

# Applied Research

Red River College brings industry partners' project ideas to life through our technology, facilities and expertise.



**Solving today's industry problems.**

**Training tomorrow's industry leaders.**

A gateway to the vast base of knowledge, capabilities, facilities and industry networks that reside at Red River College – a Canadian leader in applied research and commercialization.

Our research and innovation is applied – meaning its purpose is to deliver a measurable return on investment for you and for our economy, through increased productivity, competitiveness, jobs, exports and more.

### COLLABORATIVE APPROACH

Driven by the needs of industry, we work as a team to find solutions for today's challenges – as well as tomorrow's.

We own our intellectual property but freely share it. We grant commercial rights freely to support economic development, which means IP is not an impediment to successful collaboration and commercialization.

### TRACK RECORD OF SUCCESS

- 15 years of Research Partnerships & Innovation
- RRC is one of Canada's Top 50 Research Colleges
- Synergy Award from NSERC (2015)
- \$85 million in capital investments
- RRC applied research involves more than 1,800 students, 170 faculty, 60 courses

We deliver technical services, applied research and training to other organizations through our industry-focused centres. We serve industry partners to drive innovation and economic growth in Manitoba – and beyond.



- Advanced manufacturing and materials
- Automation, robotics and prototyping technologies
- Non-destructive inspection and simulations



- All Weather Climatic Chamber testing
- Chassis Dynamometer testing
- On- and off-highway heavy vehicle testing



- Building materials and assembly testing
- Whole building testing and commissioning
- Building performance monitoring



- Cold weather/climatic and emissions testing
- Vehicle-related software and technology integration
- Energy conservation/alternatives



- Food prototyping and ingredient utilization
- Recipe development and process improvements
- Food styling, food photography and consumer taste testing





# AEROSPACE AND MANUFACTURING

TECHNOLOGY ACCESS CENTRE

Cost-effective, practical solutions to support the aerospace and manufacturing industries through research and development, technical and business services, training and knowledge dissemination.



**75**

## Partners

The total number of organizations that partnered with TACAM.\*

**130**

## Projects

The number of projects developed and conducted for clients.\*

**\$3.2M**

## Revenue

The amount of revenue received by TACAM for project operations.\*

**\$12M**

## Capital Acquisition

The amount of additional facilities and equipment available to industry.\*

## SIX AREAS OF EXPERTISE

- Advanced Manufacturing and Materials
- Smart Factory and Learning Factory
- Manufacturing Automation and Robotics
- Rapid Prototyping Technologies
- Non-destructive Inspection
- Physical and Computer-based Simulations

## FIVE RESEARCH FACILITIES

### SMART FACTORY

Evaluating emerging technologies such as advanced robotics, factory automation and simulation, additive manufacturing, reverse engineering and industrial network technologies.

### MODEL FACTORY MACHINE SHOP

Saving time and money on design, prototyping, inspection, machining and additive manufacturing.

### CENTRE FOR AEROSPACE TECHNOLOGY & TRAINING

Evaluating new joining and bonding processes and materials to support partners before making a major capital investment or interrupting their existing production flow.

### COMPOSITES MODEL FACTORY

Manufacturing and assembling composite aerospace components, and providing training in our fully equipped facility.

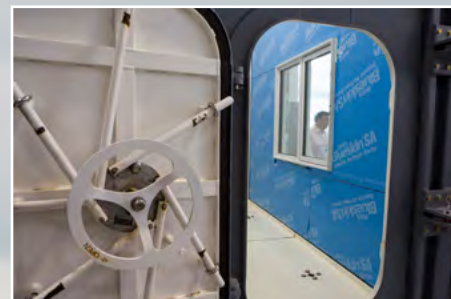
### CENTRE FOR NON-DESTRUCTIVE INSPECTION

Inspecting new and existing composite products using the Laser UT® System

\*All Figures for April 2017 - December 2019.



Supporting the building industry by helping clients address the challenges of designing and constructing durable, energy-efficient building envelopes, components and assembly in an environment with extreme conditions.



## RESEARCH TECHNOLOGY

The Centre for Applied Research in Sustainable Infrastructure (CARSI) at Red River College is the primary location where BETAC develops applied research activities.

### ENVIRONMENTAL CHAMBER

BETAC has access to two side-by-side chambers to evaluate thermal performance of windows, doors and mock-up wall systems.

### AIR, WATER AND STRUCTURAL CHAMBER

BETAC's air, water and structural chamber is intended to stimulate innovation in the design and construction of building envelopes.

### WHOLE BUILDING AIRTIGHTNESS TESTING

BETAC's whole building airtightness testing provides a quantified result to help clients determine the cost/benefits of a retrofit.

### PORTABLE TECHNOLOGY

We can bring our portable technology and flexible training options directly to clients.

## THREE AREAS OF EXPERTISE

### BUILDING MATERIALS AND ASSEMBLY TESTING

Identifying new techniques and testing full assemblies to save resources and money.

### WHOLE BUILDING AND SUBSYSTEMS TESTING AND COMMISSIONING

Testing concepts before implementation to enhance environmental sustainability.

### BUILDING PERFORMANCE BENCHMARKING AND MONITORING

Helping clients to stay up-to-date with the industry's best practices.

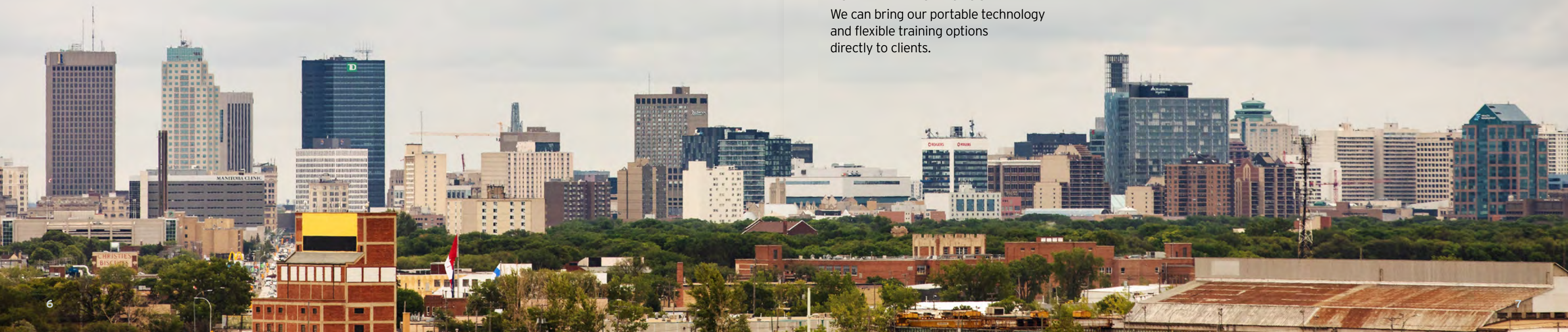
## AWARDS

### NSERC'S SYNERGY AWARD FOR INNOVATION

As a measure of the innovative capacity housed within BETAC, the Centre's staff were among the recipients honoured when the Natural Sciences and Engineering Research Council of Canada (NSERC) presented a Synergy Award for Innovation to the partnership between Manitoba Hydro and Red River College in February 2016.

### INNOVATION IN APPLIED RESEARCH AWARD

BETAC also won a bronze award for Innovation in Applied Research during the closing gala of College and Institute Canada's (CICan) annual conference in 2015. As with the NSERC honour, the award celebrated the College's dynamic applied research partnership with Manitoba Hydro.





# PRAIRIE RESEARCH KITCHEN

TECHNOLOGY ACCESS CENTRE

Creative solutions to support food processors and food service providers through research and development, technical services and training. The Prairie Research Kitchen brings together a unique blend of food science and culinary arts to develop solutions for our clients.



## RESEARCH SERVICES

### RESEARCH AND DEVELOPMENT

- Rapid prototyping
- Ingredient applications
- Consumer research trials
- Food process improvements

### TECHNICAL AND BUSINESS SERVICES

- Recipe development
- Food photography
- Trade show support
- Access to resources and funding

### TRAINING AND KNOWLEDGE DIFFUSION

- Customized training
- Safety and processing
- Networking events
- Corporate on-site and in-house training

## BLENDED EXPERTISE

### CULINARY ARTS

Chefs and culinary students use their expertise in creating great tasting food to research.

### FOOD SCIENCE

Food scientists' knowledge of food systems, scientific methods and food safety elevate product creation and processing.

### MARKETING AND BUSINESS

Consumer testing and market trends and knowledge help shape new product ideas and outcomes.

### STUDENT WORKFORCE

Our network of students supports cost-effective food research and prepare a new generation of food developers.

**70**  
**Partners**

The total number of organizations that have partnered with the Prairie Research Kitchen.\*

**120**  
**Product ideas**

The number of products created, developed and conducted for clients.\*

\*All Figures for 2013 - 2019.





# VTEC

Vehicle Technology & Energy Centre

Connecting national and international vehicle manufacturers with College researchers, staff, students and facilities to find innovative approaches in vehicle performance and development.

Manitoba's presence as a major transportation hub is growing, and VTEC is fuelling that growth with the development of new on- and off-highway vehicle technologies.

## INNOVATION EXPERTISE

- Cold-weather/climatic testing
- Vehicle-related electronics and software
- Energy conservation and alternatives
- Light weighting/materials
- Technology integration
- Emissions testing

## RESEARCH SERVICES

Our areas of focus include the use of renewable fuels, improving the fuel efficiency of fleets, and evaluating and demonstrating emerging technologies, with an emphasis on extreme weather conditions.

Clients stay in the driver's seat while we accelerate their projects with:

**Applied Research** into current and emerging on- and off-highway vehicle technologies.

**Technical Services** such as testing and evaluating components, systems and vehicles.

**Training** by preparing tomorrow's workforce to ensure the successful commercialization of new innovations.

## 60,000 Square-foot complex

The Vehicle Technology and Research Centre is comprised of a series of facilities that combine academic and industrial functions, with a large shop area that replicates a typical work environment in the transportation and trucking industry.



# MOTIVELAB™

All-Weather Climatic Chamber and Chassis Dynamometer Test Facility

**MotiveLab™** is a research facility focused on supporting Manitoba's heavy vehicle sector.

A unique facility for Western Canada, MotiveLab™ is capable of supporting on- and off-highway heavy vehicle testing and development requirements for the entire region.

## CAPABILITIES

- MotiveLab™ has the ability to test vehicles at temperature extremes throughout the year, while under full-load conditions.
- The climatic chamber has an operating temperature capability of between -40°C and +50°C (independent of outside ambient temperature).
- MotiveLab™ is capable of accommodating transit buses and highway coaches, as well as off-highway vehicles such as tractors and self-propelled harvesting equipment.
- Vehicles can be tested on an integrated, adjustable, high-performance, three-axis 1,000 HP chassis dynamometer.
- MotiveLab™ is able to simulate various ground topologies, such as slopes.
- The Chassis Dynamometer has the ability to regenerate the power it produces back into the overall chamber power load.

Additional research equipment/instrumentation includes portable emissions test equipment, data loggers, a biodiesel refinery, a 7.7KW Level 2 AC charging station, a 30KW DC quick charger, specialized battery testers, tools and protective equipment required for testing electric vehicle batteries.

## 7,000 Square-foot facility

MotiveLab™ is home to a combination All Weather Climatic Chamber and Chassis Dynamometer test facility that caters to vehicles of all sizes across various markets.



