

A DECADE OF INNOVATION

TEN YEARS OF PARTNERSHIPS: 2004 - 2014

Fuelling Manitoba's economic growth & community development



APPLYING KNOWLEDGE, DELIVERING RESULTS™

Red River College's parabolic solar trough testing and demonstration project is made possible thanks to RRC's partnership with the University of Manitoba and Manitoba Hydro, with financial support from NSERC.

Red River College's (RRC) Academic Plan 2020 makes the college's vision clear: to be "recognized as one of North America's leading institutes of applied learning and research. The knowledge and skills learners acquire at the college are a catalyst for innovative achievement in Manitoba's business and social sectors. They build our economy and enrich our whole society."

Applied Research & Commercialization (AR&C) has been a growing part of that vision since 2004. "Looking at our first 10 years, a great amount of focus was on building capacity," said Ray Hoemsen, Director, AR&C. "We have worked with granting organizations, such as the Natural Sciences and Engineering Research Council of Canada (NSERC) to help respond to community and business needs."

RRC's original focus was on green buildings, and it is still an intrinsic part of the college's research focus. There are four key strategic research areas at the college: advanced design and manufacturing; clean technology; digital technology; and health, nutrition and social sciences. Many of the research projects have evolved from challenges and problems that both industry and the community want solved.

"We are always looking for something that engages our faculty and our students in some way," says Hoemsen. "Our mission focuses on economic development. When our clients do well, then Manitoba does well, and the college does well, too." The college strives to ensure that businesses truly benefit from the research capabilities, resources, and services provided. "We do not let intellectual property be an impediment. We retain rights for further research and educational use, but we routinely give our industry partners commercial rights with no royalties."

AR&C, from the beginning, has believed in supporting creativity and research within RRC, and because of that belief, the College Applied Research Development (CARD) fund is also celebrating its tenth anniversary. Built into the original strategic plan, the fund is designed to encourage faculty, staff, and students to engage in research activities at the college.

Since that year, the CARD fund has been funded internally. "It's been very effective in giving people the resources and the opportunity to develop practical research projects," says Hoemsen. Over the past ten years, the fund has distributed nearly \$500,000 to faculty and students for over 60 projects, supporting such areas as research personnel, equipment, materials, and travel.

CARD also holds one of the keys to the future of AR&C. "Health science research is an emerging research area for the college," says Stephanie Forsyth, President and CEO of RRC, and the CARD fund has helped support research activities



Students frequently state the applied research experience as the most valuable learning and career-developing experience of their college years. – Stephanie Forsyth, President and CEO of RRC

in such areas as nursing in less-developed nations, and in disaster situations, such as Hurricane Katrina. We also anticipate additional focus on areas such as medical devices, pharmaceutical formulations and processes."

Due in part to initiatives such as the CARD fund and the introduction of their new construction management degree, the college officially became a polytechnic institution – one of only 11 in Canada. "Being a polytechnic refers to a model of learning and a type of institution," says Stan Chung, VP Academic and Research, RRC. "It's an applied learning model – one that is infused with applied research, and deeply connected to careers and jobs. And as a polytechnic, the college has evolved from a Trades school to one that grants career-oriented diplomas, advanced diplomas, and degrees. I believe our next steps are to share more of our best practices, and to continue to deepen and broaden what we've been doing."

The work that is done today is putting the college, Winnipeg and Manitoba on the world stage. In the spring of 2013, Joe Justice, founder of WikiSpeed visited the college and worked with students, faculty, researchers, and local industry to build an energy-efficient car in just one day; he will be showing the videos of this build at his many speaking engagements worldwide. In late 2013, Ray Hoemsen and Neil Cooke, Chair, Transportation Heavy Apprenticeship

Trades were invited to Japan to deliver presentations on the work the college is doing in electric vehicle research.

"The work we are doing is not just having an impact on our students and research partners, but also on the college and on Manitoba's communities," said Chung. "It's all intrinsically connected to our strategic plan." Expanded research capabilities and resources for aerospace industry and in the area of social sciences, as well as being part of an international consortium to develop and test five all-electric transit buses are all trademarks of a growing and vital college.

Another area of growth for AR&C is in the field of social science research. "Tatjana Brkic and her team research businesses in various countries and bring that information back to businesses in Manitoba," explains Forsyth. "They are developing market intelligence guides that are contributing to the growth of small- to medium-sized businesses both regionally and internationally. This work is not only a significant benefit to companies who may struggle with the costs of R&D, but also contributes to the service learning value-add that we are expanding at the college."

Another developing focus for AR&C is to use its social science research to make more meaningful connections with the Aboriginal community, both in and outside of the college. Brkic's research has shown the power of micro-enterprise development in other countries. "We will be looking to see how we can bring our research home to develop micro-enterprises here," says Forsyth. "There's a lot to be excited about."

Forsyth is often found meeting with RRC students. "Students frequently state the applied research experience as the most valuable learning and career-developing experience of their college years." Applied research is what colleges like RRC do best. Hand-in-hand with an experiential approach to education, RRC is a vital part of the post-secondary education options offered in Manitoba. RRC is proud to provide the province with graduates experienced in innovation, global awareness, and leading-edge technologies who are prepared to fulfill RRC's mission: "contribute to Manitoba's economic and social prosperity through exceptional applied education and research."

RED RIVER COLLEGE & APPLIED RESEARCH

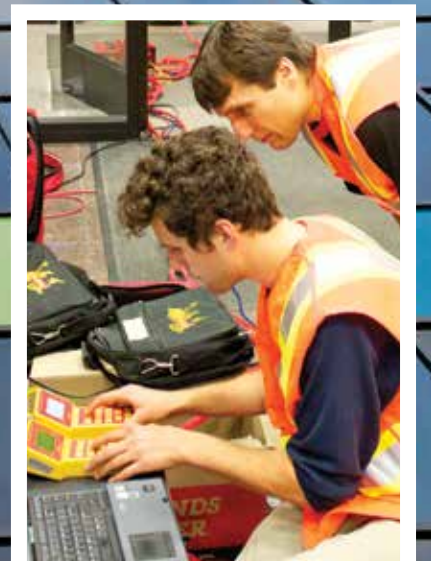
- Manitoba's largest institute of applied learning
- Over 200 full- and part-time academic programs
- More than 30,000 enrolments
- 94% employment rate for graduates
- Annual operating budget of ~\$180M
- Annual research budget of ~\$2M

- Manitoba Roundtable on Sustainability Award of Excellence - 2009
- Winnipeg Chamber of Commerce Spirit of Winnipeg Award - 2010
- Association of Canadian Community Colleges National Gold Leadership Award - 2011
- Top 10 Research College in Canada, ranked by the Impact Group - 2013



Big Buildings, Big Energy Loss, Big Opportunities!

"SITRG's first major air-leakage test was 363 Broadway in downtown Winnipeg"



Rob Spewak and Serge Broeska check building pressurization.

The Sustainable Infrastructure Technology Research Group (SITRG), established in late 2009 with a five-year, \$2.3-million grant from the Natural Sciences & Engineering Council of Canada (NSERC), is focused on improving energy performance of new and existing buildings. "Because of our extreme climate, reducing energy use is a very important issue for Manitoba building owners," explains Ken Klassen, Research Professional for the Centre of Applied Research in Sustainable Infrastructure (CARSI). "Our province has a long, rich history of doing pioneering work to improve energy efficiency in housing. SITRG is focused on doing that same work in commercial, industrial, institutional and large, multi-family buildings."

Improving energy efficiency is more than just sealing windows, adding insulation, and having an up-to-date heating and cooling system installed. An important contributing factor to a building's energy efficiency, comfort, and durability is air leakage. "There is a big gap of knowledge in that area," says Klassen. "We actually know quite a bit about air leakage in low-rise housing because over 30,000 homes have been tested in Manitoba. For larger, non-residential buildings that number was probably less than a dozen. We are working to address that gap in knowledge."

Testing air leakage in a large building involves overcoming many obstacles. "Our first major project was an office tower in downtown Winnipeg," says Rob Spewak, Senior Research Manager of Applied Research & Commercialization and SITRG. "With a team of students and our crew, we had the challenge of making enough fans work properly to pressurize and depressurize the large building. Another challenge was to separate factors such as vents and grills whose job is to ventilate the building from legitimate air leakage issues. And, last, we had to consider the stack effect that results when warm air rises in a tall building." The crew tested the building before a new façade was added, and afterwards.

"The testing sessions lasted a long time. We arrived around 6:30 in the evening and finished around 2:30 in the morning," says Spewak, adding with a laugh, "An unexpected challenge was the fact that the building had a bank machine in the lobby, and just as we'd run through half of the pressure levels for testing, a stream of customers would come through the doors to use the machine. When they left, we'd have to resume the test." When the results were tabulated, the new façade resulted in a 15 per cent improvement in air tightness.

After this success, and with the techniques they learned, Spewak and his team wanted to test more buildings to create a database of air leakage rates for large buildings in Manitoba. "We asked 33 experts to rank 20 potential areas of energy-related building research for SITRG. Exploring air leakage in the commercial building sector was ranked highest. In response, we partnered with Manitoba Hydro, which helped us by giving us financial support to engage local consultant, Gary Proski, who's been working in this field since the 1970s. We promised Manitoba Hydro that we would test 20 buildings, and we delivered 25." The final reports will be completed soon.

"Minimizing air leakage has an important effect on the durability of a building," says Klassen. "Excessive air leakage can cause a lot of moisture damage. It allows water vapour to get between the building and the façade that freezes and thaws, damaging the façade resulting in the need for expensive repairs or replacement. That's why a big part of our focus on air leakage control is on sustainability. It's better for the environment if you can make existing buildings last longer, rather than having to construct new ones."

In many cities, there is a resurgence in renovating and converting heritage buildings. Most of these buildings were built with little or no insulation at all. Adding insulation, installing new heating and ventilation systems, and changing the type of occupancy can put stresses on the structures that they didn't face before. The recent conversion of the Union Bank Tower to house the Paterson GlobalFoods Institute is an example of such a space. "We've placed sensors in the retrofitted exterior walls of the tower to continuously monitor temperatures and moisture so we can collect data to study what happens over time," says Spewak.

"Our goal is to not only increase knowledge about the energy performance of buildings in Manitoba but also to increase the supply of knowledgeable people," says Klassen. "Our research begins local in order to be relevant elsewhere. Our students learn through these projects, and at the same time, provide much-needed data for industry. Ten years sounds like a long time, but it's just a blink of the eye. We're learning all the time, creating an industrial infrastructure and a human infrastructure. And growing both is what we're trying to do with SITRG."



Paul and Gerri Charette

Paul Charette, Red River College Civil Technology alumnus and Chairman of Bird Construction Inc., along with his wife Gerri have donated \$1 million to establish Red River College's first endowed Research Chair. The Province of Manitoba has matched Paul and Gerri's contribution. In April 2013, Dr. Shokry Rashwan was appointed as the Green Building & Construction Chair for Research and Innovation, and will lead applied research within the School of Construction and Engineering Technologies.

CONGRATULATIONS TO RED RIVER COLLEGE ON 10 YEARS OF APPLIED INNOVATION THROUGH AR&C



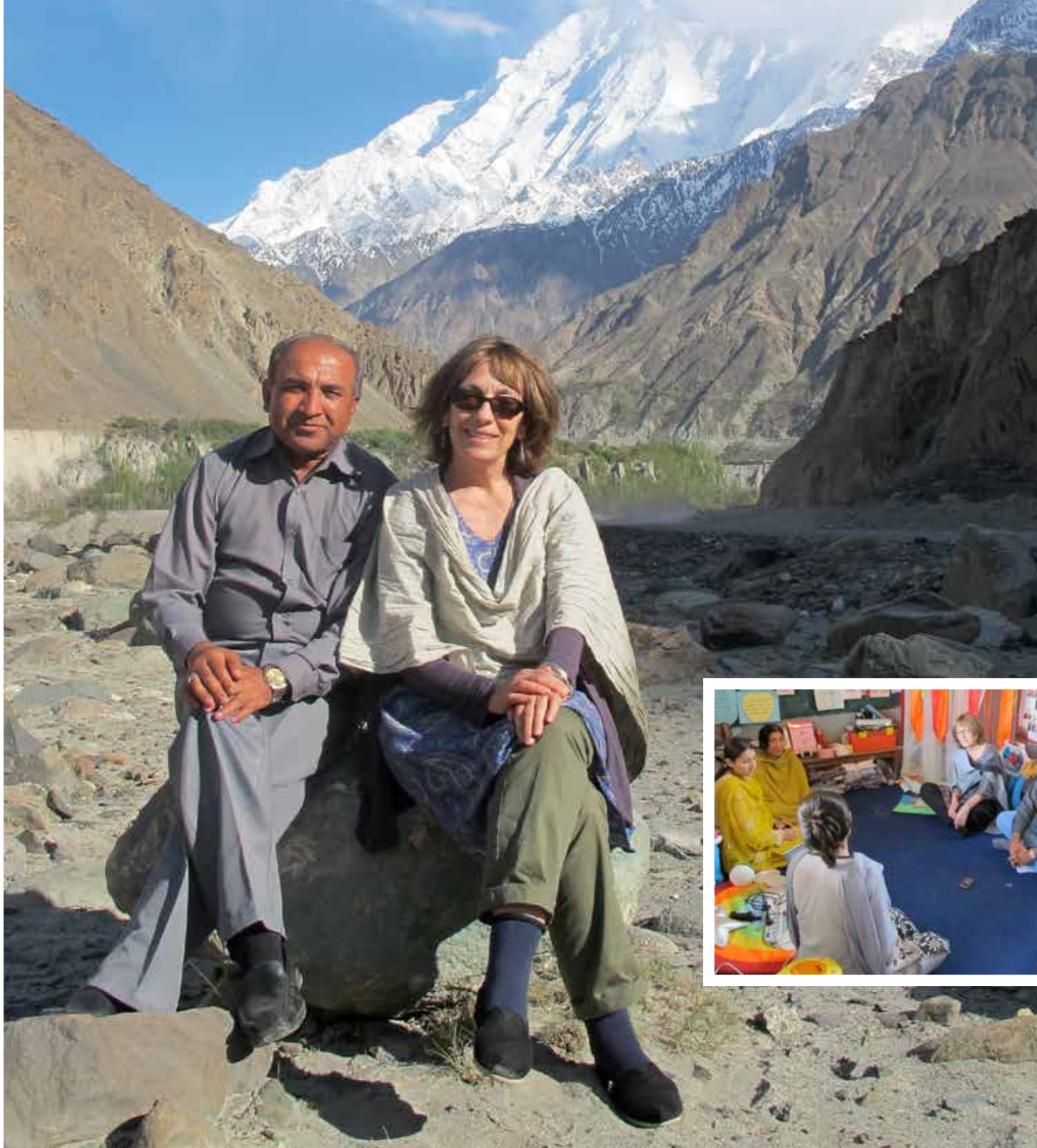
CATT technology includes 3D plastic printing, robotic vision systems, digital X-ray, plastic welding, cold metal transfer, chemical vapor deposition, and hybrid laser welding and cladding for aerospace superalloys.



StandardAero and Red River College forged the **Centre for Aerospace Technology and Training (CATT)** with a spirit of cooperation, intellectual curiosity and desire for results. Building on a decade of amazing achievements, we celebrate the research centre agreement as a standard for public/private collaboration. Together, the StandardAero and Red River College partnership creates skilled jobs, marketable technology and highly trained graduates for today's competitive marketplace.



FROM RED RIVER COLLEGE TO THE WORLD



Janet Jamieson, Research Chair, School of Health Sciences and Community Services with Salman Ali, Programme Officer, Aga Khan Education Services, Pakistan on a research mission in Pakistan.

The resource RRC wanted to create had to be easily accessible and current. “We came up with the idea of creating an online resource that could be updated as new science emerged. We decided to make it multi-media, too, so it would be engaging, and because we’d had some experience with video production on two other projects.” Dr. Fraser Mustard, a champion of spreading the word about the importance of early brain development, helped RRC find the right partners to make the idea a reality.

In 2002, with funding from The Lawson Foundation, and in partnership with the Atkinson Centre for Society and Child Development at the University of Toronto, a resource-rich, multi-media website was born: The Science of Early Child Development (SECD). On this website (www.scienceofecd.com), Jamieson and her team gathered links to the latest research, interviews with experts in the field, videos demonstrating various aspects of early childhood development, and suggestions for discussion and further study that could be used in early childhood education classrooms.

“From the beginning we imagined it as something that could be potentially useful globally,” says Jamieson. “There was an increasing interest in the subject, and though people couldn’t afford books all over the world, people were going online in Internet cafes.” It wasn’t long before the World Bank saw the value in the resource and offered funding for an international edition of the website. This venture was soon recognized by the Aga Khan University and eventually received funding to expand internationalization from the Geneva based Aga Khan Foundation. For the team, this funding opened doors to the world.

“The Aga Khan University in Karachi, Pakistan had developed a post-graduate program in human development and had adopted the SECD as a core resource,” says Jamieson. “I went over and taught and helped facilitate using our material as a resource. However, our examples of children’s programs were not relevant to an international audience. We knew we needed different voices.” The Aga Khan Foundation provided funds to make a contextualized version, and arranged opportunities for filming in Egypt, Pakistan, Afghanistan, East Africa and other locations. Since then, the crew has also filmed in Bangladesh and Cuba.

“What is satisfying for me is that we’ve done something that’s useful to other people, and now they can take it from there,” says Jamieson. “We’ve created a great learning experience. People can read, watch, reflect and learn from our resources or take one of our online courses. We are in our third Canadian edition and our second international edition and we’re adding new information all the time.”

Recent funding from various partners guarantees that SECD will continue to benefit and reach out to those who work and research in this field in Canada and around the world.

• • •

FIFTEEN YEARS IS TOO LONG TO WAIT.

That’s what the Early Childhood Education team at Red River College (RRC) decided in 2000 when they learned that the gap between scientific research and implementation was 15 years. They believed that people working with children in the front lines or training child care professionals should be able to access new research related to early brain development and its links to long-term learning and health outcomes while it was still new. “There was a burst in new science about early brain development and the long reach that early childhood had on a person’s life,” says Janet Jamieson,

Research Chair, School of Health Sciences and Community Services, RRC. “New information about early brain development, the impact of genetics, and early experiences was growing quickly, but access to these resources for those working in the field was extremely limited.”

A Career of Service & Professional Leadership Honoured



Ray Hoemsen, FEC, P. Eng.,
Director of Applied Research & Commercialization

In October 2013, the Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM) honoured Ray Hoemsen, P.Eng., with an Honorary Life Membership in recognition of his dedicated service to the engineering profession and voluntary service to APEGM.

Throughout his career, Hoemsen, Director of Applied Research & Commercialization, has worked with industry, government, colleges and universities to the benefit of students, researchers, and Manitoba business. He has also volunteered his leadership skills to over 70 sports, community and professional organizations.

“Ray has had an incredible career spanning over 35 years, and we are pleased to be able to grant him an Honorary Life Membership,” said Dawn Nedohin-Macek, P.Eng., President, APEGM. “He is an inspiration to his students, faculty and fellow Professional Engineers.”



WestCaRD

Creating
Technology Growth
Opportunities

WestCaRD's Mission is to facilitate:

- Technology Growth
- Research & Development Projects
- Specialized Workforce Development

in the testing and propulsion sector.

***We Appreciate RRC
For What You Do!***



Electric Vehicle Technology & Education Centre

The All-Electric BATTERY TRANSIT BUS

Over the past 10 years, Red River College's (RRC's) Mobility from Green Energy initiative has resulted in extensive transportation- and energy-related research. The expertise and experience gained in this applied research made the college the ideal choice for a new challenge. In 2011, the Province of Manitoba provided \$645,000 to establish the Electric Vehicle Technology & Education Centre (EVTEC) at the college's Advanced Transportation & Energy Centre.

Winnipeg's unique geographical location and harsh climate makes RRC the ideal location to demonstrate and test the performance of electric vehicles such as the Chevrolet Volt, Mitsubishi iMiEV, and Nissan Leaf in extreme weather conditions. EVTEC also develops research and innovation projects for ground-transportation electric and hybrid vehicles using renewable fuels, including bio-diesel.

EVTEC was conceived as a demonstration and public education site for all-electric and plug-in hybrid-electric vehicles and recharging equipment. While supporting the Province of Manitoba's policy regarding sustainable transportation, EVTEC has three purposes: to partner with businesses in the transportation sector on innovation and the development of practical research projects, to develop curriculum and training for the maintenance of electric and hybrid vehicles, and to use its resources to create public awareness and build industry networks.

All-Electric Battery Transit Bus

EVTEC's first major research project didn't start small. An international consortium, consisting of the Province of Manitoba, Manitoba Hydro, Mitsubishi Heavy Industries (Japan), New Flyer Industries and RRC, embarked on a \$3-million development of a prototype "zero emissions" bus and the high-capacity charging system needed to support its operation. Within a year the prototype bus was operational.

Tested over a nearly two-year period in Winnipeg, the prototype has performed well. New Flyer Industries has received \$3.4 million from Sustainable Development Technology Canada to develop four more buses. With additional contributions from the consortia partners, the total investment in the projects will total \$10 million. These five buses will run under normal transit operating conditions for up to four years as part of Winnipeg Transit's fleet.

This dynamic project has resulted in more than just five new buses. There are already commercial benefits; with New Flyer Industries being awarded, among other business opportunities, a contract by the Chicago Transit Authority for two battery electric buses.

Looking Ahead

Spurred by the success of this international project, EVTEC is looking ahead to future opportunities and the questions and challenges that accompany them. How can ground vehicle batteries be repurposed for stationary applications? What are the best methods to develop appropriate business models for electric vehicle and green energy technologies? How can the college develop and optimize commercial-grade, high-capacity, fast-charging infrastructures to support electricity-powered vehicles? What technologies need to be in place to deal with passenger electric vehicle end-of-life issue? The teams at EVTEC look forward to working with interested parties to find the answers and develop solutions.



All-Electric Battery Transit Bus:

- Is 100% battery powered
- Is the first-of-its-kind in Canada
- Has no tailpipe
- Generates zero emissions
- Has a range of 80 kms
- Runs for approximately four hours in typical stop-and-go transit operation
- Can be fully charged in 30 to 40 minutes
- Runs significantly quieter than a diesel bus
- Has a 120 kWh battery that weighs about the same as the engine and fuel tank on a diesel engine bus
- Generates electrical power equivalent to 25,000 AA batteries



Congratulations to the AR&C at RRC for 10 years of progress and innovation! From your friends at MacDon.

MacDon is a world leader in technology, innovation, and manufacturing of high performance harvesting equipment. Our products are sold worldwide from offices in Canada, The United States, Australia, and Russia. As a family owned company, we are proud of the relationships that are formed with the employees. We are committed to a safe and challenging workplace, providing employees a fulfilling career where they can grow. With career opportunities in a variety of fields from Design to Testing, Manufacturing to Marketing, Procurement to Accounting, IT, and Human Resources.

Realize your potential today at macdon.com/careers

Join the Performance Team!

MacDon



EnviroTREC congratulates Red River College for a decade of Applied Research leadership and excellence. EnviroTREC has been a part of this history and looks forward to continued technology and skills development with the College's applied research team at its side.

EnviroTREC's purpose is to stimulate and mentor collaborative research and development activities and to promote the development of human resources necessary to support aerospace technology development in Manitoba. A priority for EnviroTREC is the development of technologies and skills related to the testing, evaluation and certification of the next generation of large aircraft engines.

For more information please visit the EnviroTREC website at www.envirotrec.ca

EnviroTREC
Canadian Environmental Test Research & Education Center

CLEAN WATER TECHNOLOGY

LEARNING AND SHARING

Red River College (RRC) is focusing on clean water technology, with a financial contribution from the National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP). “This is an area of research that is important to us,” explains Rob Spewak, Senior Research Manager, Applied Research & Commercialization. “In Manitoba, we have the challenge of the nutrient-loaded Lake Winnipeg, and unique conditions of both flood and drought. This contribution helps us create a network of interested groups and individuals so we can share information, learn from one another, and work towards common goals.”

NRC-IRAP’s support allows RRC to arrange networking events and to bring in speakers to educate and encourage innovation in clean water technology. “We have a great relationship with the Manitoba Environmental Industry Association,” says Spewak. “They focus on policy while we work on the technical side with industry. Together we work to create projects for small companies in the clean water technology industry. Rather than import solutions, our researchers can work with industry to create our own solutions and find a way to export them to others.”

The faculty and researchers at RRC provide advisory services, along with access to facilities, to small- and medium-sized enterprises (SMEs). These services help businesses increase productivity, innovate, and become more competitive in the clean water technology field.

Recently, as a direct follow-up to a water roundtable at Centrallia 2012, a team from RRC, the Manitoba Environmental Industries Association, and World Trade Centre Winnipeg traveled to the Netherlands to learn about their experts’ solutions to their unique water problems. Below sea level, the country has challenges with water drainage.



Fort Whyte bioplatform installation

“They had a lot to show us in the innovative ways they manage water and water treatment,” says Spewak. “Waste is a resource in the Netherlands. We don’t see it that way, so it was very interesting to learn from their experience. This February, a trade commission from the Netherlands will be visiting here. We were introduced to their network when we were there. Now they will get the chance to connect with ours.”

A team from industry and RRC is also working on a plan to use cattail plants to clean the overabundance of nutrients that annually plagues Lake Winnipeg’s waters with toxic algae. Cattail plants naturally feed on the harmful phosphorus and nitrogen, but they can only do their job in the shallow water that is their natural habitat.

Working with Curry Industries and Native Plant Solutions, the research team has created floating bioplatforms that they hope will make it possible for cattails to grow anywhere on the lake. Currently the platforms that were built in 2013 are still on the lake to see how they will survive the winter. The NRC-IRAP financial contribution also helped subsidize a student to work on this project.

Building Digital Connections

Thanks to the Digital Technology Adoption Pilot Program (DTAPP) delivered through NRC-IRAP, RRC technology students are getting valuable workplace experience while helping SMEs with their digital technology challenges. DTAPP is a national program designed to speed up the rate at which SMEs in Canada adopt digital technology and build digital skills.

For several construction and manufacturing businesses in Manitoba, those skills were delivered in 2013 by a cross-functional team of 12 RRC technology students, their instructors and researchers. The student teams spent an average of five days working onsite with each company, and then prepared reports for these businesses with recommendations ranging

from suggestions for the use of robotics to incorporating mobile devices and adopting mobile applications.

“You have students, instructors, and research advisors all working together to support a local business in becoming more productive and competitive,” says Brent Wennekes, DTAPP project manager for RRC. “It’s a prime learning and networking opportunity for the students, and the firms involved benefit not only from the insights they receive from the reports, but from getting to test-drive potential future employees.”

Several firms have gone ahead and adopted the recommended technologies, and at least one student has gone on to work for their project client after the project was completed.

Sustainable Infrastructure

With its work in green building construction and the development and testing of electric vehicles, Manitoba is becoming known as a nucleus for sustainability in both Canada and throughout North America. To support the sustainable infrastructure and transportation network in Manitoba, Applied Research & Commercialization at RRC has developed a Sustainable Infrastructure and Transportation Cluster Map. The map highlights Manitoba-based facilities and expertise in this field and provides an interactive platform for participating organizations and users. The map can be found here: <http://mbsustainableclustermap.rrc.ca/>

TECHNOLOGY ACCESS CENTRE FOR AEROSPACE & MANUFACTURING



The Hon. Steven Fletcher, Minister of State (Transport); James Knight, President, Association of Canadian Community Colleges; MP Joyce Bateman (Winnipeg South Centre); the Hon. Gary Goodyear, Minister of State (Science and Technology); Stephanie Forsyth, President of RRC; and Dr. Suzanne Fortier, President, NSERC at the announcement of NSERC funding for RRC’s Technology Access Centre.



CMT robotic welding capability at RRC’s Industrial campus co-located at StandardAero, Centre for Aerospace Technology & Training (CATT).



Neil Dobson, Research Technologist (left), and Fred Doern, Research Chair (right) for the School of Transportation, Aviation & Manufacturing (right) with research robot Baxter.

Powering Innovation and Productivity for Industry and Students

In November 2012, the Honourable Gary Goodyear, Minister of State for Science and Technology, confirmed a grant of \$1.7 million through the Natural Sciences and Engineering Research Council of Canada’s (NSERC) Community and College Innovation Program to establish the Technology Access Centre (TAC) for Aerospace and Manufacturing.

Fred Doern, Research Chair for the School of Transportation, Aviation and Manufacturing, explained that the grant, paid out over five years, was to be used to create the TAC, focusing on innovation, research and training. The centre makes RRC’s expertise, research facilities and technology available to small- and medium-sized businesses involved in aerospace & manufacturing.

“This technology access centre builds on the partnerships RRC has formed with companies like StandardAero and Boeing Canada to enhance innovation and productivity in these key industry sectors,” says Stephanie Forsyth, President of RRC. “Ultimately, the research done through the TAC will create new jobs and other economic opportunities right here in Manitoba.”

At the TAC, industry works with RRC on applied research projects, technical service, and training activities. Aerospace and manufacturing-specific program graduates, co-op students and interns have the opportunity to work with experts in the industry. The students contribute to the development of new technologies, while developing skills and making important industry connections.

With industry partnerships like this, it’s no wonder that RRC has a 95 per cent employment rate for its graduates.

At the TAC, industry clients can pursue applied research and testing without interrupting their own production. The centre also offers various technical services such as the capacity to print a rapid prototype or to conduct non-destructive inspection tests. And the focus is on responding to industry requirements quickly. “For most of those companies, the answer is needed in a matter of weeks,” says Tracey Dyer, Manager of the TAC and Director of Business Development for the School of Transportation, Aviation and Manufacturing.

The three main areas of focus for the TAC are:

- Advanced Materials & Bonding (including composites and advanced joining/welding, 3D printing/additive manufacturing technologies)
- Imaging & Automation (including robotics, PLC’s/sensors/actuators, CNC, Non-Destructive Inspection)
- Simulation & Visualization (software, HD video & learning simulations, hardware simulators, etc.)

Over the past decade, RRC and its partners have invested over \$20 million in acquiring state-of-the-art technologies specializing in advanced materials and bonding, imaging and automation, and machine vision and simulation. The TAC initiative brings these facilities under one umbrella, making it easier for industry to access equipment and college researchers. In the future the TAC looks forward to even more collaboration in applied research projects with organizations of all sizes, both within and outside of the province.

Congratulations to Red River College for a decade of applied research leadership.

Innovate Manitoba looks forward to continued collaboration with the College towards the acceleration of innovation and prosperity for all Manitobans.

www.innovatemanitoba.com



STUDENTS BRING INTERNATIONAL BUSINESS INTELLIGENCE TO MANITOBA FIRMS THROUGH APPLIED RESEARCH



Tatjana Brkic, Business Applied Research Faculty Lead, Applied Commerce and Management Education (ACME) at Red River College (RRC), wanted to find a way for international business students to engage in research and to also contribute to the community. “When people think of the words applied research, they think of inventing a new machine. Why not have it mean finding a new way to market a product outside of Canada?”

Thinking of how to use student resources and research skills to help local business means looking at applied research in a different way. And, as usual, a new vision requires doing some homework.

“I began with a benchmark study to look at what colleges and universities in Canada, the United States and Europe were doing in the areas of applied business research,” explains Brkic. “I looked at our student body, too, and thought about what would be good value for our students. We have students here from all over the world who bring skills and business connections with them that are largely untapped.”

One area that Brkic examined was the lack of information about pertinent technologies, solutions, trends, and market opportunities in foreign countries that is available to small- and medium-sized enterprises. “Numerous studies have shown that a major reason that smaller businesses don’t enter international markets is because of the high cost of gathering the global business intelligence needed to make strategic expansion decisions. They don’t know the markets or the competition or the government regulations that might affect them. This is research we can do.”

With students from 15 different countries enrolled in the international business program, this research focus was a perfect match. The project combined the knowledge that the students brought from their home countries, the information and skills the students could learn through the research project, and the resources they could offer the local business community.

Brkic chose the renewable energy field as the first research focus. The college is conducting applied research on whether concentrated solar power will work in Manitoba’s harsh climate, so, with financial support from the Natural Sciences and Engineering Research Council, the study began with solar energy. The students researched concentrated solar power businesses



From left: Brent Wenmekes, Tatjana Brkic, Manas Chopra, Ana Priscila Eichstaedt, Pryanik Chaudhary, Jing Zhang, Jenny Wang, Aman Sexena at the Polytechnics Canada 2013 Student Applied Research Showcase.

in four continents to develop reports that looked at markets, competition, supply chain, barriers to entry, government policies, and technology applications.

The comprehensive report involved over 70 students. Fifty students put the reports together and the other 20 took the reports to small businesses. “The students shared research results with local environmental industries stakeholders to see if it was something they would like to investigate for a different sector,” says Brkic. “We received the most interest from the geo-thermal sector, so now the students are working on a project in that field. The students consulted the businesses to get their opinion on the value of the information to their operations.” Students developed communications skills and also had the opportunity to grow a

network of business contacts that have seen the quality of their work and who can help them find jobs after graduation.

“Making business intelligence research a part of our program benefits everyone,” explains Brkic. “We have the opportunity to create networks of cooperative businesses; our students can supply affordable research, gathering strategic business intelligence that small- to medium-sized companies might not have access to, or are unable to afford.

In April 2013, the project was presented at the annual Polytechnics Canada Applied Research Showcase in Calgary. Entitled, Global Business Intelligence for Renewable Energy Solutions, the project was represented by a team of six RRC students with the support and guidance of advisors with Applied Research & Commercialization at RRC. The college made a strong showing in their first competitive venture as a polytechnic. The Honourable Jason Kenny described the students and their project in his speech as an excellent example of how immigrants can add value to the Canadian workforce.



**Canadian
Manufacturers &
Exporters**

Helping Manufacturers grow their business.

LET’S TALK!

WWW.DARETOCOMPETE.CA | 204.949.1454

Congratulations to Red River College on 10 years of applied research!



**Manitoba Chapter
Canada Green Building Council**

Our vision: A sustainable built environment in Manitoba.



(204) 943-1023 | admin@mbcagbc.org



**Winnipeg
Construction
Association**

Congratulations on 10 years of Applied Research!

The Winnipeg Construction Association is your source for construction information services, advocacy, education & more.

www.winnipegconstruction.ca • 1447 Waverley Street • 204.775.8664



**ICTAM congratulates
RRC on 10 successful years
of applied research.**

www.ictam.ca

ictam
building connections

BIG DREAMS COME TRUE IN WINNIPEG.

At Boeing Winnipeg, we’re proud to be the largest composite manufacturer in Canada and a leading-edge, tier-one supplier to the revolutionary 787 Dreamliner. We’re equally proud to be a top employer and vital member of the greater Manitoba community, celebrating more than 40 years of building innovation and opportunity across Canada.

BOEING

WHAT'S COOKING

AT THE PATERSON GLOBALFOODS INSTITUTE?



Presenting a featured dish at Jane's using Granny's Finest chicken

L-R: Stan Chung, VP Academic & Research; Craig Evans, CEO, Granny's Poultry; and Chef Jeffrey Brandt



Keith Müller, Dean, School of Hospitality and Culinary Arts demonstrates new equipment.

Culinary Arts Meets Science

The students and chefs in the School of Hospitality and Culinary Arts at the Paterson GlobalFoods Institute (PGI) are taking applied learning and research in their field of study to new levels by teaming up with Manitoba food producers to develop new products for the marketplace and for commercial use.

Still in its beginning stages in its new building, the school is eager to work closely with the food industry on product innovation and development. A shining example of this is the college's partnership with Granny's Poultry Farmers Cooperative. "Partnering with an industry-leader like Granny's Poultry benefits culinary students and researchers through the opportunity to conduct food technology research in this state-of-the-art institute," said Stan Chung, VP, Academic and Research, RRC.

The college's work with Granny's includes students working with the firm's research chef to build and test new chicken recipes and get them ready for the marketplace. Winnipeggers can enjoy the benefits of the collaboration at Jane's, the urban, upscale restaurant that occupies the main floor of the institute in Winnipeg's Exchange District.

There is a belief in the marketplace that fresh is best. "Here we are trying to create products that will have that fresh taste and texture after being prepared from frozen," says Mavis McRae, Research Professional in Food Technology with Applied Research & Commercialization at RRC. "With our technical capabilities, we can show food producers how their food works under various conditions and collect data by doing comparisons with other similar products." Hospitals, schools, long-term residences, any organizations that need to prepare meals for a lot of people are all interested in producing healthier and tastier products, and the institute's resources can help make that possible.

"All the prepared foods on your shelf start with a recipe, and any time that students get a chance to experiment with new ingredients or are challenged to come up with new recipes, it enhances their education," explains Keith Müller, Dean, School of Hospitality and Culinary Arts. Competitions challenge students, too. At a recent competition, Mission Impulsive, sponsored by Pulse Canada, RRC students finished very well with an ice-cream, chocolate chip sandwich made from chickpeas and lentils. "This exposure to the food industry challenges students to exercise their creativity and product development skills—resources they will tap into when they begin to work."

"We've started conversations with a number of companies to enhance our co-op program, too," says Müller. "We are also working with the Food Development Centre in Portage la Prairie, where we hope to have a chef student working alongside food scientists on a food

product development project. We're also trying to coordinate similar co-op options with the University of Manitoba Food Science Department – blending food science and culinary skills with food product development."

Another exciting research area emerging from PGI is for RRC's culinary students to combine their applied research with health research to develop recipes with certain nutritional content. Sometimes foods need to incorporate a certain amount of a nutritional component to meet a health claim. Students in the School of Hospitality and Culinary Arts can work on recipes, explore various foods that can work in the product to meet the health claim, and eventually look at commercialization. The students can go beyond just adding five more grams of something to meet the claim. By using their culinary skills, they can work with nutritionists to design a product that tastes good, provides the promised health effect, and gives consumers more options.

"We've just begun to explore the options," says Müller, "but we're excited about our new links with the Manitoba food industry and the wonderful opportunities ahead for our students."

• • •



School of Hospitality and Culinary Arts instructor, Tim Appleton teaches a class in Jane's.

CURRY INDUSTRIES LTD.

Congratulations
on your
10th Anniversary

Researching Sustainable Eco-Technology
The Cattail Bioplatform Harvesting System™
Natural Solution for Cleaning Water
A Made in Manitoba Solution

www.curryindustries.com

PIONEER TRAILBLAZER EXPLORER DEFENDER
CREATOR REBEL PIONEER EXPLORER TRAILBLAZER INNOVATOR VISIONARY PIONEER
REBEL PIONEER CREATOR EXPLORER DEFENDER TRAILBLAZER REBEL PIONEER CREATOR EXPLORER VISIONARY REBEL PIONEER CREATOR

The University of Manitoba
congratulates
RED RIVER COLLEGE
on 10 years of research achievements
and collaborations that play a vital role in
building Manitoba's economy.

UNIVERSITY OF MANITOBA | Research and International
umanitoba.ca/research

Congratulations
Red River College
and AR&C for TEN
years of excellence
and innovation in
applied research

number 10

Number TEN Architectural Group
310-115 Bannatyne Avenue
Winnipeg MB | www.numberten.com



Greetings from the Honourable **Michelle Rempel**,
Minister of State for Western Economic Diversification

On behalf of our Government, I am pleased to congratulate the Applied Research & Commercialization (AR&C) office at Red River College on your 10th Anniversary. As a structured research enterprise, AR&C has achieved success by fostering innovation through collaboration.

In the year ahead, creating jobs and securing economic growth will remain our Government's top priority. We also remain committed to strengthening innovation and skills development. The work that's been done at Red River College over the past 10 years demonstrates the results that can be achieved when government, industry and academia work together.

Western Economic Diversification Canada is proud to work with Red River College on projects aimed at finding new and innovative ways to meet industry demands and, at the same time, develop skilled workers to join the workforce. These projects cover a broad spectrum of activities, including research and development, as well as skills training in aerospace, vehicle technology, digital media, and culinary arts.

I wish you all the best and continued success as you embark on your next decade.

Vœux de l'honorable **Michelle Rempel**,
ministre d'État chargée de la Diversification
de l'économie de l'Ouest canadien

Au nom de notre gouvernement, j'ai le plaisir de féliciter le bureau de recherche appliquée et de commercialisation (RAC) du Collège Red River à l'occasion de son dixième anniversaire. En tant qu'entreprise de recherche structurée, le bureau de RAC connaît le succès en misant sur la collaboration pour encourager l'innovation.

Au cours de la prochaine année, créer des emplois et assurer la croissance économique demeureront la priorité ultime de notre gouvernement. Nous continuerons aussi de stimuler l'innovation et le développement des compétences. Par son travail accompli au cours des dix dernières années, le Collège Red River montre les résultats qui peuvent être obtenus lorsque le gouvernement, l'industrie et les universités unissent leurs efforts.

Diversification de l'économie de l'Ouest Canada est fier de travailler avec le Collège Red River à la réalisation de projets destinés à trouver des moyens novateurs de répondre à la demande de l'industrie et, en même temps, de former des travailleurs qualifiés pour renforcer la main-d'œuvre. Ces projets sont réalisés dans un éventail de domaines d'activités, dont la recherche et le développement ainsi que la formation professionnelle en aérospatiale, en technologie automobile, en médias numériques et en arts culinaires.

Je vous adresse tous mes vœux de succès continu pour la prochaine décennie.



A MESSAGE FROM THE PREMIER OF MANITOBA

On behalf of the Province of Manitoba, it is my pleasure to congratulate Red River College on ten years of ground-breaking applied research.

Our government is committed to creating more opportunities for Manitobans to learn the skills they need to find good jobs and raise their families here at home, while ensuring employers have the skilled workers they need to grow their businesses and our economy.

That's why we are proud to partner with Red River College and to build the new Skilled Trades and Technology Centre. Building on our joint initiatives like the electric bus currently under development with Mitsubishi Heavy Industries, New Flyer Industries, and Manitoba Hydro, the centre will provide new opportunities for more Manitobans to pursue rewarding careers in trades and technology.

This state-of-the-art facility will eventually accommodate nearly 1,000 students learning high-demand trades, and is critical to delivering on our government's commitment to add 75,000 new skilled workers to Manitoba's economy by 2020.

By working together, we are creating job and training opportunities for Manitoba families that are growing our economy and helping keep Red River College at the forefront of global trade and technological innovation.

- Premier Greg Selinger



UN MESSAGE DU PREMIER MINISTRE DU MANITOBA

Au nom de la Province du Manitoba, j'ai le plaisir de féliciter le Collège Red River pour ses 10 années de recherche appliquée d'avant-garde.

Notre gouvernement est fermement décidé à créer plus de possibilités pour les Manitobains et les Manitobaines afin que ceux-ci puissent acquérir les compétences dont ils ont besoin pour trouver de bons emplois et élever leurs familles ici même, ce qui permettra également aux employeurs d'avoir accès aux travailleurs spécialisés dont ils ont besoin pour la croissance de leur entreprise et de notre économie.

C'est pourquoi nous sommes fiers de travailler en partenariat avec le Collège Red River afin de construire le centre de la technologie et des métiers spécialisés. Dans le prolongement de nos initiatives conjointes, comme l'autobus électrique en cours de développement avec Mitsubishi Heavy Industries, New Flyer Industries, et Manitoba Hydro, le centre offrira de nouvelles possibilités aux Manitobains et Manitobaines et permettra à un plus grand nombre d'entre eux de se lancer dans des carrières enrichissantes dans le domaine des métiers spécialisés et de la technologie.

Cet établissement ultramoderne dédié aux métiers à forte demande pourra accueillir près de 1 000 élèves et sera un instrument clé dans la promesse faite par notre gouvernement de soutenir l'économie manitobaine par l'ajout de 75 000 travailleurs spécialisés d'ici 2020.

En travaillant ensemble, nous créons des emplois et des possibilités de formation pour les familles manitobaines qui contribuent à la croissance de notre économie et à maintenir le Collège Red River au premier plan de l'innovation mondiale dans le domaine des métiers spécialisés et de la technologie.

- Premier Greg Selinger



THANK YOU!



Applied Research & Commercialization at Red River College would like to extend a heartfelt THANK YOU to all those who made this publication possible.

This special feature about AR&C at RRC was produced by newINK Publishing Solutions and the Winnipeg Free Press.

Contact us to explore research partnership possibilities

Ray Hoensen, FEC, P. Eng.,

Director, Applied Research & Commercialization, Red River College

C5-06 2055 Notre Dame Avenue • Winnipeg, MB R3H 0J9
Voice: 1-204-632-2523 • Fax: 1-204-633-3079 • RHoensen@rrc.ca

IISD is a global leader in developing innovations in sustainable development and economic solutions to environmental challenges

WE ARE PROUD TO PARTNER WITH RED RIVER COLLEGE TO MEET SOME OF THESE CHALLENGES

Congratulations on 10 Years of Applied Research!

iisd

International
Institute for
Sustainable
Development

Institut
international du
développement
durable

PROMOTE

heal

GROW

develop

To learn more go to LSAM.ca

support

FEED



LSAM congratulates Red River College on 10 years of applied research, their work makes for a better Manitoba.



LSAM
Life Science
Association of Manitoba

focus

fuel

connect

RESEARCH

THE SCIENCE OF LIVING BETTER.

innovate

Produce

CREATE

deliver



**NSERC
CRSNG**

TEN YEARS OF HELPING PEOPLE AND IDEAS GROW TOGETHER

In today's competitive world, putting people and ideas together creates the building blocks for success.

Ten years ago, NSERC launched our community college grants to help colleges support more applied research in their community. We began with a budget of \$2.8 million and Red River College was one of our first colleges.

This year, NSERC will invest almost \$50 million in over 60 colleges across Canada.

These colleges help communities grow by powering innovation and growth for companies, especially for small and medium-sized enterprises that are the drivers of jobs and growth. Colleges also ensure students have the knowledge, practical skills, and experience that will make them employable.

That is why NSERC is proud to be a leading partner with Red River College, and colleges across Canada.

Through innovative applied R&D and a commitment to training the next generation, Canada's colleges help businesses of all sizes succeed:

86%

of companies who worked with a researcher through an NSERC college project felt the results met their needs.

Two in five

companies told us they were able to grow their company by hiring new staff, increasing annual revenue, or even acquired new customers.

Congratulations to Red River College on 10 years of applied R&D success.

**Janet Walden,
Chief Operating Officer, NSERC**

www.nserc-crsng.gc.ca



Natural Sciences and Engineering
Research Council of Canada

Conseil de recherches en sciences
naturelles et en génie du Canada

Canada