



UVic students help turn the energy taps on as CRD water flows from the Sooke Reservoir to Victoria. CRD Photo

UNIVERSITY OF VICTORIA

Students a natural source for energy alternatives

How do you harness lost energy? That's just one of the questions University of Victoria engineering students are trying to answer as they pair up with industry to help companies design alternative energy systems.

This past summer, a pilot course in UVic's Design Engineering Office's Sustainable Energy Systems Design Projects, in UVic's Faculty of Engineering, provided an opportunity for engineering students in the final year of undergraduate studies to apply their technical, creative and teamwork skills to significant real-life projects.

Six student teams worked closely with industry representatives to design sustainable energy systems based on industry needs.

The City of Victoria tapped into UVic talent, enlisting a four-member team for its Water Pressure Reduction Energy Capture Project. At 11 different sites throughout the city, water is received from the Capital Regional District distribution lines at approximately 140 psi.

Then, at each site, this pressure is reduced through pressure-reducing valves by approximately 50 psi before further distribution. The city turned to the UVic team to find a cost-effective way to harness this lost energy.

The team of mechanical engineering students were given a project that involved a number of stages. The first was to conduct a needs analysis, problem identification and state-of-the-art review. Guided by both faculty and industry engineers, the team generated potential solutions and

conducted feasibility studies to select the most viable choice for a final recommendation to the city.

The UVic course was designed for just such an opportunity, under UVic's new Design Engineering Chair. For the last seven years, the Natural Sciences and Engineering Research Council of Canada (NSERC) has run a national program called Chairs in Design Engineering. In January, UVic's director of the Institute for Integrated Energy Systems, Dr. Peter Wild, was awarded the NSERC Chair in Sustainable Energy Systems Design. Part of that proposal was to bring in a course that teaches design in sustainable energy systems.

Jason Bazylak, design engineer with the Design Engineering Office, served as the key point of contact between the office and industry players. "The response from industry was very positive," recalls Bazylak. "We received 18 project proposals, much higher than I was expecting considering this was our inaugural offering of the course."

Response to the pilot project has been upbeat.

"The students were great, very professional and easy to work with," recalls Deryk Lee, supervisor of electronics and automation with the city's Department of Engineering. "But when they came to us with a lot of questions we turned it back on them and said, 'you're doing the research, you tell us how to do it.'"

That's arguably the point at which the UVic students began to really learn about their projects.

"We benefited immensely from the experience, and enjoyed a

unique opportunity to work on a real-life project," says team member Ian McMurdo. "While our end product was theoretical design work, we did open the door for the project to progress, should the city choose to pursue the concept," echoing the long-term hopes of fellow team members Iain McEvoy, Bobby Wangler and John Campbell.

All six teams accomplished an amazing amount of design during the 13-week course. In at least three cases, the participating companies were interested in pursuing the designs to a further stage, either themselves or through another student design team.

The pilot project is now a permanent course, offered again next summer. Bazylak anticipates even more companies will want to participate. For industries that can't wait that long, Bazylak also runs a co-op program aimed at training highly qualified Sustainable Energy System Design Engineers, which provides a subsidy to companies that hire UVic engineering students into a SESD-related role.

Bazylak sees long-term energy sources in the students as well as in their projects.

"They enjoyed getting the chance to work with industry engineers in a field that they are passionate about. That's great news because the need for highly qualified design engineers with experience in sustainable energy systems has never been greater."

Further details about the UVic student projects can be found at: design.engr.uvic.ca/student-projects/mech400-sesd/projects/