

ACCESS British Columbia

The sun is shining on B.C.'s water

by Karl Yeh, WD Communications,
Vancouver

Environmental technology has become a common phrase. Concerns about rising energy costs have renewed interest in alternative energy sources that are efficient, renewable, and environmentally friendly. One such technology is solar power, more specifically, solar hot water.

The solar hot water system is one of the safest, most practical and efficient renewable energy sources available. It is a cost-effective use of solar energy that provides hot water for showers, dishwashers and washing machines. Solar hot water can also be used for car washes, hotels, swimming pools, and commercial laundromats.

According to the British Columbia Sustainable Energy Association (BCSEA), an organization that advocates for clean and sustainable forms of energy and supports the SolarBC Project, a solar water heater can provide half of the water heating energy needs for an average Canadian family of four. Not only does this solar hot water system lower fuel consumption for heating, it continues to operate during a power failure.

A solar hot water system consists of three components:

- 1) a solar collector used to convert solar radiation from the sun into reusable heat
- 2) a heat exchanger, which transfers the heat from the solar collector to potable water
- 3) a storage tank to hold the heated water



Solar hot water systems are a growing industry around the world, particularly in Germany and Austria. There are also large markets in the United States, Japan, and Israel. In Canada, despite the relatively small market, there are significant opportunities for growth in the solar hot water sector as Canadians are among the highest energy consumers per capita in the world. Furthermore, a year-round solar hot water system has been developed with freeze protection, which enables it to operate in some of Canada's more extreme seasonal conditions.

Domestic hot water accounts for 20–30 per cent of residential energy consumption and 50 per cent in homes that use hot water for space heating. The market potential for solar hot water systems has become a key driving force behind BCSEA, which has a short-term goal to facilitate the installation of 100 systems in three to four B.C. communities over two years, and a long-term goal of up to 100,000 by 2025.

“This technology has the potential to be widely used in homes and businesses across B.C., providing a practical, safe

CONTINUED ON PAGE 2

B.C.'s water

CONTINUED FROM PAGE 1



Solar panels are used to heat water in homes.

and renewable energy source,” said Dr. Nitya Harris, SolarBC Project Leader. “Our project will test the potential for the rapid acceleration of solar water heating in pilot communities across British Columbia.”

The work done by BCSEA has become highly recognized and has garnered an award from the Canadian Solar Industries Association (CSIA) as the 2005 Solar Advocate of the Year. The CSIA presents several awards annually to organizations and companies that assist solar energy technologies and systems to overcome barriers and break into Canada’s mainstream.

Despite the advantages of the solar hot water system, the demand from homeowners has been relatively low. In 2002, there were approximately 12,000

solar water heaters in use in Canada, representing less than one per cent of the national market. There are two major reasons for this low demand: the general lack of awareness and understanding about the benefits of solar energy, and the higher cost of installing solar powered equipment compared with equipment used for oil and gas. Consumers have relatively few incentives or subsidies available to them to install a solar heating system.

In partnership with Western Economic Diversification Canada (WD), BCSEA has taken steps to address these challenges. The Solar Water Heating Acceleration Project is an initiative that consists of public education to increase awareness of the benefits of solar hot water, and pilot programs across B.C. communities

to determine cost-effective measures for solar hot water systems.

As attention to energy costs continues, there is tremendous potential for alternative technologies such as the solar water heating system to become popular commodities, ones that can benefit homes and businesses across the country.

For more information about this topic, please visit the following websites:

British Columbia Sustainable Energy Association - www.bcsea.org

Solar Hot Water system - www.solarbc.ca

Canadian Solar Industries Association - www.cansia.ca

For more information about WD support for alternative energy, visit www.wd.gc.ca/innovation/etf/. ■

by Jamie Kokoska, WD Communications, Vancouver

Researching the forests around them

The University of Northern British Columbia (UNBC) has expanded its I.K. Barber Enhanced Forestry Lab and is taking a deeper look into the science of forests through a new confocal laser microscope.

Western Economic Diversification Canada (WD) invested \$311,168 towards the expansion of the University's forestry lab, a renovation that permits more students and professors to study the biology of B.C. forests. The new space allows research offices to be located alongside laboratory areas, giving students and professional forest researchers the opportunity to work side-by-side. The ability to locate collaborating organizations (such as the Canadian Forest Service) within UNBC's forest lab significantly strengthens the relationships the university has with industry and government researchers. These relationships translate into a more expansive education for students studying in the field of forestry.

Thanks in part to an investment of over \$365,000 by WD, UNBC is now home to the only confocal laser microscope in Northern B.C. This particular type of microscope is essential to the forest research occurring at the university. For example, Dr. Lito Arocena is using the microscope to examine the role micro-organisms play in forest ecosystem nutrient cycling (the process by which plants absorb nutrients from the soil and return them after they die and decompose). The microscope

identifies fungi and bacteria needed to produce the nutrients required for plant growth—information that will aid the forestry industry when replanting trees and rehabilitating areas affected by forest fires.

Many different forestry research projects are currently being tested at UNBC including a study on the effects of microsite-based tree planting (choosing the best location to ensure optimum health and growth of seedlings) and a pilot study on the use of nitrogen-fixing plants to correct mine spoil (soil reclamation at abandoned mines). The Canadian Forest Service is also working with the lab to better understand the

implications of the current mountain pine beetle epidemic in central and northern B.C.

Dr. Max Blouw, vice-president (research), UNBC, hopes the research will help diversify the resource dependent communities in central and northern B.C. "A core question among both industry and communities is how to transition from high-volume, low-value commodities to a greater emphasis on value-added economic activity," notes Dr. Blouw. "The investments by WD have enhanced UNBC's ability to contribute to this important challenge and will allow us to continue responding to the needs of our community." ■



Forest researchers at I.K. Barber Enhanced Forestry Lab.

by Jinny Wu, WD Communications, Vancouver

Advancing ocean research and technology

When it comes to uncovering the secrets of our vast oceans, the Bamfield Marine Sciences Centre (BMSC) quickly comes to mind.

BMSC's reputation as Canada's leading marine biology research institute is worldwide. Established in 1972, the BMSC is the only open-ocean laboratory on the Pacific coast that provides researchers and students an opportunity to engage in field research. It offers unparalleled access to a wide array of environments including unique coastal, marine and rainforest habitats, and exceptional species diversity.

BMSC is owned and operated by the Western Canadian Universities Marine Sciences Society, whose members are the University of Victoria, University of British Columbia, Simon Fraser University, University of Alberta, and University of Calgary.

"For almost 35 years, we have been pushing the frontiers of knowledge in marine and coastal science," said Dr. Dennis Jelinski, Director of BMSC.

With over 125 principal researchers, BMSC has made a number of important discoveries in the areas of cancer treating chemical compounds and neurobiology, produced ecologically sustainable materials, and managed various isolated nature reserves.

The main goal of BMSC is to become a state-of-the-art facility that provides a fertile environment for research and commercialization. With the addition of the newly-constructed Rix Centre for



The Rix Centre for Ocean Discoveries.

Oceans Discoveries, BMSC is poised to realize this goal.

The Rix Centre for Ocean Discoveries, named after Dr. Donald Rix, is a multipurpose facility that houses a marine biotechnology laboratory, coastal integrity laboratory, digital imaging and analysis laboratory, classroom, office, and conference space. Western Economic Diversification Canada (WD) invested \$1.15 million toward the purchase of equipment and the improvement of facilities at the Centre.

"Great leaders such as Dr. Donald Rix communicate the big themes. To communicate means more than talking—it means facilitating and connecting," said Dr. Jelinski. "Donald Rix's vision for the Rix Centre for Ocean Discoveries was to directly support BMSC

as the country's pre-eminent institution of marine science, to foster innovative applications of science and technology in the ocean/marine sectors and to lay the groundwork for a spirit of innovation that creates new opportunities in marine life sciences."

The Rix Centre for Discoveries undoubtedly opens doors for BMSC. Apart from enhancing BMSC's infrastructure, it encourages partnerships among universities, industry and other communities, and strengthen Western Canada's technology transfer and commercialization capabilities in the marine sector.

For more information about BMSC and the Rix Centre for Ocean Discoveries, call (250) 728-3301, or visit www.bms.bc.ca. ■