ACCESS
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Big Things Come in Small Packages

by Laura McNabb

Having completed three years assisting prototype development, the **MicroSystems Technology Research Institute (MSTRI)** at the University of Alberta invited dignitaries, members of the academic community and local media to a "show and tell" on October 15, 2003.

Dr. Jingli Luo explains her fuel cell project to Edmonton-Rutherford MLA Ian McClelland and Health Minister Anne McLellan at the MSTRI Showcase event.

MSTRI was created with support from Western Economic Diversification Canada (WD) and the Government of Alberta to provide researchers with an opportunity to initiate pre-commercial microsystems research projects focusing on platform or application-specific technologies for individual companies. The Institute assists microsystem companies in the early stages of prototype development through use of the **NanoFab**, the University of Alberta's premier nanotechnology fabrication facility.

Health Minister Anne McLellan attended the event on behalf of WD Secretary of State Stephen Owen to view exhibits by Aurora NanoDevices Inc., BigBangwidth Inc., Norcana Inc., Nova Research Corporation and several others, and to talk with their spokespersons.

Through MSTRI, these companies have developed and maintained new intellectual property in Canada, while facilitating technological innovations that will advance new small and medium-sized start-up companies. As the representatives from these high-tech organizations were quick to testify, MSTRI has proven that it is an excellent vehicle for bringing together researchers, facilities and companies that will form a new industry cluster for microsystems research and commercialization in Western Canada.

Towering Above the Rest with a Pra

Tower Aerospace tests the Badger in a low speed drop of both compartments of the fire suppresion system, releasing 2,500 lbs. of water.

In 2003, the country watched horrific television images of flames shooting into the sky from the Okanagan Valley in the B.C. interior. The Okanagan Mountain Park fire drove over 30,000 Kelowna-area residents from their homes at the height of the firestorm, and over 250 homes were lost in the tragedy.

This was only one of the many devastating forest fires that blazed through B.C. and Alberta this past year, threatening, and often destroying, the livelihoods of workers in the forestry, agricultural and tourism industries.

In Calgary, a successful western Canadian aerospace company watched the news, knowing that they were sitting on an innovation that would get to the "heat" of the problem. Their new product, however, was still undergoing final product testing and was not yet ready for official use.

Sandy McLeod, president of **Tower Aerospace Inc.**, indicated they had a practical solution that would have an impact and help firefighters — the *Badger*!

When a fire erupts, firefighters need to get to the site quickly – an initial attack response. Currently, only 30 per cent of the water dropped from traditional water bombers actually reaches its target on the ground due to evaporation and particalization — making current technology only 35 per cent effective.

The *Badger* water bombing system drops a "water bomb". The force of the payload creates a path through the trees and brush ahead of the fire to slow it down, change its direction or put it out. It ensures that 90-95 per cent of the water dropped reaches hot spots on the ground.

McLeod credits a "remarkable young man" that the company hired with help from Western Economic Diversification Canada's (WD) **First Jobs in Science and**

ctical Solution for Fighting Wildfires

Technology Program for the *Badger's* success. "Jeffrey Goodfellow is an Aerospace Engineering graduate from Toronto's Ryerson University who has made outstanding contributions to the project in the area of design engineering."

Goodfellow is not the first graduate that Tower Aerospace hired under the First Jobs program, and probably not the last, added McLeod. In 2000, the company also hired Natalie Elliot, a computer operator who provided computer operations management support.

The *Badger* technology is patent-protected in both Canada and the U.S., and is recognized by the National Research Council as a scientific achievement. It is already attracting international interest. Tower Aerospace recently established exclusive distribution rights for future sales in the U.S.

The *Badger* is part of a joint venture agreement Tower Aerospace signed with B.C. Forestry in February 2003 to research, design, test and build water bombing delivery systems. The 10-year contract includes ongoing support of advanced water bombing systems and maintenance of any products sold to them.

Using a high-speed snorkel, an aircraft can fill the Badger with 300 gallons of water in just 30 seconds from any nearby water source.

For more information about the *Badger* or other services offered by Tower Aerospace, call (403) 291-1117 or visit their website at: www.toweraerospace.com.

WD's First Jobs program provides eligible businesses with funding up to 50 per cent of a science or technology graduate's salary for one year, to a maximum of $20,000. For more information about this program, or other services offered by WD, visit: www.wd.gc.ca.

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Climbing the Ladder of Success

Jason (L) and Hal Beck (R) designed the LeveLadder™, an attachment that can be installed on fiberglass or aluminum ladders to improve their stability.

Jason Beck was working at a construction site in 1995 when the ladder he was using collapsed. The fall resulted in a shattered ankle and a hefty Workers Compensation claim for medical expenses and lost wages. It also resulted in an idea!

Jason and his father, Hal, talked about developing a ladder-leveling device that would steady a ladder placed on uneven ground or stairs.

Eight years later, **Beck Technologies Inc.** is successfully marketing the *LeveLadder*™. The new ladder attachment features an ice pick on the feet and safety release buttons on the top of each leg that allows for height adjustments.

The leap from idea to production required assistance. The **East Central Alberta Community Futures Development Corporation (CFDC)** provided the father-son team with financing to manufacture their product and connected them with a marketing company to help distribute the *LeveLadder*™.

Since June 2003, the Camrose company has secured distribution through three major Canadian companies, and anticipates sales to reach 4,500 units in their first year of business.

The benefits of the *LeveLadder*™ are numerous – increased safety, productivity and product durability. "It has passed Canadian Safety Association tests and been endorsed by the Alberta Construction Safety Association," indicated Hal.

The *LeveLadder*™ has the potential to reduce workplace injuries similar to Jason's, and save the construction industry over $20 million and as much as 900,000 lost man-hours in one year alone.

For more information, visit www.leveladder.com or contact Beck Technologies at (780) 672-7241.

For more information about the services offered by East Central Alberta CFDC, call (780) 336-3497 or visit their website at: www.ecabiz.ca.

Grande Prairie Regional College Goes the Distance

Aboriginal peoples represent the fastest growing segment of Canadian society. But the remoteness of many of their northern communities can be a significant challenge for them to participate in the workforce.

Alberta's northwestern region, for example, is experiencing exciting economic growth. Regardless of its diverse population and considerable distances between communities, industry is booming — forestry, oil and gas, tourism, health and wellness. But, industry is experiencing significant labour shortages.

Grande Prairie Regional College (GPRC) isn't content with the traditional classroom. It has gone the distance to ensure that students in remote communities have access to training through a distance learning initiative.

With funding from Western Economic Diversification Canada's (WD) **Innovation and Community Investment Program**, GPRC purchased new videoconferencing and Web-based technology to enhance industry-specific training in nine remote Aboriginal communities. Upgrading distance education technology at GPRC enables the college to extend learning opportunities to students in their home communities.

"WD's funding was a tremendous boost to our ability to use videoconferencing and the Web, particularly in combination, enabling us to bring learning opportunities to people who would otherwise be kept out of post-secondary education and vocational training," said Carmen Haakstad, GPRC's executive director of advancement.

While this project is targeted toward enhancing access for the Aboriginal population in communities such as Conklin, Fort Chipewyan, Fort Vermillion, Gift Lake, Grouard, High Level, High Prairie, Manning and Rainbow Lake, it also benefits the entire college community.

For information about programs offered by Grande Prairie Regional College, visit their website at: www.gprc.ab.ca.

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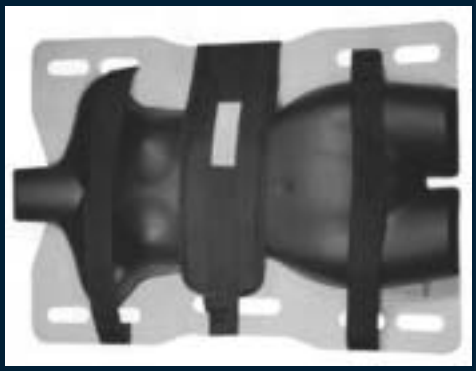
Unique Partnership Program – A Four-Year Success Story

Doctors and nurses struggle daily to safely move prone patients. Not only is patient safety a concern, the strenuous effort also puts the caregiver or hospital personnel at risk of back injury.

Tenet Medical Engineering of Calgary presented University of Calgary students with this medical challenge and asked for help developing a solution. A design proposal by student Mark Griffiths successfully addressed the problem and garnered him the 2001 Design Distinction Award in *ID Magazine* for the *ProneSafe Patient Positioner*.



ProneSafe Patient Positioner

This innovation is just one of six medical devices that made the leap to commercialization with help from the **Medical Device Development Program (MDDP)**.

Helping to make the MDDP a success was the funding support provided by the **Canada/Alberta Western Economic Partnership Agreement (WEPA)**. Western Economic Diversification Canada (WD) and the Government of Alberta each contributed $300,000 towards the $800,000 program.

The four-year program provided an exceptional learning experience for 189 students from the universities of Calgary and Alberta, the Northern Alberta and Southern Alberta Institutes of Technology (NAIT and SAIT), and Mount Royal College. They worked directly with medical practitioners and 12 industry sponsors in the development of over 40 medical devices. The program created a system where these newly-developed products could move from idea to concept, from prototype to commercialization.

Once an industry sponsor identified a problem, a student team was formed to examine the design problem, conduct research, develop a design concept and prepare a solution. Each project required a team effort — faculty and students, student supervisors and coaches, medical advisors – doctors and nurses, industry sponsors and an industrial design firm.

NAIT students worked with engineers from PulmoNOx® Medical Inc. of Edmonton to develop the *ViaNOx-ds*®. Scheduled to hit the markets this month, the *ViaNOx-ds*® is state-of-the-art nitric oxide (NO) delivery and analysis technology. The gaseous version of nitric oxide is a

pharmaceutical agent that mimics the naturally produced NO in the human body. Among its many uses, NO has anti-inflammatory properties for the prevention and psychometric dysfunction following coronary bypass surgery (over 450,000 patients each year undergo bypass surgery).

ViaNOx-ds® has been approved by both Health Canada and the U.S. Food and Drug Administration.

While not all MDDP projects were commercially viable, the learning process was valuable for the students. And, now many projects simply require refinement or additional development.

The program's successful approach also resulted in two new companies. Matter Industrial Design Incorporated came together to manage many aspects of the MDDP and undertake follow-up design and project completion. MiX: Med Info eXchange was formed to further develop and commercialize a Web-based electronic patient referral system.

PulmoNOx's Ali Ardakani is personally grateful to WD. With help from WD's **First Jobs in Science and Technology Program**, PulmoNOx® was able to reduce their risk in hiring Ardakani as a recent graduate. "I got a jump start on an exciting career. It's a great program," said Ardakani, who went from researcher and assistant to the CEO when he started with the company four years ago, to Vice President of Operations of the company's manufacturing facility in Tofield.

UofC student intern Alex Poda helped Bortec Biomedical Ltd. prepare for ISO quality assurance standardization for the Cliniflex™ which utilizes EMG signal acquisition technology and an artificial intelligence software package. The Cliniflex™ records EMG activity associated with muscle activation and then translates this into a visual presentation useful diagnose temporomandibular joint disorders and dental occlusion.

For more information about the Medical Device Development Program or the First Jobs in Science and Technology Program, visit: www.wd.gc.ca.

Diversifying Calgary's Economy

by Colleen Wilson

For many Canadians, and internationally, Calgary is synonymous with oil and gas. But behind the scenes of Calgary's glittering skyline, an innovative group of people is working hard to put Calgary on the map for more than just oilrigs. They want to ensure the city's economy, and the people who rely on it, continue to thrive long after the last drop of oil has been extracted from the ground.

Photo courtesy of Calgary Economic Development.

Calgary Economic Development's industry development strategy is a community-led initiative. With help from Western Economic Diversification Canada (WD), the initiative is creating opportunities for sustainable growth and economic prosperity in the Calgary region.

Efforts to strengthen the Calgary region's competitiveness on the international stage got another boost from WD last fall with an $800,000 contribution, bringing the Department's total support to $1.5 million since 2000.

The funding will allow business development activities to move ahead in the areas of: information technology; financial capital; transportation, warehousing and logistics; wellness; geomatics; wireless/telcommunications; and tourism, arts and entertainment.

WD's partnership with Calgary Economic Development is an excellent example of how the Government of Canada is meeting a key commitment — helping western Canadians build sustainable communities by boosting their capacity to compete internationally.

So don't be surprised if palm-sized computer technology or revolutionary global-positioning systems will soon jump to mind first — before oil and gas — when you think of Calgary.

For more information on Calgary Economic Development's industry development strategy, call 1-888-222-5855 or visit www.calgaryeconomicdevelopment.com.