working against cooling, and the

Photo: Dominic Schaefer

whole building is … like an airplane held together by duct tape."

In addition, the software projects energy usage under current conditions, and any consumption that's out of whack with projections triggers an e-mail alert to the building manager.

This is something Karen Jawl of Jawl Development Corp. in Victoria appreciates.

Before installing software from Pulse as part of its participation in BC Hydro's optimization program, the company had to deal with a broken override switch in one its buildings. The override is designed to allow employees to have heat and light outside normal hours of operation, but when the switch broke, the boiler operated continuously for two months: an unnecessary use of natural gas.

"Being able to identify [far more quickly] when problems happen in your buildings … is a huge advantage," Jawl says of the software. "There's also a good tenant-engagement tool, which allows tenants to be responsible for their energy consumption, too."

Giving managers more information to manage buildings is valuable, she says, pointing out, "In 2009, we decreased our energy consumption by 18 per cent and expect to reduce it a further five per cent in 2010."

Theodor Sterling Associates (TSA) also caters to the increased interest in benchmarking, but within its own field of indoor air quality (IAQ), another important element of a building's performance. British Columbian law requires the annual testing of IAQ, which can have a critical impact on employee well-being and productivity.

LungsoftheCity.com, a site TSA launched in March 2010, helps clients benchmark IAQ against local and regional averages: a decision-making tool for clients additional to the annual report TSA delivers.

Toronto-based Sempa Power Systems Ltd., which operates a research and operations centre in North Vancouver, closes the management circle. In 2003, it developed software that drives a hybrid heating system now in place in 40 buildings throughout B.C. The system not only improves energy efficiency but also uses the most efficient energy for the job.

The goal of the hybrid boilers is to displace propane – a common fuel in Whistler, for example – with cheaper electricity whenever possible. Sempa's software tracks a building's energy use up to an established peak, shifting between electricity and propane according to circumstances. This helps clients save up to 15 per cent on energy bills and reduce greenhouse gas emissions by 20 to 30 per cent: enough, in fact, to generate credits the Vancouver Organizing Committee was able to use to offset carbon emissions during the 2010 Winter Olympic Games.

"[B.C.'s] carbon tax is driving behaviour toward using hybrid heating systems to help reduce carbon emissions from [buildings], especially in the broader public sector where there is a requirement," Sempa president Ron Dizy says. "It's driving a new set of [behaviours] that we haven't seen before."

Combined with specifications for LEED-certified construction and other measures by governments and private companies, such behaviours are poising B.C. to lead the development and deployment of technology to improve green building performance

The region has two key advantages: a knowledgeable workforce and government support. The resources and networks of

Burnaby's 3383 Gilmore Way, known as DiscoveryGreen, where clean technology is locally sourced

Helliwell and Kerfoot have supported Pulse's development. Yet most cities don't have the mix of talent Vancouver offers tech companies, Helliwell points out, and ample government funding (Pulse garnered $7 million last year) adds to the incentives that draw clean-tech companies here.

"It's really allowed us to accelerate development of the technology," Helliwell says of what Vancouver has offered Pulse. "Most weeks, I'll have a number of calls from private equity firms and B.C. firms, mostly from the Bay area, and sometimes New York. … [But] we're more looking for … steady growth and keeping things in Vancouver." ■