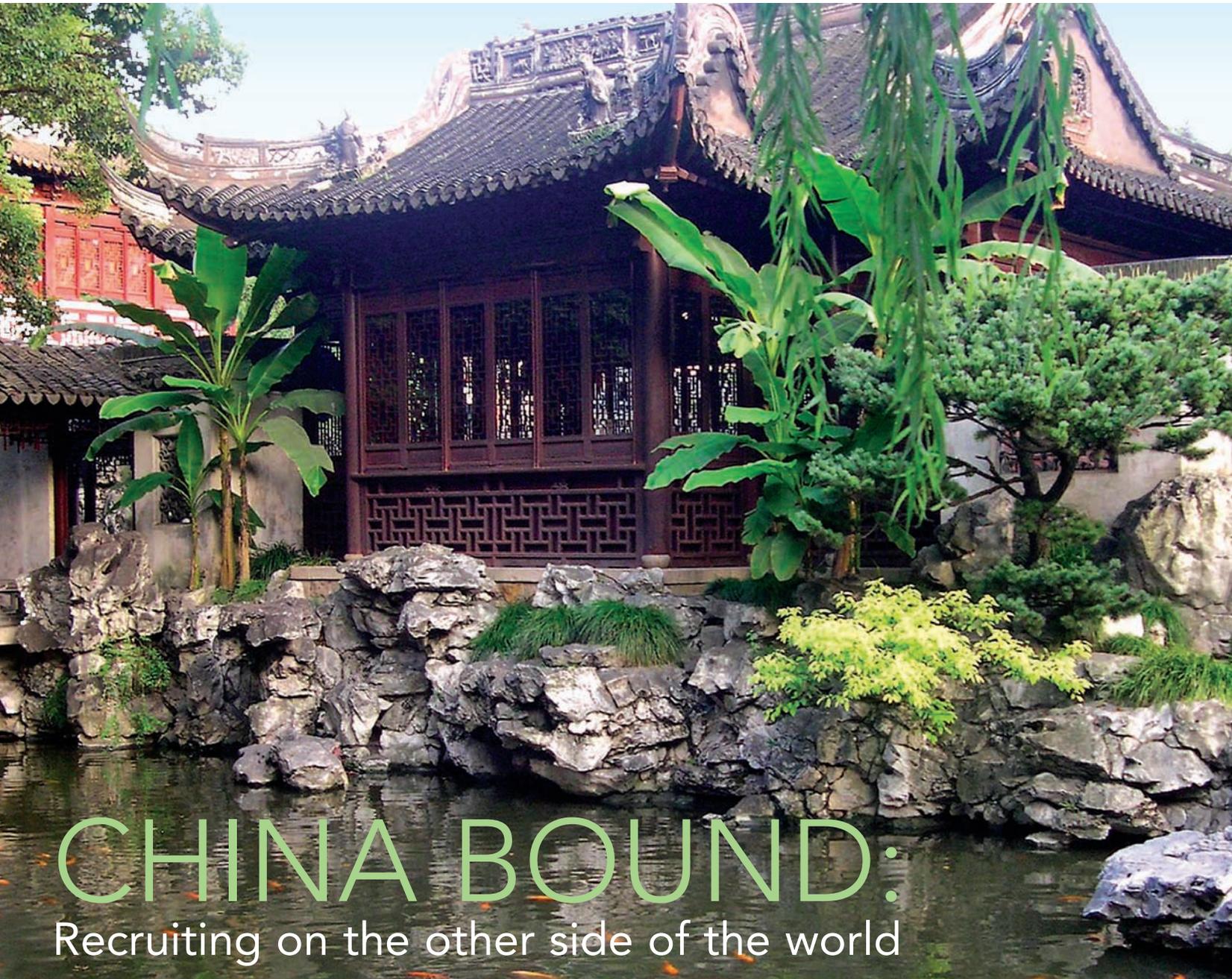




# Benchmarks

WINTER 2008



## CHINA BOUND:

Recruiting on the other side of the world



# The Dean's message

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I'm pleased to present this latest edition of *Benchmarks* magazine. As usual, it's been a busy year for the Faculty of Engineering and Applied Science. As dean, and as an alumnus, I am especially proud of our graduates. Within these pages you will read about the recent successes they have had in rising through the ranks of their respective organizations, or the heights they have achieved with the companies they have founded.

As well, you'll hear about faculty members who have received major grants and research and development funding for projects that will be vitally important in furthering Memorial's research capacity in the field of engineering. Our current students are certainly continuing the forward momentum of our faculty and have garnered numerous awards and recognitions of their own. They have also renewed their focus on giving back to the community by organizing a number of fund- and awareness-raising activities. I am confident the future success of our faculty is safe in their capable hands.



The information collected here is just a small representation of the many accomplishments and achievements of our faculty, students and staff over the past 12 months. I trust that you will find much to enthuse, inspire and interest you in the pages that follow.

I would encourage you to get in touch with me if there are issues you would like to discuss or if you have ideas and suggestions for upcoming editions of *Benchmarks*.

With very best wishes,

Dr. Ray Gosine, P.Eng.  
Class of '86

## Record setting donation means a new LIFE for engineering students

The Faculty of Engineering and Applied Science is always focused on giving their students more: Providing well-equipped labs, modern classrooms and, most importantly, an outstanding learning experience here at Memorial. In December 2007, the Faculty of Engineering and Applied Science received a gift that will do just that. Drs. Angus and Jean Bruneau donated over \$1,000,000 to create the Angus Bruneau Student Leadership and Innovation Fund in Engineering (or Angus Bruneau Student LIFE Program). It is the largest single donation from living individuals in Memorial University of Newfoundland's history.

"It is often through extracurricular and voluntary service activities that students discover, develop and demonstrate their leadership abilities to the great benefit of the organizations with which they associate, their peers, and the community at large," said Dr. Angus Bruneau, who served as the Faculty's first dean from 1969 until 1974.

Student leaders in the faculty say it will have a significant impact. Jonas Roberts, president of the Memorial chapter of Engineers

Student leadership in developing innovative projects will be the primary focus of these awards, which can range up to \$10,000 each. The program will recognize student leadership and innovation in three categories:

- **Community Service:** Initiatives will be funded that involve innovative approaches to significant local or international challenges such as international development or gender diversity within the engineering profession, and thereby enhance the engagement of engineers in the community.
- **Engineering Education and Enhancement of the Education Experience:** Areas of particular interest will include national or international design competitions, school outreach initiatives, programs that foster academic success, technological entrepreneurship, and student-designed seminars, debates and leadership development forums.
- **Research:** Graduate students involved in engineering research and its transfer to industry, including business start-up activities by graduate students, research project fairs, travel funding for paper presentations, and support for graduate students involved in national or international competitions.



Drs. Angus and Jean Bruneau

Without Borders, a student-led organization that works to eliminate extreme poverty, talked about the wide variety of initiatives his organization has undertaken, and the skills he has developed as a result. "For me, the opportunity to take part in so many worthwhile activities has been invaluable, and the leadership training and personal development I've experienced will serve me throughout my life."

Delia Warren, president of the Engineering Undergraduate Society, also spoke of her organization's diverse activities, which include high school outreach, sporting and social events, charity fundraisers and connecting students with industry. "One of the challenges we have in all our activities is fundraising. For every initiative we undertake to benefit students or support a charity, we first have to find the money to make it happen. This new program will provide us with the financial leverage to make so many more student initiatives possible."

Dr. Ray Gosine, dean of the Faculty of Engineering and Applied Science, is looking forward to how this donation will help engineering students contribute even more to Memorial and to communities. "The focus of this fund on innovation and leadership is a very fitting reflection of Dr. Bruneau's career and contributions in Newfoundland and Labrador. He has brought a tremendous spirit of innovation and capacity for leadership to our university, to our business community and to our cultural and artistic community."

# WISE Student Summer Employment Program thrives despite tough start

**Despite a tough start**, the Women in Science and Engineering Newfoundland and Labrador's (WISE NL) Summer Student Employment Program had a very successful year. But getting there was no easy task. Changes to the Canada Summer Jobs program meant that six weeks before the program was set to begin, program administrator Mercia Conway received a call saying the organization would receive no funding for the 30 positions they had anticipated receiving. That kicked the group into gear.

"We organized a media campaign and started contacting government leaders and supporters. We got in touch with all of the former participants and supervisors and had everyone contact both levels of government and the media asking for support. All of the province's Members of Parliament were working on it and we had such great feedback from everyone," said Ms Conway.

WISE is a non-profit volunteer organization which aims to increase the participation of women in science, technology,

engineering and mathematics careers. Currently in its 18th year, the program has successfully placed more than 600 young women from across the province in paid research positions at Memorial University and its partner organizations.

WISE's hard work paid off. The Gander Service Canada office contributed five positions while Corner Brook gave four. Four weeks later, and just one week before the program was set to begin, WISE received a call at 4 p.m. saying the St. John's office would add another 17 positions.

The program not only survived, but ultimately ended up with 28 positions, more than it had last year. The Faculty of Engineering and Applied Science contributed one position as did the Government of Newfoundland and Labrador. The Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) also provided additional support. That allowed participants to be hired from 22 communities across the province including St. Anthony, Lark Harbour, McCallum and Dunville.

## From building bridges to building latrines – One girl's summer with EWB

Amanda Cranford was one of this year's WISE SSEP participants. The Mount Pearl native was encouraged to apply by a teacher. Positive reviews from friends who had been involved in the program in previous years convinced her to give it a shot.

"I knew I wanted to go into a career in science, so what better way then to gain hands on experience while making money for my education?" she said. "It was an amazing opportunity that I just had to be involved in!"

Ms. Cranford's placement was funded by the Faculty of Engineering and Applied Science which put her together with the university's top student volunteer organization, Engineers Without Borders (EWB), an organization dedicated to eradicating poverty by helping people in developing countries gain access to technologies that will improve their lives. "I was incredibly lucky to be placed in a brand new position with EWB and given the title of Director of Women's Issues and Appropriate Technology," said Ms. Cranford. "In the eight weeks I was with EWB, I accomplished so much – I could not have dreamed of a more rewarding placement."

One of the most fulfilling projects she worked on was developing and presenting a workshop on women's issues in development. She also designed and built a model of a community latrine that could be used in a developing country.

"I'll admit I'm a total girly-girl but I couldn't wait to lace up my steel toe boots, head down to the lab to mix cement," she jokes. "I was also given the opportunity to act as a representative of EWB and take part in community outreach events. I gave presentations on the importance of clean water to young science camp

participants which was so rewarding. I also helped to create community awareness as a part of the Engineers Without Borders-Oxfam Water March for the World on Signal Hill. EWB-MUN even gave me the opportunity to travel as a part of their chapter to the EWB Atlantic Retreat in Nova Scotia, a real highlight of my summer."

Ms. Cranford believes WISE and EWB have even influenced her future career path.

"My ambition is to become a women's doctor and travel to Africa. I have this new, fueled desire to make a difference in this world," she said. "I love working with people and believe that experiencing new situations everyday would be amazing. I'm planning on pursuing a degree in biochemistry, spending a summer volunteering in Africa, and hopefully going on to Med School."

She encourages all young women who are considering applying in the program to take advantage of this great opportunity.

"I would have to say, 'Do it!' Take advantage of the opportunity to experience the best summer of your life," she said. "WISE SSEP is not just a summer job; it's an outlet for young women to gain insight into promising career options and make life long friends and connections."



Amanda Cranford's placement with EWB was funded by the Faculty of Engineering and Applied Science.

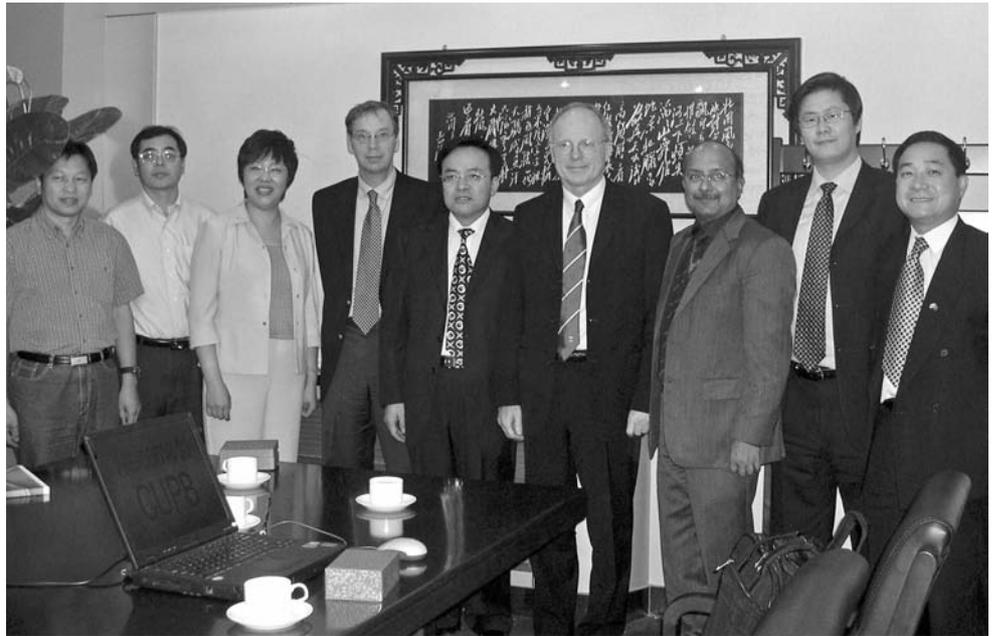
# China Bound: Memorial officials travel around the globe in the name of engineering

**Members of the Faculty** of Engineering and Applied Science have recently returned from another recruitment initiative to China. The faculty has regularly been visiting the country since 2003.

During September, Dr. Ray Gosine, dean of the faculty, Dr. Ramachandran Venkatesan, associate dean of Graduate Studies and Research, and Dr. Bing Chen, an engineering professor originally from China, visited 14 Chinese universities. While there, they met with the administrators of 11 institutions to explore potential collaboration with Memorial and delivered presentations to a number of them. Then president Axel Meisen and vice president (academic) Eddy Campbell joined several meetings showing support from the university administration.

The potential outcomes of these meetings include the possibility of jointly developing undergraduate and graduate programs with China University of Petroleum (Beijing) in certain disciplines, especially in oil and gas. Ningbo University is also keen on collaborating with Memorial to westernize their engineering undergraduate program, with the graduates moving to St. John's to complete a subsequent professional master's program.

Collaboration interests and opportunities for research and joint educational programs between Memorial and the other universities visited have been recognized. Memorial is considering seeking joint funds with Chinese universities under bilateral programs like the Canada China Science and Technology Cooperation Agreement. Many of the universities visited are pleased to help promote Memorial and its programs through their academic channels. In general, the university's reputation would increase among Chinese universities enhancing the success of future recruitment efforts, especially for the four professional master's



Memorial University delegates meet with officials from the China University of Petroleum-Beijing

programs. The administrators in these universities are keen on sending formal delegations to visit Memorial in the coming years.

Other efforts in China allowed for interviews with 15 students and administration of English tests for seven students to pave the way for enrolling them in next year's cohort for Master's of Applied Science in Computer Engineering (MASCE), Master's of Applied Science in Environmental Systems Engineering and Management (MESEM), Master's of Applied Science in Oil and Gas Engineering (MOGE), and Master's of Engineering Management (MEM). Two successful affinity and alumni events were held in Shanghai and Beijing, attended by the Memorial delegation, alumni and upcoming students, parents of current and graduated students, agents, and media representatives. Parents of students in MASCE and MSESSEM programs expressed their happiness and satisfaction in the educational experience their children received at Memorial. University presentations, agent training, media interviews, and meetings with potential students and their parents were also undertaken towards increasing future enrollment to Memorial's programs.

# RAVEN Group UAV's named by Upper Lake Melville students

**Thanks to students** from the Upper Lake Melville area two UAV's (Uninhabited Aerial Vehicles) belonging to The RAVEN Group have names of their own - The Monarch and Takunnajik (ta-ku-nya-vik). Mrs. Susan Lamonds' Grade 2 class from Peacock Primary School chose the name Monarch due to the similarities between the butterfly and a UAV – its long-distance flying ability, eyesight range, and use of wind. Mrs. Dawn Sinnotts' Grade 5 class from Queen of Peace Middle School chose Takunnajik, which in Inuttitut means observer – exactly what UAV's do, regardless of size and capability.

"It is amazing how readily young children understand and accept this kind of technology," said Pip Rudkin, Manager of UAV Operations at Provincial Aerospace. "The level of research and the way they linked their selected names to the UAV's were very impressive."

Both groups affixed their names to the Aerosondes and received trophies for their schools in a ceremony at 5-Wing Goose Bay on May 6. Thanks are extended to Serco for bussing the winning students to the event.

The RAVEN Project operates a small UAV system as part of their ongoing research and development, and Mr. Rudkin and Dr. Siu O'Young, Memorial University's principal investigator at Project RAVEN, were responsible for two outreach initiatives. The second was the high school challenge designed to interest Grades 7 to 12 students in science, technology and engineering. A team from Queen of Peace Middle School under Grade 7 teacher, David Hapgood, and a team from Mud Lake under Principal Bill Cooper participated. The students submitted mission plans for the Aerosonde UAV specific to Labrador which would employ the Aerosonde's capabilities.

The winner, Mud Lake School, devised a plan to use the UAV to monitor ice thickness on the "winter road" to Mud Lake, along with surveying the movement of sandbars in the Churchill River in the summer. Ironically, the Mud Lake Team was almost prevented from participating in the award ceremonies due to the break-up of ice in the river - the very thing they wanted to monitor with their UAV plan. Thanks to the generosity of Universal Helicopters, the kids received an extra treat - being flown to the event by helicopter.

"This project related to the local requirement of the Mud Lake community, but the detection of ice thickness and sandbars on rivers and lakes is of interest to many isolated northern communities," said Dr. O'Young. "The group has a good understanding of UAV capability and what it can do for their community."



Back row (left to right): Shanelle Cluney, Heidi Applin, Skylar Russell and Hannah Cooper. Front: Haley Moore, Jayden Winters, Brandon Wiggins and Erin MacDougall.

These activities mark the culmination of several weeks of intense effort by representatives of the RAVEN Group. Presentations were made to all participating K-6 classes with students getting hands-on experience with a full scale model of the Aerosonde. Similar sessions took place with the High School Challenge teams to help them understand the capabilities of the Aerosonde so they could design their missions accordingly. The RAVEN team will continue to work with the Mud Lake School team to refine their plan and, if practical, fly the mission from Goose Bay with the Mud Lake School team assisting the RAVEN Project flight team.

Dr. Michael Collins, Memorial University's associate vice-president of academics, was in Happy Valley-Goose Bay to represent the university.

"The UVS competition and the RAVEN project's associated school competitions highlighted the importance of science and technology in today's society...that RAVEN's efforts to involve children from all grade levels would encourage students to consider a career in science or technology," he said.

Dr. Collins sees the RAVEN project as "...an excellent example of a partnership between Memorial University and a private provincial company. The company, in this case Provincial Aerospace Limited, is looking to the future of aerial surveillance, and Memorial has significant research expertise in the whole area of uninhabited vehicle systems (UVS), so the RAVEN project is a natural fit between the two."

More than 700 students from the Upper Lake Melville area participated in the RAVEN group's outreach activities with every student receiving a certificate of participation.

# Husky Energy continues to support Husky Energy Chair in Oil and Gas Research

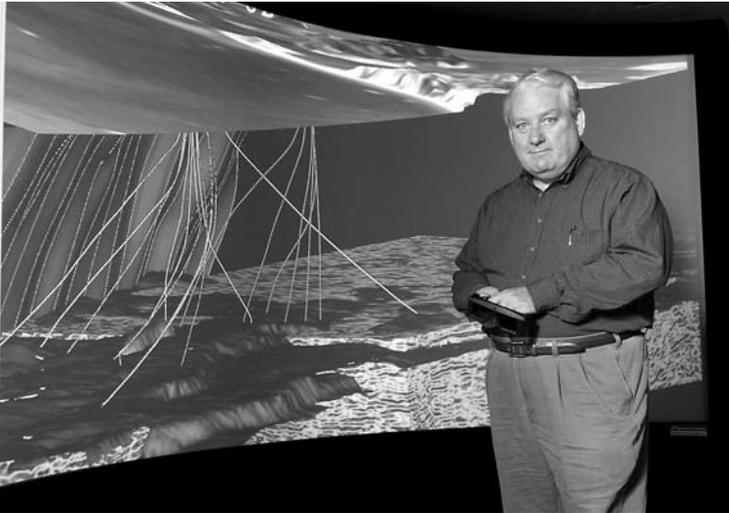
In April, Dr. John C.S. Lau, president and chief executive officer of Husky Energy announced that organizations continued support for Memorial University's Husky Energy Chair in Oil and Gas Research. In June 2003, Husky Energy donated \$2 million to create an endowment to establish the first endowed

research chair at MUN. April's announcement meant another \$500,000 contribution to the chair's endowment.

"The advancement of education and research is a key objective of Husky's community investment strategy, and we are pleased to once again partner with Memorial University as it supports the ever-changing needs of offshore exploration and production," said Dr. Lau.

Dr. R. Phillip Bording is the holder of the Husky Energy Chair. "The funding increase from Husky Energy to the endowment will provide a continuous independent source of funds to the chair for research programs and graduate students. These new funds and the other grants we have been able to leverage will allow the research group to grow in size by another eight individuals within the next year."

Since his appointment in October 2004, Dr. Bording has received five grants totaling \$4.1 million. His research interests include seismic processing algorithms for reservoir characterization, seismic modelling and migration, inverse methods for parameter estimation and joint inversion of data, application specific computing for seismic algorithms and visualization of seismic processes.



Husky Energy has recommitted to Memorial University's Chair in Oil and Gas Research, a position held by Dr. Phil Bording.

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## PEGNL recognizes engineering professor, alumni for outstanding contributions

**The Professional Engineers and Geoscientists** of Newfoundland and Labrador (PEGNL) recognized a Memorial University professor and former alumni at a special dinner during their annual conference. The event saw a number of awards presented for excellence in engineering and geoscience-related areas.

"This year's awardees are excellent examples of very talented and dedicated individuals who have made a difference," said President Douglas Goodridge, P.Eng..

This year's recipient of the PEGNL Teaching Award, which is bestowed for outstanding contributions to engineering or geoscience education, is Dr. Amgad Hussein, P.Eng.. Dr. Hussein started teaching in the Faculty of Engineering and Applied Science in 1995 while studying for his master's at Memorial University. He has worked for Newfoundland Design Associates Ltd., where he was the structural design engineer of Mile One Centre and Memorial's Clock Tower, among others. He returned to the engineering faculty to teach in 2001.

Dr. Hussein is a favourite of students, consistently scoring highly in terms of his overall quality of instruction and of his concern for his students' progress. His ratings are amongst the highest in the faculty. Dr. Hussein is a Fellow of the School of Graduate Studies, and the recipient of the Government of Egypt's Undergraduate Distinction Award.

MUN graduates John Guzzwell, P.Eng., Rodney Hale, P.Eng. and Patricia LeFeuvre, P.Eng., received the Early Accomplishment Award recognizing exceptional achievement in the early years of a career. Ms. LeFeuvre is president of Intelligent System Solutions (iSYS), while Mr. Guzzwell and Mr. Hale share the vice president position. iSYS Corporation is the inventor of PixFix™ Red Eye, an automated technology for correcting red-eye in digital photographs. It is licensed to 12 companies, including Sony, in nine countries.

Other awards presented included the Award of Merit for valued contributions to the engineering and geoscience professions and the community, Steve Millan, P.Geo. and Tom Whelan, P.Eng.; the Award for Service for dedicated service to the engineering and geoscience professions, Steve O'Brien, P.Geo.; the Community

*PEGNL continued on page 7*

# Shad Memorial takes second consecutive RBC/Shad Entrepreneurship Cup

**This summer**, Dr. Leonard Lye's spare keyboard went all the way to Waterloo, ON and came back with the RBC/Shad Entrepreneurship Cup.

The director of Shad Memorial's equipment became the prototype for a kinematic keyboard, a self-powered, wireless computer keyboard.

"Like most wireless devices, the kinematic keyboard runs off conventional battery power, but its internal battery is self-sustaining and does not require replacement," said Dr. Lye. "Small electromagnetic generators under each key convert the kinetic energy of each keystroke into usable electricity, which is used to charge the keyboard's battery, instead of relying on wasteful disposable battery power."

The prototype was designed by the 48 students who came to Newfoundland and Labrador this summer to participate in the Shad Valley enrichment program. For one month, students from Grades 10 to 12 lived in residence at MUN, one of 12 such host university campuses in the country.

During that time they heard from top-notch lecturers and seminar leaders in the fields of math, science, engineering,

technology and entrepreneurship. Their afternoons were devoted to hands-on lab workshops – everything from learning how to wire a house to dissecting body parts. What spare time they have is set aside for recreational activities, touring local attractions, and completing the house project. Using the theme – Zero Waste Technology – the students were divided into groups, each coming up with their own project to meet the theme's criteria. The overall winner was chosen to represent Shad Memorial at the RBC/Shad Entrepreneurship Cup.

The triumph marks the second consecutive win for Shad Memorial who actually tied for first place with Trent University. Carleton University came second, followed by Queen's University. The project received other awards including first place for best application of scientific principles; second place finishes for best website, best prototype and best business plan; and a third place nod for best use of external resources.

"I think what impressed everyone was that the prototype actually worked," said Dr. Lye. "All of the projects in the competition were incredibly innovative, even though they were created by high school students. I can see a number of companies interested in picking up some of these ideas."

## Belize Electricity to offer scholarship to study engineering at MUN

**Commencing in 2008**, Belize Electricity Ltd (BEL) will expand its scholarship program to students interested in pursuing a bachelor degree in Engineering from Memorial University.

The full scholarship, valued at approximately BZ\$40,000 per academic year, is aimed at developing the pool of engineers and technical professionals currently in the country. The awardee must complete a four year program to obtain the degree. The scholarship will be offered biennially.

### *PEGNL continued from page 6*

Service Award for outstanding contributions to the community, Rick Spracklin, P.Eng.; and an honorary membership was given to Hal Stanley, former Chair and CEO of the Canada-Newfoundland and Labrador Offshore Petroleum Board. This award is given to someone who is not a member of PEGNL but has made a significant contribution to the professions of engineering and geoscience. The Environment Award, which recognizes the application of science, technology and engineering to environmental management, was conferred on the Department of Transportation and Works for the Leadership in Energy and Environmental Design (LEED) Compliant Facility Design of the Corner Brook Long-Term Care Facility.

PEGNL is a self-regulating professional organization that exists so that there is competent and ethical practice of engineering and geoscience in Newfoundland and Labrador, and ensures public confidence in the professions. It receives its authority from the Government of Newfoundland and Labrador through the Engineers and Geoscientists Act. The 2007 Awards Dinner was sponsored by TD Meloche Monnex.

## Virtual Marine Technology receives international recognition

**Virtual Marine Technology (VMT)**, a provider of real-time simulation technologies for small marine craft, was runner up in the 2007 Seatrade Awards. VMT's Lifeboat Launching Simulator was short-listed in the Safety at Sea category, the only Canadian company short-listed out of 91 entries worldwide.



VMT's simulation technologies have been recognized at the international Seatrade Awards.

considered too dangerous for live boat exercises, such as launching in harsh seas, reacting to equipment faults, and performing in reduced visibility.

VMT is a member of Memorial University's Genesis Centre and the Ocean Technology Enterprise Centre at the Institute for Ocean Technology. The company's technical team is housed at ENthuzium, the incubation centre of the Faculty of Engineering and Applied Science, where the team completed the development of a Fast Rescue Craft Simulator. It was recently delivered to the Canadian Coast Guard Auxiliary Pacific in British Columbia.

The Seatrade Awards, which took place in London, England, recognizes achievement and innovation within the international maritime community. The award encourages advancement in the shipping industry by acknowledging companies and individuals that make substantial contributions in the fields of safety at sea, countering marine pollution and innovation in ship industries. An esteemed independent panel of judges representing a cross-section of the maritime industry chooses the award winners.

VMT's immersive Lifeboat Launching Simulator allows trainees to practice lifeboat launch and departure operations in conditions



Blair Kirkland (far right) uses the skills he learned at MUN every day in his work with colleagues at Exmar Offshore in Texas.

## ONAE grad owes career success to coursework

**Blair Kirkland** has a message for students in the Ocean and Naval Architectural Engineering program. The information you're learning in class can become the most important building blocks of your working career.

The St. John's native graduated from the program in 2006. He is currently working with Exmar Offshore in Houston. The company gave him his final work term and had a job offer waiting for him before he even returned to Memorial for his final term.

Exmar Offshore is an offshore oil and gas engineering company specializing in semi-submersibles and floating platform design. Mr. Kirkland is a naval architect with Exmar and primarily does hull sizing, stability analysis, weight control, hydrodynamic motions and accelerations, and mooring analysis. The company also performs structural analysis and design utilizing finite element analysis.

*ONAE grad continued on page 28*

# Engineering alumni appointed to senior positions

**ANTHONY (TONY) DAWE** has recently been elected to the position of president of Engineers Canada, formerly the Canadian Council of Professional Engineers, the national body which represents over 160,000 registered professional engineers across Canada. Mr. Dawe is a senior mechanical engineer as well as a partner and principal owner of QuadraTec Inc. in St. John's, NL. He has over 21 years experience in mechanical design and contract administration for commercial, industrial and institutional building assignments, project management and engineering of energy conservation and demonstration projects and energy performance contracts.

**EARL A. LUDLOW** has been appointed as the new president and chief executive office of Newfoundland Power Inc. Mr. Ludlow has held the position of president and chief executive officer of Fortis Properties since 2005. Prior to that, he served as senior vice president of

FortisBC, and vice president of operations for FortisAlberta. He has also held the positions of vice president of engineering and operations, Newfoundland Power Inc., and vice president of operations for Maritime Electric.

**THE HONOURABLE DANNY WILLIAMS**, Premier of Newfoundland and Labrador, has also announced a number of senior government appointments involving alumni. "These individuals bring a wealth of experience and knowledge to their new roles," Premier Williams said. "Collectively and individually, they have demonstrated exceptional commitment to the public service of this province. I wish them well and look forward to their ongoing contributions."

**DON OSMOND**, former Deputy Minister of the Department of Municipal Affairs, has been seconded to Intergovernmental Affairs Secretariat as Secretary to the Council of Atlantic Premiers. This appointment, effective May 3, is for a

four-year term. The secretary position rotates by Atlantic province. The mandate of the council is to promote Atlantic Canadian interests on national issues. To accomplish this, the council seeks to establish common views and positions to ensure that Atlantic Canadians and their interests are well represented in national debates.

**GERARD ANTLE** has been appointed Assistant Deputy Minister (Municipal Engineering and Planning) with the Department of Municipal Affairs, effective May 3. Mr. Antle served most recently as Registrar of Motor Vehicles, Department of Government Services.

**WESLEY FOOTE** has been appointed Assistant Deputy Minister (Petroleum Development) with the Department of Natural Resources, effective May 3. He most recently served in that position in an acting capacity.

## Alumni NOTES

**MONICA SNOW**, M.Eng. 1984 (Civil), has joined the Wentworth Institute of Technology's Construction and Management Department as an associate professor. Ms. Snow is currently living in Hudson, MA.

**DR. GREGORY ABELSETH**, B.Eng. 1984 (Mechanical), is an orthopedic surgeon living in Calgary with wife (Rosalie Grant, BSW 1982) and their four children. He is a clinical assistant professor in the Department of Surgery at the University of Calgary.

**DAVE SMITH**, B.Eng. 1995 (Mechanical) continued working with Peter Kiewit & Sons after graduation, where he was transferred to the PKS Industrial and International division. He settled in Wisconsin with his wife, Dee Ann and has been working as a specialized piping manufacturer since 2001. His family, including Kaitlyn (2003) and Madeline (2005), enjoys camping, biking and travelling.

**MONA EL-TAHAN**, M.Eng. 1980 would like to advise her classmates she has two sons, Dr. Tahmir El-Tahan, who is specializing as an orthopedic surgeon, and Yassir El-Tahan, who is a physiotherapist.

**HARRY MERCER**, Diploma, Engineering Adv. Studies 1969, has written a new book: *Right Leadership – The Most Inspirational Leaders are Invisible Leaders*.

**DR. SATHYA PRASAD MANGLARAMANAN**, PhD Eng. 1997, has published 25 technical papers in international journals and conferences. He currently holds one patent in the area of suspensions with two more pending. Dr. Prasad lives in Chennai with his wife, Barna and four-year-old son, Narayanan.

# China deals allows Avalon to hire again

**Genesis Centre client**, Avalon Microelectronics Inc., is doing their part in reversing the brain drain from Newfoundland and Labrador. Not only is the company hiring bright, educated young people fresh out of school in this province, but they are also hiring experienced Newfoundlanders currently living in other parts of Canada and helping them to move back. The founder of Avalon Microelectronics, Wally Haas, moved here with his family and started the company when he realized that employment opportunities were rare. In less than two years, the company has helped its third expatriate employee return to this province to work full time for them.

Avalon Microelectronics is developing intellectual property (IP) products for telecommunication applications. Recently, they announced that Fiberhome of Wuhan, China has selected their electronic products for use in development of high speed fiber optic communication systems.

"This is our first step into what is a large market for our company," said Wally Haas, president and director of engineering of Avalon. "There is significant activity in this market segment and Avalon has the products and expertise required to win much future business from the area."

Fiberhome purchased a license to use Avalon's intellectual property – software that is used to configure field programmable hardware specifically for fiber optic telecom applications.

"Avalon Micro's IP products are generating significant interest in the area of high speed fiber optic applications," said Mr. Haas. "Our field programmable based approach has allowed Avalon, a small company with less than 10 employees, to close business with much larger telecom equipment manufacturers in Canada, USA, Europe, and now China."

"One of our greatest challenges is finding talent," said Mr. Haas. With this announcement comes the need for additional employees.



Avalon Microelectronics Inc. has been bringing MUN engineering grads back to Newfoundland and Labrador.

"We hope to attract more senior electrical engineers from other parts of Canada to lead some of Avalon's development efforts locally."

Avalon Microelectronics is developing specially-programmed microchips for the telecommunications industry. Their niche will be high-speed field programmable microchips used in high throughput fiber optic networks, such as those developed by Nortel, Alcatel-Lucent and Cisco.

The Genesis Centre is Memorial University's support network developed to help Newfoundland and Labrador knowledge-based businesses/entrepreneurs create high-growth enterprises. It provides a wide range of resources and services for its clients with a long-term goal of preparing its clients to become "investor ready."

**The Engineering Class of 1993** is planning a 15 year reunion for the first weekend of August 2008. For more information please contact [MUNEng1993@gmail.com](mailto:MUNEng1993@gmail.com).

# Alumni PROFILE

**Sarah Osmond**, a Term 3 bridging student in the Faculty of Engineering and Applied Science has engineering in her blood. The St. John's native is the fifth member of her immediate family to work towards an engineering degree at Memorial University.

*"I knew my family has always been interested in engineering, but I had no idea there were so many connections."*

In fact, it literally takes a drawing of Ms. Osmond's family tree to get a full understanding of just how far-reaching the interest in engineering goes. Brother, Michael received his B.Eng. (Electrical) in 2001 and sister, Jenna, followed in 2005. Her younger brother, Andrew, is on track to graduate with his B.Eng. (Computer) in 2009 and Sarah is hoping to receive her own degree in the mechanical engineering discipline in 2011. In addition, Michael's fiancée, Deanne Petten, graduated with a B.Eng. (Ocean and Naval Architectural) in 2003.

But that's just the beginning. The Osmond family's dad, Don, was in the faculty's first graduating B.Eng. (Civil) class in 1974. Mom, Sarah (Steinhauer) may not have her own engineering degree but she does have a B.Sc. (1977), a B.Ed. (1990) and a M.Ed. (2001). A school principal, she has always promoted science and engineering to her students, particularly with the Bridge Building Competition.

The Osmond children may even owe their very existence to Memorial University. "My parents met in organic chemistry in 1976, two years after dad graduated from engineering," says Ms. Osmond. "My uncle, (Glenn Ford, B.Eng., Civil 1978), was a good friend of my mother's, and was the emcee at my parent's wedding. Glenn met my dad's sister, Noreen, at their wedding and they married a year later." The engineering bug carried on in the Ford family with son, Adam (B.Eng., Mechanical 2006). Even farther up the family tree, Ms. Osmond's paternal grandfather, Douglas, was a machinist at the stockyard and his father was a marine engineer. On her mother's side, uncle James is a marine engineer and aunt Kelly is married to an engineer. Ms. Osmond's maternal grandfather, James, studied mechanical engineering, but left his studies to look after the family business. Her grandmother, Mildred's father was a diesel-electric technician and her sister, Sandra, married a mining engineer.

"I knew my family has always been interested in engineering, but I had no idea there were so many connections," said Ms. Osmond. "I just knew I was always around it. I was the only one of all my siblings that felt the pressure to be an engineer. I'm the type of person that wants to be different than everyone else, be my own individual and the only way to do that was to be the black sheep of the family."



Sarah Osmond with her father, Don and brother Andrew. The Osmond children are all attending or have graduated from Memorial's Faculty of Engineering.

That's why after starting an engineering degree in 2002, Ms. Osmond switched programs and instead graduated with a B.Sc. in biochemistry in 2006. But, while working as the director of Future SET, a non-profit student-driven organization founded by the Professional Engineers and Geoscientists of Newfoundland and Labrador to foster enthusiasm towards science, engineering and technology in children, she began to think about returning to the program.

"I didn't feel like I was finished," said Ms. Osmond. "I always seem to be surrounded by some aspect of engineering, and coming up with projects for the children that were engineering-related was just so easy for me. I thought, maybe I should be an engineer." The problem was telling her family. Although she knew they would be completely supportive, they might worry she was making the decision for the wrong reasons. "The hardest part was for me to accept it myself," she said. "My parents have always encouraged us to be individuals and make decisions independently. I think they felt I was pressured to do engineering and the reason I dropped out was to be different."

"I love my degree and I don't regret doing it, because it opened a lot of doors for me. But I always felt that I was missing something. I would constantly say in the back of my head 'maybe I should go back to engineering' but I didn't want to admit it."

Ms. Osmond says her long term goal is to help people through the field of health care, either as a doctor or as an engineer creating prosthetics for patients who need them. "The main thing for me is to be able to help people in the end, whatever career I choose."

## MUN research sees benefits for rural fish processing facility

**John Molgaard**, a retired professor from the Faculty of Engineering and Applied Science, is as likely to be found on the Memorial University campus these days as off of it. His current work is with SafetyNet, a community alliance for health research with major funding from the Canadian Institutes of Health Research (CIHR) for studies of occupational health and safety in marine and coastal work.

For the past number of years he has been working with a team of researchers at SafetyNet including Dr. Stephen Bornstein and Dr. Barbara Neis, SafetyNet's co-directors; Dr. Scott MacKinnon, SafetyNet's interdisciplinary research chair in workplace health and safety; Shirley Solberg of the School of Nursing; Dr. Nicole Vezina, a professor of ergonomics at the University of Montreal; and their graduate students. They have been collaborating on safety projects with employees and management at Beothic Fish Processors Ltd. in Valleyfield, NL. The work began with a review of repetitive strain injuries among Beothic's crab processing workers.

"Shirley looked at the psychosocial aspects through a survey, and I investigated the biomechanics of butchering," said Prof. Molgaard. "Nicole, as an ergonomist was doing what we call participatory ergonomics.

"Participatory ergonomics involves the workers. They talk about where they have aches and pains, what they think is the cause and what is the best way to change that; we also watch them, videotape them and analyze their movements as they work."

Together, the team and workers were able to introduce changes, in particular to the packing line which made a big difference to the employees in that part of the facility. The employees were so pleased with the changes they began pressuring the team to conduct more work at the facility. The researchers were able to get additional funding from CIHR to train "ergo teams" of employees and supervisors to enable them to conduct some ergonomics investigations on their own at other sites throughout the plant.

"Nicole is also very interested in knife sharpening," said Prof. Molgaard. "When knives are sharpened properly they can be used with less force and they cut more accurately. This reduces strain and improves productivity."

In Quebec, Dr. Vezina had developed a procedure which focused primarily on the way a knife is steeled by the worker, training



Lloyd Stagg, sharpener at Beothuck Fish Processors Ltd., tries a better steeling technique as taught to him by expert sharpener Glenn Chaulk of Country Ribbon Ltd.

selected workers to become experts in sharpening and steeling knives, and in training other workers in effective steeling. She had been interested in working with Beothic on this aspect of their facility from her very first visit. SafetyNet was able to get funding from the Workers Health, Safety and Compensation Commission to transfer the knowledge and technology she had developed in Quebec to businesses in this province, beginning with Country Ribbon, a St. John's chicken producer.

This work saw the SafetyNet team return to Beothic to introduce that program there. "Many of them have been filleting fish and sharpening their own knives for years," said Dr. Molgaard. "So I was very careful in approaching this project. But they were delighted. It's worked so well for them that production has gone up by 15 per cent and they have less aches and pains when they go home at the end of the day."

The next plant scheduled to work with the team is the Ocean Choice fish plant in Marystown.

# Engineering faculty successful in obtaining major NSERC grants

**Eleven engineering faculty members** were successful in receiving Discovery Grants totalling \$241,170 in support of their research from the Natural Sciences and Engineering Research Council of Canada (NSERC). In addition, Dr. Yuri Muzychka received a large NSERC Research Tools and Instruments grant in the amount of \$134,371.

More than 70 professors from Memorial University will receive \$7,986,429 to support their work in natural sciences and engineering. These awards are normally paid out over five years. Approximately 80 students will also receive undergraduate and graduate student research awards worth a total of \$1,426,100 to give them hands-on research experience in a laboratory. In total, Memorial University received \$9,412,529 from the council.

*"This funding from NSERC is vitally important to furthering Memorial's research capacity in the fields of science and engineering."*

"This funding from NSERC is vitally important to furthering Memorial's research capacity in the fields of science and engineering," said Dr. Christopher Loomis, vice president (research). "This announcement is also critical in providing both graduate and undergraduate students funding to undertake their own research."

Parliamentary Secretary, Colin Carrie, MP, on behalf of Maxime Bernier, minister of Industry, and Dr. Suzanne Fortier, president of NSERC announced the results of the 2007 Grants and Scholarships awards in May. This announcement will see \$583 million disbursed to 10,000 professors and students across Canada.

"As outlined in our new Science and Technology Strategy, which was released by the Prime Minister in May, this funding is a clear demonstration of the value we place on the ongoing research of Canadian scientists and engineers in creating a knowledge advantage for Canada," said Carrie. "These awards will help ensure that this country's best and brightest professors and students can continue their work and their contribution to the prosperity and well-being of all Canadians."

NSERC is a federal agency whose role is to make investments in people, discovery and innovation for the benefit of all Canadians. The agency invests in people by supporting some 23,000

## ENGINEERING GRANTS

**LIHONG ZHANG** – Manufacturability-aware performance-driven layout-centric design automation of analog and RF integrated circuits. \$24,000

**OCTAVIA DOBRE** – Blind signal recognition for emerging wireless communications. \$16,000

**RAY GOSINE** – Advances in telerobotics. \$34,970

**BENJAMIN JEYASURYA** – Dynamic security enhancement strategies for power systems. \$24,570

**NICK KROUGLICOF** – Computer vision hardware and image analysis tools for automated inspection in the food processing industry. \$15,000

**CHENG LI** – Multicasting in mobile ad hoc and wireless sensor networks. \$15,000

**LEONARD LYE** – Design analysis of computer experiments, structural equation modelling and wavelet analysis of daily flows. \$20,000

**GEORGE MANN** – Intelligent control and navigation of mobile robots. \$20,000

**YURI MUZYCHKA** – Flow visualization system for microfluidic analysis. \$134,371

**JOHN QUACO** – Development of control strategies and topologies. \$23,630

**RANGASWAMY SHESHADRI** – Robust limit load determination using variational principles in plasticity. \$31,000.

**KEN SNELGROVE** – Representative boundaries for hydrologic modelling. \$17,000

university students and postdoctoral fellows in their advanced studies. NSERC promotes discovery by funding more than 11,000 university professors every year and helps make innovation happen by encouraging about 1,300 Canadian companies to invest in university research and training. Over the past 10 years, NSERC has invested \$6 billion in basic research, university-industry projects and the training of Canada's next generation of scientists and engineers.

# ACOA announces millions in R&D projects for Engineering

At a news conference in January 2007, the Honourable Loyola Hearn, minister of Fishers and Oceans and regional minister for Newfoundland and Labrador, released the details of eight projects in this province receiving up to \$16.7 million in funding under the Government of Canada's Atlantic Innovation Fund (AIF). Four of these projects have direct ties to the Faculty of Engineering and Applied Science.

"These projects build on the tremendous expertise we are developing here in Newfoundland and Labrador, particularly in oceans technology, but also in information technology, medical research and alternative energy," said Minister Hearn.

Mount Pearl-based Verafin Inc., a privately owned software development company, specializes in customer intelligence solutions for the financial services industry. The next generation customer intelligence software will provide financial institutions with a unified view of their customers via a single set of analysis tools. This project, with total estimated costs of approximately \$2.6 million, will receive up to \$1.4 million from the Atlantic Innovation Fund over three years.

Researchers at the Faculty of Engineering and Applied Science will also develop market-ready prototypes for small craft

simulation. This simulator training will replicate scenario-based, mission-oriented conditions to the extent necessary to trigger behavioural responses in the trainees. The project leader is Dr. Brian Veitch, an associate professor with the faculty. Virtual Marine Technologies Inc. will market and sell the simulators. With total estimated costs of approximately \$4.1 million, the project will receive up to \$2 million in assistance from the AIF over the next three years.

As well, Memorial University will lead the research and development of a three year oil and gas-related project with industry partners. The end products will be implemented in commercial software for oil and gas industry applications in field developments in Atlantic Canada and in particular to offshore Newfoundland and Labrador. With total estimated costs of approximately \$2.8 million, the project will receive up to \$1.7 million over a three year period.

Finally, Newfoundland and Labrador Hydro will partner with several other organizations, including Memorial University and Natural Resources Canada to develop a green technology mix of wind, hydrogen and diesel power for remote communities. With total estimated costs of approximately \$9.7 million, the project will receive up to \$3 million from the AIF over a five year period.

## Engineering research team wins quarter million dollar grant



Dr. Wei Qiu

**Dr. Wei Qiu**, of the Faculty of Engineering, and his research team have been awarded a Department of National Defence (DND) and Natural Sciences and Engineering Research Council of Canada (NSERC) Research Partnership Grant. Supported by Oceanic Corp. and Defence Research and Development Canada Atlantic, Dr. Qiu has received \$225,000 in cash and \$45,000 in in-kind contributions for the three year collaborative research project entitled, Development of Numerical Tools for Propeller Tip Vortex Flow Computation.

The research addresses the development of numerical tools to improve the safe and effective operation of surface ships and underwater vehicles, which is one of the priority research areas noted by DND and NSERC.

Dr. Qiu and his team intend to research and develop numerical methods to accurately predict the viscous flow field around a ship and further to calculate the turbulent vortex flow from propeller blade tips. Propeller cavitation is of major concern for naval warships, research ships, ferries and cruise ships since it is the predominant source of propeller-generated noise and vibration. Cavitation not only influences low frequency propeller-induced pressure fluctuations on the ship hull but also increases high frequency noise levels in ships. For naval ships this aspect is particularly challenging.

# Research on rescue operations at sea gets a boost



Dr. Brian Veitch's research will make rescue operations at sea safer.

**Dr. Brian Veitch** has been awarded \$20,000 to help make rescue operations at sea safer. Dr. Veitch, a professor of Ocean and Naval Architectural Engineering, received the funds from Springboard under the Proof of Concept fund for a Wavetimer interface with wave sensing technology.

The purpose of the Wavetimer is to help lifeboats and rescue craft launch from offshore installations and ships, and then clear the installations or ships safely, especially in harsh weather. As Dr. Veitch explains, when a small vessel is launched, it can miss its drop target due to lack of control during lowering. After splash down, the vessel can be pushed back toward the offshore installation or ship by incoming waves. It's also vulnerable to the wind and waves until it begins to make headway away from the offshore installation or ship. Any of these risks can result in a collision between the life craft and the offshore installation or ship. The purpose of the patented Wavetimer device is to reduce this likelihood by ensuring that the vessel is placed on the most favourable part of an incoming wave – the wave crest.

"It has long been known that the safety of lifeboat launch systems is suspect in harsh weather conditions. Ironically it is in just such conditions that ship evacuation systems are sometimes required to be used," says Dr. Veitch. "Memorial University and the National Research Council of Canada have over a period of years done one of the most exhaustive experimental programs ever undertaken to better understand the dynamics of lifeboats being launched into extreme seas and one of the outcomes was the realization that the success of lifeboat launching is very much dependent on where on a wave surface a lifeboat lands when it is launched."

Dr. Veitch is working with a team of researchers from Memorial University, the Nation Research Council's Institute for Ocean Technology and Mad Rock Marine Solutions. The project proposes to integrate sensing technology with the Wavetimer so the product can eventually be brought to the marketplace. The potential markets for the Wavetimer system include the offshore oil and gas industry, and the commercial shipping and cruise ship industries. The goal is to operate the business primarily in Atlantic Canada and it is anticipated that at the level of \$8M in annual revenues, the company will employ some 50 people, 40 in Atlantic Canada with some sales and service personnel located outside the country.

Dr. Veitch and his team currently have an additional \$10,000 in direct cash funding through NRC's Institute for Ocean Technology. A total of \$50,000 in funding was awarded to four Memorial University researchers from Springboard which provides \$20,000 for promising early stage inventions through its Proof-of-Concept Program and \$10,000 for investment-ready technologies through its Patent and Legal Fund.

# MUN research team considers alternative use for fish waste

**Memorial University researchers** are looking to ensure the waste left behind by fish processors gets put to good use. Dr. Kelly Hawboldt, an associate professor at the Faculty of Engineering and Applied Science, is part of a multi-disciplinary team of professors and professionals from Memorial, the Marine Institute, industry, and government who are considering alternative uses for the discarded material, including pharmaceutical products and yes, even fuel.

"We produce waste when we process fish," said Dr. Hawboldt. "The key is to try to recover by-products from it. At Memorial, Robert Helleur, a professor of chemistry, and I, along with Heather Manual (director of the Centre for Aquaculture and Seafood Development Fisheries and Marine Institute) and her colleagues at the Marine Institute are actively looking at the pharmaceutical possibilities. Another by-product is the waste fish oil which can be converted into a fuel for use in diesel generators."

When derived from vegetable oils, bio-diesel fuel can be used in compression-ignition (diesel) engines with no modification. Bio-diesel, in general, is better for the environment than petroleum fuel because it is made from renewable resources, is biodegradable, nontoxic, and has lower emissions of greenhouse gases, sulphur dioxide and polycyclic aromatics (PAH). Research into bio-diesel from fish oil is currently being done in Alaska and is also being investigated as a source of cheap, clean fuel in northern Canada – where diesel provides much of the region's electricity and heating needs, in addition to powering cars, boats and snowmobiles.

"Environment Canada commissioned a report last year that looked into processing the oil for export," said Dr. Hawboldt. "But our approach is to look at fish plants in this province, many of which are in remote locations that use diesel generators.

We want to determine if we can produce enough bio-diesel to supplement or even replace their diesel needs, thereby decreasing their greenhouse gas emissions and the organic levels in the wastewater which is typically discharged into the ocean."



Bio-diesel fuel can be derived from fish byproducts or vegetable oils.

Bio-diesel from waste animal oils is created through a chemical process called "transesterification," which involves separating glycerin from a fat or vegetable oil. The process leaves behind two products – methyl esters, the chemical name for bio-diesel and glycerin, a valuable by-product used in soaps and other products.

Dr. Hawboldt is currently doing a lifecycle analysis which would consider environmental impacts of bio-diesel from "cradle to grave."

"Once you quantify the wastes associated with recovering the fish oil, processing it and then actually using it, you can compare bio-diesel against another process and see which is best," she said. "But that's just the first step. Once we prove bio-diesel has a positive impact, then we have to consider the economics. Although, we suspect the economics would likely be good as fuel consumption and transportation costs would decrease."

Finally, to actually use bio-diesel in the fish processing plants, the researchers will have to look at either designing or modifying an existing process to allow the diesel to be upgraded on-site, or have one main processing facility to provide fuel to a number of plants. This work could even be expanded to enable fish processing boats to upgrade fish oils to bio-diesel while at sea for use on board.

Although the research is still in its early stages, Dr. Hawboldt says there is interest from some of the province's fish processors and they are looking to encourage others to get involved.

## Engineering researchers get set to study pollution in Canada's North

**Persistent organic pollutants** (POPs) have significant adverse effects on human health and the environment even at extremely low levels. So far, 12 POPs have been internationally recognized by the Stockholm Convention on Persistent Organic Pollutants. The elevated levels of POPs in local wildlife and humans have raised serious concerns in recent years particularly in cold regions like Northern Canada. In fact, according to a recent study done by Gabrielsen et al. (2003), a high level of organochlorine pesticides in food and of PCBs have been found in human breast milk of Inuit populations. And now, a researcher in engineering is going to help Canadian communities get rid of these pollutants. Dr. Bing Chen, assistant professor of Civil Engineering, has received funding to establish a Northern Region Persistent Organic Pollution Control Laboratory (NRPOP).

In northern Canada many POPs were banned, however they are still present at high concentrations in the soil. Since natural conditions (i.e. cold weather and relatively low incidence of sunlight leading to a decrease in both biotic and abiotic degradation) are different from other parts of the world, there are limitations with conventional technologies for reducing POPs. These unmanageable characteristics have hindered Canada's efforts to effectively protect northern environments.

But Dr. Chen and his team plan to change that. Most experiments in the NRPOP will be conducted in temperature-controlled reactors with artificial lighting to simulate the climate conditions in the region, explains Dr. Chen. "The UV irradiation is widely used for many areas like therapy and water purification. Here, UV lamps will be used to irradiate POPs-contaminated soil for enhancing the bioremediation process, which is a new and promising remediation technology to be developed."

Dr. Chen, along with Dr. Tahir Husain, professor and Chair of the Civil Engineering Discipline, say the NRPOP lab will be up and running by the summer. They hope the first-class research facility will help governments and industries across Canada improve their practices for remediation of the POPs contaminated sites, producing dramatic environmental, economic and social benefits.

Funding for the project comes from the Canada Foundation for Innovation, the Provincial Government's Industrial Research and Innovation Fund, in-kind support from corporations as well as funding from Memorial University.

## Engineering researchers and alumni receive millions in AIF funding

**Two of the three** Memorial researchers who recently received millions in funding are with the Faculty of Engineering and Applied Science. In addition, three of the four industry grants were given to companies with faculty connections.

On Jan. 22, 2008 Minister Loyola Hearn, Minister of Fisheries and Oceans and Regional Minister for Newfoundland and Labrador announced a \$17.7 million investment in research and development in the province through the Atlantic Innovation Fund (AIF). He made the announcement on behalf of the Honourable Peter MacKay, Minister of National Defence and Minister of the Atlantic Canada Opportunities Agency (ACOA).

The engineering researchers who received AIF funding are:

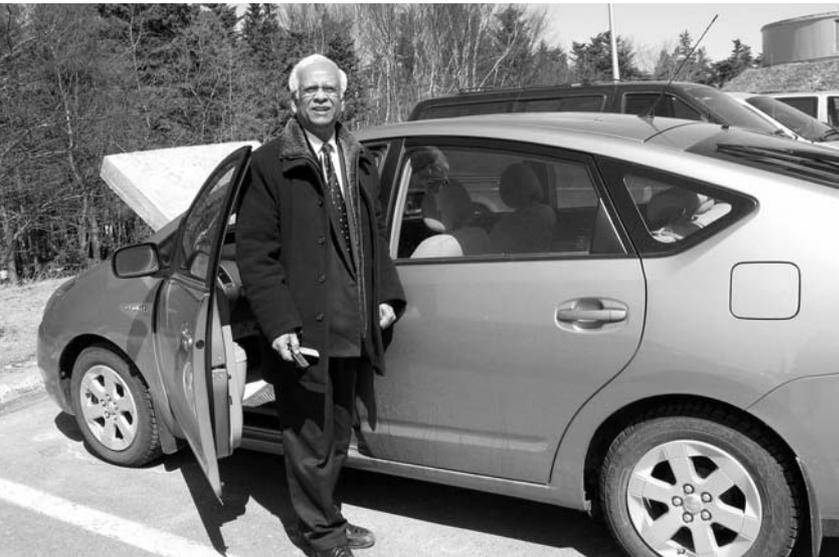
- Dr. Stephen Butt, professor of civil engineering, who received \$1.8 million over five years to develop new drilling processes of the oil industry called Vibration-Assisted Rotary Drilling. The total project will cost is \$3.4 million.
- Dr. Siu O'Young, associate professor of electrical and computer engineering, who will head up the Remote Aerial Vehicle for Environmental Monitoring (RAVEN II) project. Dr. O'Young will lead a team working with Provincial Aerospace Limited to develop collision avoidance systems for small unmanned aerial vehicles. With a total estimated cost of approximately \$5 million, this project will receive up to \$3 million over four years.

The other AIF funded projects announced with Faculty connections are:

- Intelligent Enterprise Knowledge Network – headed by alum Emad Rizkalla, Bluedrop Performance Learning received \$2.5 million over four years to develop new software application for online learning tailored for the manufacturing sector. This project has a total cost of \$4.2 million.
- Software Defined Acoustics and Development of an Underwater Vehicle – Marport Deep Sea Technologies will develop sophisticated sonar devices for use with unmanned underwater vehicles. This project is receiving up to \$2.2 million of the total \$5.3 million cost. Marport's co-founder, Anthony Paul and vice-president of research and development Neil Riggs are both engineering alumni.
- Radio Frequency Identification Reader – Cathexis Innovations Inc., which was founded by four students from the faculty, will work with Microsoft Corporation to continue the research and development of its IDBlue technology, the world's first Bluetooth-enabled mobile Radio Frequency Identification reader. This project, with a cost of \$4.6 million, will receive up to \$2.7 million over three years.

## Memorial University Engineering professor receives accolades for technological advancements

**The accolades and awards** recognizing the work of Dr. Aziz Rahman continue to accumulate. His most recent accomplishment is being chosen as first Canadian winner of the Dr. Ing Eugene Mittelmann Achievement Award by the Institute of Electrical and Electronics Engineers' (IEEE) Industrial Electronics Society (IES). Dr. Rahman will receive the award for "for his life-long outstanding contributions to interior permanent magnet (IPM) motor drive systems and associated delta, pulsewidth and wavelet modulated inverters."



Dr. Aziz Rahman has received a special award for developing the motor used in hybrid electric vehicles like the Toyota Prius.

With this award, Dr. Rahman also becomes the first Canadian to receive the highest achievement awards from four major IEEE societies. His past accomplishments include receiving the William E. Newell Award from the Power Electronics Society in 2004, the Cyril Veniott Electromechanical Energy Conversion Award from the Power Engineering Society in 2003, and the Outstanding Achievement Award from the Industry Applications Society in 1992. In addition, he has received the Richard H. Kaufmann Award, an overall technical field award in industrial systems engineering, from the entire IEEE body in 2007.

The bulk of his awards recognize his pioneering contributions in developing modern permanent magnet synchronous motors. Dr. Rahman successfully built the first 45 kilowatt IPM motor in the early 1980s at Memorial University and is widely known as "Mr. IPM". The IPM motor is now the workhorse of modern hybrid electric vehicles in which reluctance and permanent magnet torques are utilized for maximum torque and highest efficiency.

In recent years, the public demand for highly efficient electric vehicles has led car manufacturers like Toyota to seek improved technologies to meet the challenges of an energy-hungry world dealing with limited fossil fuel sources. Since launching the world's first mass-produced hybrid vehicle in 1997, the Toyota Prius, the corporation has sold more than 1,000,000 hybrid vehicles – all of which use Dr. Rahman's IPM motor drive.

IEEE is the world's largest professional organization for the advancement of technology. Since 1975, this award, which is the highest honour given by the IES for outstanding contributions in the field of industrial electronics, may be given for a single major accomplishment or a career of recognized achievements and is not necessarily given yearly – only when a suitable candidate is identified.

Dr. Rahman received the award, which consists of a framed certificate and a \$5,000 (U.S.) cheque, at the 33rd annual conference of the IEEE Industrial Electronics Society, IECON 2007. The event took place Nov. 5-8 in Taipei, Taiwan.

A professor and university research professor at Memorial University's Faculty of Engineering and Applied Science for 31 years, Dr. Rahman is a consultant to many companies including General Electric Company, the Iron Ore Company of Canada and Newfoundland and Labrador Hydro. He has published almost 600 papers and is a registered professional engineer in Ontario and Newfoundland and Labrador. Dr. Rahman is a life fellow of IEEE, a fellow of IET, U.K., a member of IEE Japan, a life fellow of the Institution of Engineers, Bangladesh, and a fellow of the Engineering Institute of Canada.

# Engineering researcher looks into the benefits of wind as an alternative energy source



Dr. Tariq Iqbal is researching a hybrid energy system for Labrador

**Dr. Tariq Iqbal**, associate professor at Memorial's Faculty of Engineering and Applied Science, has been focusing his scholarly energies on renewable energy systems. Dr. Iqbal received funding from Memorial's Harris Centre to research a new hybrid energy system for two Labrador communities that will see a reduction in the reliance on diesel-generated power.

The release of the Government of Newfoundland and Labrador's first-ever energy plan, Focusing Our Energy, outlined the province's plans for developing the "abundance of natural resource wealth" found in the province including wind and other energy sources. The plan is the province's vision to help "achieve self-

reliance and prosperity, as well as develop sustainable green energy solutions for the 21st century."

Dr. Iqbal hopes the province is truly committed to the development of wind and other renewable energy sources like small hydro. He would like to see more wind projects like St. Lawrence and Fermeuse being approved by the government in the near future. He also hopes government will lift the ban on small hydro and let many projects be developed in the very near future. He completed a similar study for Battle Harbour last year also with funding from the Harris Centre that showed that a hybrid system could reduce diesel consumption from 30,000 litres per year to 13,000 litres during the tourism season from June to September, resulting in a 57 per cent decrease.

"There are times the system only uses one-sixth of the diesel normally used," he said. "In the newly designed systems only 36 per cent of the energy comes from diesel, 50 per cent from wind and the remainder from a micro hydro unit. Initial capital cost of the new hybrid system would be about \$134,000 and it would attract more tourists to Battle Harbour," Dr. Iqbal explained. Presently, he is looking into available renewable energy resources in Port Hope Simpson and Cartwright and he plans to design hybrid systems for those diesel communities.

## Faculty and staff NOTES

### NEW FACULTY

Dave Murrin - lecturer, September 2007

Shawn Kenny - assistant professor, January 2007

Heather Peng - assistant professor, January 2008

### NEW STAFF

Leslie Downton - programmer consultant, April 2007

Steve Steele - engineering technologist III, August 2006

Mark Ingerman - engineering technologist III, October 2007

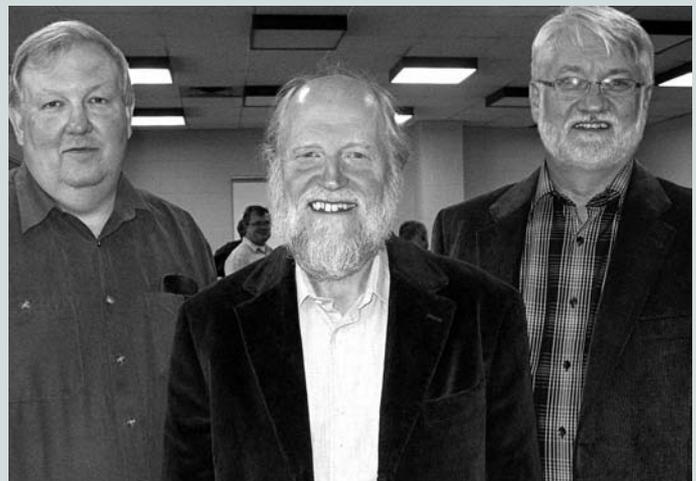
### RETIREMENTS

Dennis Johnson - engineering technologist III, September 2007

Cathy Purcell - senior secretary, January 2007

Dag Friis - professor, August 2007

Dr. Michael Booton - professor, August 2007



Dennis Johnson, Don Bass and Dag Friis all retired from the Faculty of Engineering and Applied Science recently.

### OBITUARY

**Harold Snyder** - After a brief illness, Mr. Snyder passed away in Kingston on Sept. 17, 2007. Born in Shawinigan on Jan. 1, 1926, he served in the Canadian Armoured Corps and studied civil engineering at McGill. He worked on international projects with Rio Algom and Brinco, then joined CFLCo on the Churchill Falls hydroelectric project, rising from construction manager to executive vice-president. In 1975, he founded the

Centre for Cold Ocean Resources Engineering in St. John's and lectured at Memorial University of Newfoundland. In 1982, he was invested as an Officer of the Order of Canada. He held a Diploma in Restorative Justice from Queen's Theological College and was a United Empire Loyalist, Fellow of the Canadian Society of Civil Engineering and a member of the Science Council of Canada.

## Faculty successful in endowing scholarship in memory of Bill Milne



Bill Milne

**The Faculty** of Engineering and Applied Science has been successful in endowing a scholarship in memory of William J. (Bill) Milne, a former faculty member and chair of the Naval Architecture program from 1979 to 1994. He was tragically killed in an automobile accident in March 2006 near Wakefield, Quebec.

Mr. Milne had the foresight to found the Ocean and Naval Architectural program at Memorial University, which continues to be rated one of the top programs of its kind in North America and is the only cooperative program in ocean and naval architectural engineering in the world.

Following an appeal to graduates, the faculty has raised a total of \$22,500 to endow the scholarship in perpetuity. This total includes significant contributions from Oceanic Consulting Corporation, a local ocean engineering firm; an anonymous donor; and Ruth Milne, the widow of Bill Milne.

The first recipients of the Professor Bill Milne Memorial Scholarship are expected to be announced during the fall scholarship presentations, which will coincide with the 25th anniversary of the first graduates from the Ocean and Naval Architectural program.

For more information on contributing to the Professor Bill Milne Memorial Scholarship or giving to the Faculty of Engineering and Applied Science, please contact Susan Tobin at 709-737-3996 or visit [www.engr.mun.ca/alumni/invest\\_in\\_the\\_faculty.php](http://www.engr.mun.ca/alumni/invest_in_the_faculty.php).

## Engineering co-op manager new president of national body

**Anil Raheja**, program manager of the Faculty of Engineering's co-op education program and coordinator, has been named the president elect of the Canadian Association for Co-operative Education (CAFCE). CAFCE is the voice for post-secondary co-operative education in Canada. It is the accreditation body for co-op schools and a resource for educators, students and employers interested in co-op education.



Anil Raheja

"I'm quite pleased with the achievements we attained within the faculty and the university, but there are some issues that are best addressed at the national level," said Mr. Raheja. "I would like to see Memorial more involved in CAFCE. Although we have some of the biggest co-op programs in the country we don't have the visibility and prominence we should have."

He would also like to see CAFCE encourage more consistency and standardization between different co-operative schools in the country. "I'd like to develop a system to increase the benefit to the students, and that's what my focus always has been," he said. "I believe that the co-op programs exist to serve the students, enhance their learning experience and prepare them for the real world. At present, Canada's booming economy is making it even better to be a co-op student which is very rewarding for co-op practitioners."

## MUN engineering students win gold at Atlantic Engineering Competition

**An undergraduate student team** from Memorial's Faculty of Engineering and Applied Science took home a top prize at the Atlantic Engineering Competition in early February, 2007. The competition, held at the Fredericton campus of the University of New Brunswick, saw a strong showing from two

"The best thing about the competition was for that day you were an engineer," said Mr. Campbell. "You were given a problem to solve, build and pitch. The final presentation was worth the most marks and judges could see that you were able to communicate in a manner that made them want to buy your product, but also in a way that was technical. So it was a great experience, and winning . . . well, that looks great on a résumé. But it also says great things about the engineering program at Memorial. Everybody at that conference will go home and tell people that students from Memorial University won."

For their win, the team received \$1,000 and an invitation to the Canadian Engineering Competition in Saskatoon in early March, 2007.



AEC gold medal winners: Todd Barbour, Andy O'Connell, Andrew Ronan and John Campbell

MUN engineering teams. However, the Term 5 team, with members, John Campbell, Todd Barbour, Andy O'Connell and Andrew Ronan, took first in the senior design competition.

The challenge involved creating a device to transport a container of liquid up an incline in an area with strong winds. Their innovative solution to the presented design problem had them using renewable power and was the only one out of 10 participating projects able to accomplish the goal of the competition. The team built a paddle-type windmill that rotated when the fan or "wind" blew on it. This tightened a rope around a shaft between the two paddles and, as the rope shortened, their vehicle was pulled up the incline.

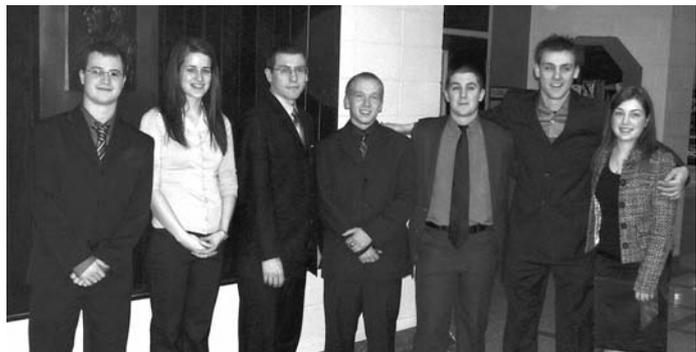
"On top of being the only group that managed to get up the hill successfully with a full load, our selling point was that our project was environmentally friendly and we turned part of the problem into the solution," said Mr. Ronan.

The day's schedule included 10 hours to design and build the project, beginning at noon, with a PowerPoint presentation of the design's selling features to be delivered at 8 a.m. the next morning.

## Devon Canada sponsors Term 2 Design course

**The annual Term 2** Design contest was made a little more spirited last year though the sponsorship of Devon Canada Corporation, a wholly owned subsidiary of Devon Energy Corporation, a Fortune 500 company and one of the world's leading independent oil and gas exploration and production companies.

A mandatory course for all disciplines, the design program pits nearly 200 students in direct competition with each other in a challenge to identify market demands, and create concepts and specifications for products to meet that demand. This past year, Devon Canada contributed \$2,000 to be awarded to the top three teams participating in the event.



Devon Canada sponsored this year's Term 2 Design Contest, with the top three teams receiving \$2,000.

# EWB hosts third "Beat the Crap out of Poverty" event



Engineers Without Borders held their third annual event to raise awareness and funds for global poverty and hunger issues.

most active and successful groups at Memorial University. By working in rural communities in areas such as water and sanitation, food production and affordable energy, EWB has a lasting impact on the people who need help the most.

On October 17, Engineers Without Borders (EWB) held their third annual "Beat the Crap Out of Poverty" event. EWB members kicked off the celebration by towing an old car in front of the Memorial University clock tower and painting it with words that represented the global problems of poverty and hunger.

For a small fee, students got the opportunity to smash the car with a baseball bat, crowbar or sledge hammer. All funds raised went towards EWB's outreach and overseas work. The event also include a BBQ over the lunch hour.

The event coincided with the International Day for the Eradication of Poverty, with hundreds of events being planned around the world to commemorate the day and to make the voice of the poor heard.

MUN Oxfam also held events across the MUN campus with the common theme of standing up against poverty. In one event, Oxfam asked everyone in the University Centre to stand up for one minute in solidarity against poverty. This was part of an international event and attempted to set a Guinness World Record for greatest number of people standing up in support of a cause within a 24 hour period.

EWB, a student based international development organization that promotes human development through access to technology, is one of the

## Engineering grad student wins top GSU award for teaching



**Tamer Sabrah** has received the 2007 Graduate Student Union Award for Excellence in Teaching and Teaching Activities. Mr. Sabrah has been described by his peers as a naturally good teacher, and this sentiment has been echoed by his students in their course evaluations. During his time at MUN, Mr. Sabrah has completed both the graduate program in teaching as well as the highest level of the Teaching Opportunities for Graduate Students (TOGA) program, where he continues to teach other graduate and PhD level students how to educate effectively.

Mr. Sabrah, a PhD candidate in Civil Engineering, acted as a TA for three courses during the 2006-2007 academic year, and helped design and facilitate ENGI 1504: Engineering Graphics, which featured the AutoCAD program. He receives this award, not just for his excellent work instructing early engineering students, but for his dedication to improving the teaching skills of others who have the benefit of working with him. Mr. Sabrah's nomination initially originated with his undergrad students, the classes of 2011 and 2007. It was ultimately completed and submitted by his peers on their behalf.

Winners were selected by a committee of graduate student representatives, GSU executive members and MUN administrators. The award includes a \$250 cash prize as well as the privilege of having the winner's name inscribed on the GSU awards plaque hanging in Bitters and promoted through the GSU listserves.

# Engineering Student Society 'B' holds Winter Charity Ball

In February 2007, over 150 people attended the first Winter Charity Ball, hosted by the Engineering Undergraduate Student Society 'B'. In addition to working towards improving the image of engineering students in the eyes of the general public, the goal of the event was to increase the sense of social responsibility among Memorial University's engineering students. The evening celebrated the theme "Engineers Giving Back to the Community" and highlighted organizations and issues which were important to the students. Funds raised during the event were divided between the Conservation Corps of Newfoundland and Labrador, a not-for-profit organization dedicated to providing youth with training and employment in environmental and cultural heritage conservation and the Tetra Society of Newfoundland, which recruits skilled volunteer engineers and technicians to create assistive devices for people with disabilities.

In addition, the society created a new scholarship award, the "Engineering Society 'B' Community Innovation Award," to be given to David Sharpe, a Term 2 engineering student for his submission of a design proposal to solve a community-based engineering issue.

The Winter Charity Ball took place at the Johnson GEO Centre, a fitting location for a gathering of members from the local engineering and business community and included live music from



Student Society 'B' held their first Winter Charity Ball in February.

members of Memorial University's School of Music, guest speakers, including representatives from both featured organizations, society executives and Dr. Ray Gosine, dean of the Faculty of Engineering and Applied Science.

The evening's fundraising got underway with a silent auction showcasing art and other donated items from businesses and members of the community.

"Although over \$3,000 was raised to support charity, it was just as important that everyone learned about the organizations we were there to support," said society president, Delia Warren. "We're hoping that this awareness has increased our student's need to be socially responsible and that future members will continue this charity ball as an annual event with the potential for even more growth over time."

# Computer Science Games team places sixth in North America

Students from Memorial University's Faculty of Engineering and Applied Science have placed sixth overall in the 2007 Computer Science Games Competition. This is a major accomplishment for the faculty and is the highest a team from Memorial University has ever placed.

The competition included teams from across North America and took place last March in Montreal. In 2006 the team from MUN ranked 23rd. The competition spanned three days, with teams

participating in a variety of computer science and engineering competitions. Competitions of honourable mention include the artificial intelligence competition, second place; cryptography, second place; and debugging, tied for first place.

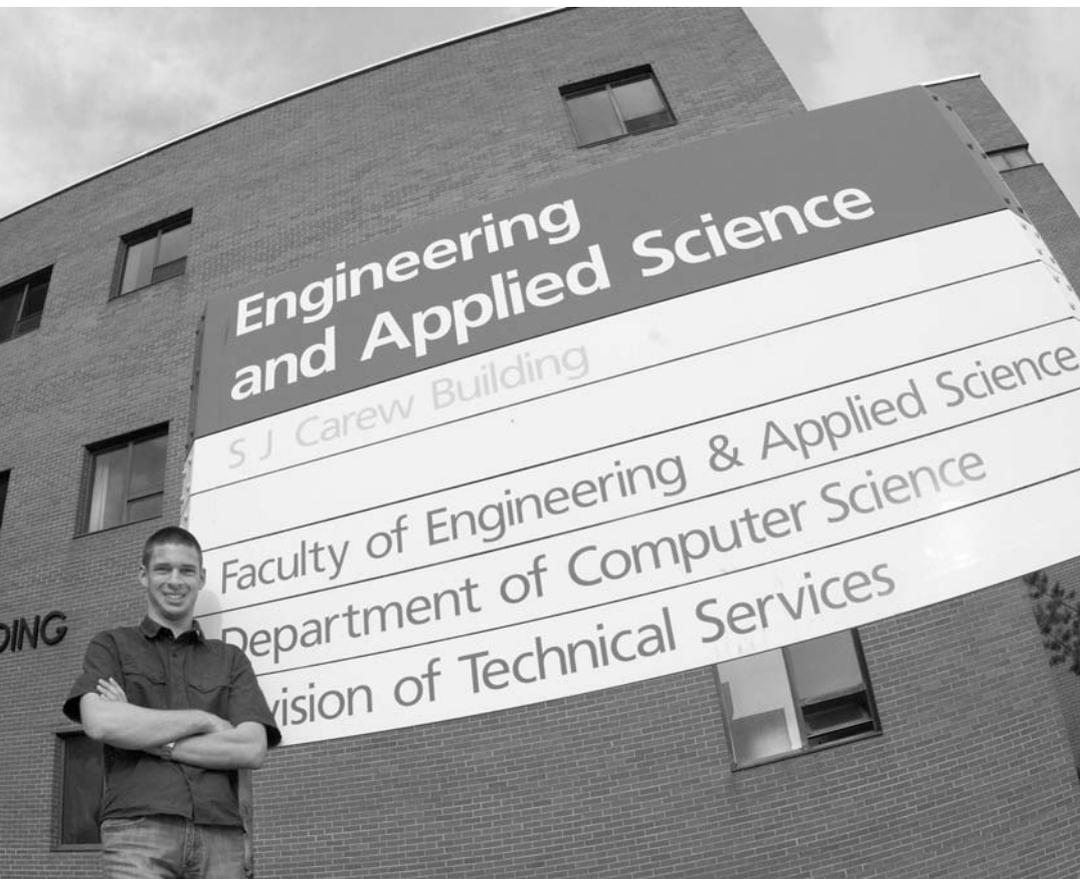
The MUN team was comprised of nine computer engineering students, Kenneth Evoy, Tara Feener, Jesse Saunders, Sarah Flynn, Rob Rees, Joshua Gorner, Chris Butler, Alex Brown and Kenneth Smith.

# Engineering students design a new Strait of Belle Isle ferry

The ferry link between the Labrador Straits and the Island of Newfoundland is a perennial concern to the residents of the Labrador Straits as well as to the thousands of tourists who visit the Straits every year. It is for this reason that three Engineering students from Memorial University are hoping their concept design for the Strait of Belle Isle ferry will be taken seriously by the provincial government.

The concept design will be capable of handling the capacity of the current vessel, the *MV Apollo*.

Included in the design is a plan for tourist amenities on the main deck, including an expanded gift shop and cafeteria. In order to accommodate the growing demands on this route, a second vessel may be required during the tourist season.



This report, completed in July, is the culmination of a semester's work for the three students, and represents the first part of a two-semester project. "This project was tremendously rewarding, as it has practical value and has the potential to drastically improve an essential transportation link for the people of Southern Labrador," said Evan Martin, the project leader.

The request to design the ferry came from a workshop organized by the Harris Centre, in partnership with the Labrador Straits Development Corporation and the Southeastern Aurora Development Corporation, held in May 2006.

Dag Friis, professor of Engineering and supervisor of the team, concluded that it's time for government to seriously look at new ferries for this region.

"The *Apollo* has outlived its useful life and was even aged compared to normal ship life expectancies, when it was purchased from the Baltic for use in the Straits. Our conclusion is that, for the

Evan Martin collaborated with fellow students to design a new Strait of Belle Isle ferry.

Evan Martin, Heather Brown and Jessica Coffey collaborated on a concept design for a ferry that could handle the winter ice in the Straits area and still be able to accommodate the summer tourists and regular users, including the transportation and shipping industry.

type of class you need for the Straits, you can't find an existing ship like it, you have to build one. If the people of Southern Labrador want year-round service, then a new ship is the answer; two even better!"

The students and their professor hope that their report will encourage the provincial government to build a new vessel in the province, in support of the local shipbuilding industry.

# Engineering society reaches out to graduate students

## The Engineering Grad Student Society (EGSS)

is not one of the highest profile student groups at Memorial University. Instead, they prefer to be a low-key organization that quietly works to meet its goal of providing support to its members.

Past society president Jahangir Khan says the most important function of the EGSS is to advocate change on behalf of the graduate students. The society is represented at faculty council meetings and is given the opportunity to meet with MUN's dean of graduate studies and the engineering faculty's associate dean of graduate studies.

"Although what we discuss might not initially have a groundbreaking effect, it may ultimately cause very fundamental changes for our members," said Mr. Khan. "For example, we've been asking for more graduate student housing facilities. We don't expect that to happen this year, but it may if we keep pressing."

Recently the group has worked with the associate dean of undergraduate studies to encourage the office to release a year long schedule of graduate courses, instead of advising of course offerings just prior to the beginning of a semester. This allowed students to make decisions with more advanced planning. The society has also advocated for improvements to student funding and student facilities.

"It doesn't matter if the advocacy work we do is on behalf of someone who isn't a member; we represent the grad students as a whole body," said Jonathan Anderson, the newly elected president and former EGSS faculty council representative. "Advocacy work is very important to the graduate student body, but because things may be of a sensitive nature, we can't talk about what we've accomplished and the students might not even know what we've done for them."

The second key function of the EGSS is to increase the level of interaction between graduate students and between grad students and their professors. To that end, the society has organized a number of social events for members and created a weekly drop-in coffeehouse that brings both groups together in a relaxed setting.

"Because the research work of graduate students is so individual, you don't actually need to ever talk to anybody else," said Mr.



Members of the Engineering Grad Student Society executive.

Anderson. "We're just trying to bring people together who might not otherwise see one another; to give them a chance to sit down and chat. It's an opportunity for people to get to know each other in a way you otherwise might not see in a graduate program."

The dean of the faculty, Dr. Ray Gosine, encourages professors to take the time to participate in the coffeehouse and mingle with the students. Although the society does not have a fixed source of funding, subsidies are provided by the dean's office and by the faculty's associate dean of graduate studies, Dr. Ramachandran Venkatesan.

"It's not just food we're trying to serve, we're also trying to serve an environment too," said Mr. Khan. "Grad students don't normally knock on each other's door and say, 'How is your research going?'"

The society's long term goals are to increase its volunteer base, and to engage international students more directly.

"Some of these students already have a sense of community with each other," said Mr. Anderson. "They already have that cohesiveness that a lot of our social events are trying to create between groups of otherwise totally segregated people. It's one of the reasons why we're here; otherwise we'd just stay at home and do our research."

# Student's design wins first Community Innovation Award

**David Sharpe is the first winner** of the Engineering Student Society 'B' Community Innovation Award. This is the first engineering scholarship established by students in recognition of one of their own.

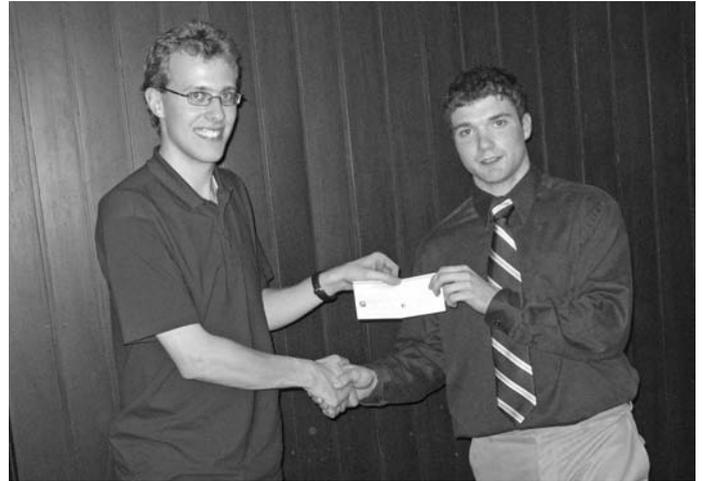
The Term 2 student accepted the challenge of designing a self-sustained rainwater collection irrigation system for home usage in gardens and greenhouses which must be able to collect rainwater and distribute it in a time release/need release basis to nourish plants. The system was to be made using environmentally friendly methods and employ minimum usage of external energy.

The scholarship was based entirely on the submission, with no minimum average or grade point average requirements. The goal was to encourage students to use their engineering skills to come up with innovative solutions to real life problems.

"We decided the best way to stress our message about social responsibility was to get students thinking about how engineering could be used to have a positive impact on the community," said Delia Warren, president of the Engineering Student Society 'B'. "We believe we succeeded in increasing awareness in the need to operate as socially responsible and environmentally aware citizens in our community, not just as engineers, but as individuals as well."

Mr. Sharpe said the main reason he decided to participate in the challenge was because he had a keen interest in design.

"That is a big reason why I chose applied science over something like a physics degree," he said. "My father always maintained a greenhouse while I was younger, so, I figured I'd give the challenge a shot."



David Sharpe (right), winner of the first Community Innovation Award, is presented a cheque by Adam Noel, vice president of finance for Student Society 'B'.

While he didn't expect to win the award, he knew that the amount of time and effort he put into the challenge made it a possibility.

"I was happy when I heard I won," he said. "It's nice, because I'm sure the society and every student who was involved in the creation of this project realizes how demanding the engineering program is," said Mr. Sharpe. "I know the effort I put in would, at least, be recognized by the student members of the society, who happened to be the organizers and judges of the entries. These students are in the same boat as myself, and I appreciate the fact that busy students were able to raise funds to donate for the award, and find the time to organize the whole thing."

Students raised the funds for the scholarship at a charity event last winter. Proceeds were split between the award and two charities – the Conservation Corps of Newfoundland and Labrador and the Tetra Society. Each received \$1,150 with the Faculty of Engineering and Applied Science contributing an extra \$1,000 for the scholarship fund, for a total of \$2,150.

## Engineering student wins SNAME undergrad scholarship

**Topsail native Heather Brown**, a Term 7 Ocean and Naval Architectural Engineering student, has won the first Mandell and Lester Rosenblatt Undergraduate Scholarship offered by the Society of Naval Architects and Marine Engineers (SNAME).

The scholarship is valued at \$6,000, and is open to all student members of SNAME in the United States, Canada and International. SNAME annually awards both graduate and

undergraduate scholarships to encourage study in naval architecture, marine engineering, ocean engineering or marine industry-related fields. Requirements for the scholarship include being an active member of a local SNAME student section and evidence of superior academic achievement.

After graduation, Ms. Brown is hoping to work in the field of Arctic and ice engineering.

## EWB takes volunteer award second year in a row



EWB member Gillian Langor (right) is presented the MUN Volunteer Club/Society of the Year Award by Dr. Lilly Walker (centre), dean of Student Affairs and Services.

**For the second year in a row**, Engineers Without Borders have won the Memorial University Volunteer Club/Society of the Year award from the Student Volunteer Bureau. This award is presented to a club or society active at Memorial that has consistently shown a zest for contributing to student life, helping others and making a difference by organizing volunteer efforts for a great cause during the academic year.

Engineers Without Borders – MUN was formed in 2005, joining 23 other Canadian university Engineers Without Borders chapters across the country in the fight against poverty. A registered Canadian Charity, EWB helps people in developing countries gain access to technologies that will improve their lives.

Over the past year, EWB has planned numerous successful events to connect people who are passionate about international development and to create a real impact in their communities and overseas. Two such events highlighted poverty issues, the “Let’s Rock Poverty” concert and the “Beat the Crap out of Poverty” awareness event. Through their coffee club, the organization works towards ensuring farmers get a fair price, and raise funds for their Junior Fellowship program and for travel to the EWB’s national Leaders for Change conference in Calgary.

## Upcoming **EVENTS**

**Speaking of Engineering**  
**Wednesday, February 20, 2008, 7:30 p.m.**  
**S.J. Carew Building, Room EN2006**

Admission is free. Parking is available in Lot 16.

**Have you ever wondered...**  
**If engineering can really help the environment?**

Engineering is the only profession that leaves a visible effect on the landscape. If that is so, can society hold engineering accountable for the state of our environment? What has been engineering’s role in the recent “environmental decades”? What should be engineering’s future role in a world with a burgeoning population that is demanding greater well-being; where there is increasing demand for resources and energy, and one that is faced with the unique planetary challenges of climate change?

Join **Mr. John Roberts, vice-president, environment of Aurora Energy Resources Inc.** for a discussion on the environmental history of engineering, and its necessary contributions to society in the future.

**Speaking of Engineering** is hosted by the Faculty of Engineering and Applied Science at Memorial University and the Professional Engineers and Geoscientists of Newfoundland and Labrador.

The following **Speaking of Engineering** will take place on **Wednesday, March 26, 2008**, with Mr. Stan Marshall, president and CEO of Fortis Inc. Details to be announced.

For more information, visit [www.engr.mun.ca](http://www.engr.mun.ca).

## Engineering student wins IEEE Foundation Scholarship

**Matthew Appleby**, a Term 7 engineering student, has received a \$3,500 Canadian Foundation Scholarship from the Institute of Electrical and Electronics Engineers, Inc. (IEEE).

The scholarship is intended to encourage awareness and participation in the educational program supported by the IEEE by paying a major portion of the final year tuition fees and related academic expenses of a student who has demonstrated a previous commitment to the IEEE McNaughton Learning Resource Centre and related IEEE activities.

Mr. Appleby has been a member of IEEE for three years and has served on the university's IEEE student branch as a Society A senior representative. He has also volunteered and participated in the Newfoundland Electrical and Computer Engineering Conference, an event that brings together IEEE members from across the province.

IEEE, a non-profit organization, is the world's leading professional association for the advancement of technology. Through its global membership, the IEEE is a leading authority on areas ranging from aerospace systems, computers and telecommunications, to biomedical engineering, electric power and consumer electronics, among others. To foster an interest in the engineering profession, the IEEE also serves student members in colleges and universities around the world.



Dr. Steve Bruneau demonstrates principles of engineering with a steam engine for children at the Newfoundland and Labrador Science Centre during National Engineering and Geosciences Week, 2007.

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### *ONAE grad continued from page 8*

"Much of the work I do is directly related to courses I took in engineering, particularly the complicated ones," said Mr. Kirkland. "To perform my job I literally use information gained from those classes every day. As a result I can attend a meeting or work on a project and understand everything that's happening and why."

Mr. Kirkland says it's important for students to know that some of them will use the information and skills they've learned in their own day-to-day work, but even if they don't, they'll likely end up working with those who do.

"It's something you can and will encounter," said Mr. Kirkland. "At the very least, you should be able to understand what people are talking about when they present you with the results of complicated engineering analysis."

He now trains Memorial work-term students in some forms of analysis and finds they're very quick to pick up difficult concepts, even if they haven't yet studied it in school.

"If we get them in their fourth work-term or earlier they haven't encountered most of this material in their course work," said Mr. Kirkland. "By the end of their work-terms they are performing the same analysis as engineers who have been working for 20 years in the industry."

Mr. Kirkland is not the only Ocean and Naval Architectural Engineering graduate working for Exmar and says the company has been very impressed with the level of preparation Memorial has given its graduates.

"When I was there two years ago on a work-term, my classmate and I, were the first MUN students to work with Exmar Offshore," he said. "Since then the company has gone from the just the two of us, to seven Memorial graduate employees and four permanent student positions and we're only 60 people strong."





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