



Canada's Climatic Testing Experts

Test your products in any weather condition



National Research Council Canada

Conseil national de recherches Canada

Canada^{ca}

Measuring 30 metres in length, 6 metres in width, and 6 metres in height, the NRC climatic testing facility is one of the largest and most versatile of its type in North America.

Climatic testing

Extreme weather conditions can be the ultimate proving ground for your product. No design process or computer simulation can foresee every scenario in which nature will penetrate and disable your product or equipment. But climatic testing will reveal them all; right before your eyes. Climatic testing is one of the most reliable and accurate way to expose a considerable range of product deficiencies in all conceivable types of weather.

NRC's climatic testing facility is one of the largest and most versatile in North America. It provides a single location to test performance under an exceptionally wide range of conditions and temperatures and our expert staff have decades of experience in design and testing for extreme climatic conditions. Whether you use the facility for climatic evaluation of the HVAC system in full-size rail cars, testing of a new de-icing agent, torture testing new systems in a military vehicle or for other purposes, you will get expert analysis and results faster.

Our current facilities

Designed specifically to evaluate the performance of even the longest and largest commercial and military equipment, vehicles, and components under severe climatic conditions, the NRC climatic testing facility offers:

- › Chamber size: 30 m x 6 m x 6 m (100' x 20' x 20')
- › Temperature range: -51°C to +55°C (-60°F to +131°F)
- › Available services: compressed air, refrigerated fresh air, water, steam, engine exhaust extraction, monitoring of hazardous gases
- › Data: Over 200 channels for data acquisition
- › Electrical: 600 VAC, 900 VDC
- › Accommodation capability: from light passenger vehicles to rail locomotives
- › Climate simulation:
 - ☁ Snow
 - ☔ Rain
 - ❄ Freezing rain
 - 🧊 Ice
 - 🌫 Fog
 - ☀ Solar heating simulation
 - 🌀 Turbulent wind simulation

“NRC environmental conditioning support has allowed 3M Canada to secure and deliver significant new or ongoing business with the US Department of Defense for our high performance personal respiratory protective filters.”

- Glenn Long, Business Development Manager Military
3M Canada Company

New Climate Testing Facility Improved capacity for your products

GREATER TEMPERATURE RANGE -65C TO +71C: Users can now test their products in the entire range described in the MIL-810 standard. This temperature range covers product used in the high arctic and in non-air-conditioned storage facilities in the world's hottest desert regions.

LARGER SPACE 36.6M X 15M X 7.6M: The facility is large enough to accommodate multiple vehicles simultaneously, including locomotives and other large ground vehicles. The entire front of the building opens up as a doorway to accommodate exceptionally large test object such as aircraft.

GREATER VERSATILITY: The test space can be divided into multiple temperature zones using removable walls and can simulate indoor/outdoor environments for communications product testing or thermal shock simulations. The space can even be adapted to set up obstacle courses for human-machine interface (HMI) testing, human performance testing and shelter testing in extreme climates.

4-AXLE DYNAMOMETER: The unique 4-axle, independent 8-wheel dynamometer provides maximum flexibility for dynamic road testing. The dynamometer can be easily reconfigured to test a 4 axle vehicle at an incline or even multiple 2 and single axle drive heavy vehicles under various climatic conditions.

FULL SPECTRUM SOLAR DIURNAL CYCLE SIMULATION: The metal halide lamp technology in the new facility allows near-true simulation of the sun's heating and UV spectrums. Day/night diurnal cycles can be accurately simulated, providing a valuable test-bed for your products performance.

HIGHER WIND SPEEDS: While not a wind tunnel, turbulent wind of up to 140km/hr can be simulated in the facility, which allows simulation of harsh wind conditions, along with driving rain and snow conditions. The wind feature also simulates the conditions experienced by a vehicle as it moves at or above highway speeds.



WORLD-CLASS EXPERTISE

With over 40 years of experience in investigating and developing solutions for climatic impact on rail, military, aerospace and commercial products, NRC's team of climatic engineers have all the experience needed to solve even your most difficult climate testing challenges.

Climatic testing with NRC can add value to your business and operations in five important ways:

- 1. Demonstrate that your product meets customer specifications**
You can qualify your products for current and future applications in all kinds of environments.
- 2. Test your prototype** • Get access to “weather on demand”, regardless of the season. No matter what time of the year, you can test your prototype in any weather condition.
- 3. Specify the environmental conditions you want and hold them there** • Don't chase fleeting weather conditions around the country. Keep your test team in one location and keep it productive.
- 4. Pinpoint failure modes no matter how elusive** • Hold or sweep through any matrix of temperatures, humidity, or precipitation and spot trouble as it emerges.

- 5. Subject your product to environmental extremes**
Find your product performance limitations before your customers. Avoid in-service failures and warranty claims by setting operating guidelines for your product for even the most extreme conditions.

“NRC climate engineers helped us test a chiller vest and thermal blanket system to support the rapid deployment of Canada's main battle tanks in 2007. NRC assistance was key in developing a solution that allowed Canada's tanks and crews to operate effectively in the summer heat of Afghanistan.”

Lt.-Col. (Retired) Stéphane Siegrist,
Canadian Armed Forces

NRC Climate testing expertise is available to your company. Along with secure building access and the ability to pursue projects in strict confidentiality, NRC offers flexible business arrangements to suit your testing needs. Call us to find out how we can work together.

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NR16-226/2018E-PDF
ISBN 978-0-660-26759-3 PDF
ISBN 978-0-660-26760-9 PAPER

June 2018
Également disponible en français