

Le Collège communautaire du Nouveau-Brunswick

Growing industrial services and applied research potential

Over the past decade, the *Collège communautaire du Nouveau-Brunswick* (CCNB) has stepped up its efforts to support and promote innovation and technology integration initiatives in New Brunswick's industrial and manufacturing sectors. These activities enable the institution to play a more direct role in the province's economic development.

The CCNB's research and industrial services capacity has progressed steadily over the years. Since 2005, the institution has developed an innovation-driven ecosystem by recruiting a research director with a Ph.D. from McGill University. In 2008, the CCNB joined Springboard Atlantic Inc., a network of universities and colleges that supports the commercialization of research in Atlantic Canada. It also recruited an engineering-trained liaison officer to forge growing and sustainable ties with the industry. In 2009, the CCNB reached a milestone in its commitment to innovation: it became eligible for grants from the Natural Sciences and Engineering Research Council of Canada (NSERC) and shortly thereafter obtained a substantial grant (\$2.3M) for the pre-commercial development of biotechnologies in Atlantic Canada.

Furthermore, innovation activities performed by our teaching staff, in collaboration with businesses, help them stay up to date in their field of expertise and understand the training needs considered relevant and necessary by the industry. The 2013 first edition of *Canada's Top 50 Research Colleges List*, published by ReSearch Infosource Inc., reveals that the CCNB is among the first 50 Canadian colleges in terms of research revenue in 2011 and 2012.

Research networks and partners

The dynamic character of the CCNB drives its successes, as the college fulfills its mandate focused on business-based innovation and technology integration. It fulfills its role as an innovator by proposing original solutions to problems in the industrial sector. It also realizes that, to carry out applied research, it must forge partnerships with companies, universities, research institutes and various coordinating bodies.

Strategic research and industrial services areas

To date, the CCNB has identified four strategic research areas that require the expertise of qualified staff in one or more of its campuses:

1. Development of industrial bioproducts

In 2010, the CCNB received a five-year, \$2.3 million grant from NSERC to set up a **Biorefinery Technology Scale-Up Centre** for the entire Atlantic region. The institution also received financial support from the New Brunswick Economic Development Department, the New Brunswick Department of Energy and the Atlantic Canada Opportunities Agency to purchase equipment for pilot scale processes.

A research team working at the Grand Falls site of the CCNB – Edmundston Campus supports the industry in its bioproduct promotion efforts. The team uses microbial fermentation, enzymatic hydrolysis, bioseparation and chemical process technologies to produce high value-added industrial bioproducts (namely bioethanol, biogas, biodiesel and alcoholic beverages) from forest, agricultural and marine biomass as well as from industrial and municipal waste.

The centre gives university researchers and companies the opportunity to test their technologies at near-production scale thus validating their technologies before undertaking commercial production or negotiating the value of their technology with a licensee. Furthermore, the centre has mobile pre-commercial equipment that can be used by its

staff of biorefinery experts to demonstrate innovative processes to the industry. The centre helps to reduce potential financial risks of adopting new technologies.

The research group focuses its efforts on the following services:

- Developing new processes and technologies;
- Demonstrating processes and technologies;
- Completing pre-market assessment of concepts;
- Providing technological support;
- Providing specialized analysis for hops, malt, beer, spirits and others;
- Training employees of a company on the use of technology for the biofermentation of waste from the forestry, agricultural, marine, industrial and municipal sectors.

2. Mechanical prototyping and advanced assembly and welding technologies

The CCNB's second priority research area relies on the expertise of a research and industrial services team located in the CCNB – Bathurst Campus. The **Metal Innovation and Technology Transfer Centre** specialize in mechanical prototyping and the development of mechanical processes or procedures that use advanced assembly technologies.

The team can undertake research and industrial services projects of various kinds: some require just a few hours of work, while others, funded mainly through research assistance grants, can take place over several months or even years.

The team strives to support the technological developments of the metals industry in New Brunswick and the Atlantic Provinces by providing the following services:

- Development of mechanical procedures and processes
- Prototyping and concept validation
- Technology integration projects
- Development of assembly procedures and processes

In 2014, the team broadens its mandate by contributing to the promotion and the development of advanced welding technologies through demonstrations, specialized training and applied research projects.

3. Agro-industry sustainable development

The agro-industry sector is a new strategic research area of the CCNB. Since 2012, the CCNB has been managing a team – located in Grand Falls – active for the past twenty years. The **Eastern Canada Soil and Water Conservation Centre** contribute to the innovation of the agro-industry and its sustainable development through partnerships and professional collaborations with entrepreneurs and support agencies for the further development of the sector. It is able to offer various services throughout Atlantic Canada, namely the development and integration of technologies, specialized technical assistance, the search for practical and economical solutions and the development of diagnostic as well as soil and water management tools.

The agro-industrial services and research activities of this group of experts fall mainly in the following sectors:

- Soil and water conservation
 1. Application of best management practices

2. Soil, crop and nutrient management
 3. Agricultural environment
 4. Agroforestry
- Independent and confidential review of environmental farm plans
 - Mapping, applied geomatics and precision agriculture

4. Support services for the composite materials industry

The development of businesses that incorporate composite materials is the highest priority of the research and industrial services sector of the CCNB in the Acadian Peninsula. In fact, the institution supports the development of a recently created industrial cluster in the field of composite materials – **NB Composite Cluster Group Inc.** – by providing companies with the necessary technical assistance and training to increase their expertise, their productivity and their competitiveness in this highly specialized field.

Furthermore, over the past several years, our institution has supported the development of composite materials in an effort to diversify the regional economy. In 2005, it organized the first provincial symposium on composite materials and incorporated a 10-week training on composite materials to a metal assembly program. The CCNB is a member of the *Regroupement des industries des composites du Québec*.

Services offered

- Thermal processing of parts
- Technical assistance
- Prototyping
- Technological integration, testing and characterization of materials or products
- Staff training

The CCNB owns an hydraulic compression press (*Wabash, Genesis series*), the only one of its kind in New Brunswick for compression molding, superplastic molding, bonding and laminating. The device supports small-scale production, since closing, compression, heating and reopening processes are fully automated.

5. Health and wellness

The health and wellness sector is a priority research area for the CCNB – Dieppe Campus. Led by a researcher from the *Université de Moncton*, the institution is taking part in research work on the health and wellness of professional drivers thanks to financial support from ACOA (\$1.8 million over three years) and with the participation of the Atlantic Provinces Trucking Association. The purpose of the project is to develop a commercial software application, particularly a driver health toolkit, that will provide an assessment and response method adapted to the unique working conditions of professional drivers. The kit will include two modules, one on analysis and the other on corrective measures, designed to analyze a driver's driving skills, health, attitude and attention levels and provide recommendations specific to the driver's lifestyle. As part of this project, the CCNB is gathering field data using a mobile laboratory travelling around the Atlantic Provinces and supporting the lead researcher in their analysis. The mobile laboratory is equipped with a truck driving simulator and biopsychological measuring devices.

The CCNB wishes to exploit its industrial services and research potential by increasing partnerships to carry out applied research projects focused on health and wellness.

A growth accelerator for innovative businesses

Rapid technological changes and the emerging needs of industry require the CCNB to renew and update its existing study programs and develop new ones in order to meet the requirements of the knowledge-based economy.



In addition to the training it provides and its current research areas and industrial services, the CCNB is making efforts to align its applied research and innovation mandate with the strategic priorities emerging in New Brunswick's economy. The integration of composite material applications, green technologies, the environment and food safety are areas the CCNB plans to closely monitor to be able to respond to industry's emerging innovation needs.

The CCNB is also coordinating a province-wide project on value-added wood products. The New Brunswick Wood Products Industry Innovation and Commercialization program is an initiative of the Atlantic Canada Opportunities Agency, the New Brunswick Department of Economic Development and the CCNB. Through this program, FPIInnovations offers the service of two industrial advisors specialized in productivity or marketing.

Moreover, the CCNB also fulfills mandates from federal and provincial agencies to organize technology-based trade missions in Canada and abroad. On a wider scale, the CCNB assists companies participating in these missions with their innovation approach by introducing and adapting new technologies. The support services provided by the CCNB allow innovative businesses to quickly and efficiently upgrade their skills, their methodologies and their technologies to ensure their growth.

Contact

Jean-Jacques Cormier

Industrial Liaison Officer - Research and Industrial Services

(506) 378-4207

jean-jacques.cormier@ccnb.ca