

# MECHANICAL TESTING LABORATORY

## TESTING, DEVELOPMENT, PRODUCT R&D

SPECIALIZED TEST FACILITIES TO DELIVER RELIABLE, COMPREHENSIVE RESULTS



Kinectrics is  
registered to  
ISO 9001

### A multi-faceted challenge

Determining how materials react to cyclic, static or seismic loads can be a requirement in the design phase of a project, in meeting legislated safety standards, or in validating a manufacturer's specifications for load bearing.

### An established leader

Kinectrics' leadership in assessing the performance of structures and components under both normal and abnormal conditions has been developed through decades of hands-on experience with one of North America's largest utilities. Our state-of-the-art laboratory houses several unique facilities: from universal test machines, a strong floor, and environmental chambers to a conductor dynamics laboratory. With a full complement of expert professional and technical staff, Kinectrics has the capabilities to meet the testing needs of utilities, industries, governments and private consultants.

#### ***Mechanical Testing Laboratory***

- One-stop shop for all your mechanical testing needs
- Independent third party laboratory testing
- Effective problem troubleshooting to reduce costs
- Flexibility to meet your unique needs
- Fast, efficient testing services

### Comprehensive expertise

Kinectrics maintains a comprehensive independent full-service testing facility with a broad range of equipment traceable to national and international standards. A Nuclear Grade Quality Assurance Program is also in place and can be applied to tests as required.

The Mechanical Testing Laboratory was established in 1921 as part of Ontario Hydro's internationally acclaimed Research Division, with a mandate to meet mechanical testing requirements in fields related to power generation, transmission, and distribution. Kinectrics' expertise has grown to encompass testing on all forms of engineered equipment for power generation, transmission and distribution and other fields that use high performance structures and components, i.e.: transportation, manufacturing and heavy construction.

## Complete facilities

Components can be off-loaded by a 5 ton or 20 ton crane into the main test area, which houses a full complement of equipment ranging from standard universal test units to high-speed fatigue machines. Using hydraulic actuators and load frames, very large and heavy components can be tested on a "strong floor". The strong floor consists of anchor points embedded into a reinforced floor structure and allows tension, compression and shear loading of major components. Dynamic and static loads of up to 1,200,000 lb. (5400 kN) can be achieved on this floor.

Components can also be tested under varying environmental conditions in a specialized Environmental Chamber. Loads can be applied to components while enduring environments ranging from -60°C to +90°C. Humidity can also be varied from 20% to 95% with temperatures ranging from 20°C to 85°C.

Kinectrics houses a specialized Conductor Dynamics Laboratory providing studies such as Aeolian vibration, galloping, fatigue, self-damping and creep tests on overhead conductors, skywires and fibre optic cables. Special rigs are also available to perform fatigue or damping tests on vibration and spacer dampers.

Kinectrics labs are fully equipped with state-of-the art electromagnetic shakers and hydraulic actuators, servo-hydraulic controllers, transducers, instrumentation and data acquisition systems. Many tests can be conducted on your site if required.

**Table 1. Mechanical Laboratory Equipment and Facilities**

<b>600 Kip Satec</b>	Capacity 600,000 lb. (2700 kN) Tension or Compression	Sample length to 8 ft. (2.75 m)
<b>120 Kip Satec</b>	Capacity 120,000 lb. (500 kN) Tension or Compression	Sample length to 8 ft. (2.75 m)
<b>5 Kip Baldwin</b>	Capacity 5,000 lb. (22 kN) Tension or Compression	Sample length to 4.5 ft. (1.5 m)
<b>100 Kip Horizontal Machine</b>	Capacity 100,000 lb. (450 kN) Tension	Sample length to 50 ft. (15.25 m)
<b>200 Kip Horizontal Machine</b>	Capacity 200,000 lb. (900 kN) Tension	Sample length to 50 ft (15.25 m)
<b>Satec Fatigue Machine</b>	Capacity 55,000 lb. (250 kN)	Sample length to 3 ft. (1m.)
<b>Strong Floor</b>	Physical Dimensions 20 m x 10 m	Multi-point loading up to 1,200,000 lb.
<b>Conductor Dynamics Lab</b>	Two variable spans max. length 280 ft. (85 m) and 120 ft. (37 m) Capacity 100,000 lb. (450 kN) Tension	
<b>Environmental Chamber</b>	Physical Dimensions 6 m x 2.5 m x 2.5 m Temp. Range -60°C to +90°C Capacity 22,000 lb. (100 kN) High-speed cyclic or static tension	
<b>Ovens and Cold Chambers</b>	For thermal aging max. size 1 m <sup>3</sup> Temp ranges -70°C to +170°C	

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