



### INNOVATION

Complete engineering, design and development capabilities.



### MANUFACTURING

Manufactured using Bergstrom's World class manufacturing systems and processes.



### QUALITY

Designed, engineered and manufactured in the U.S. and China facilities.



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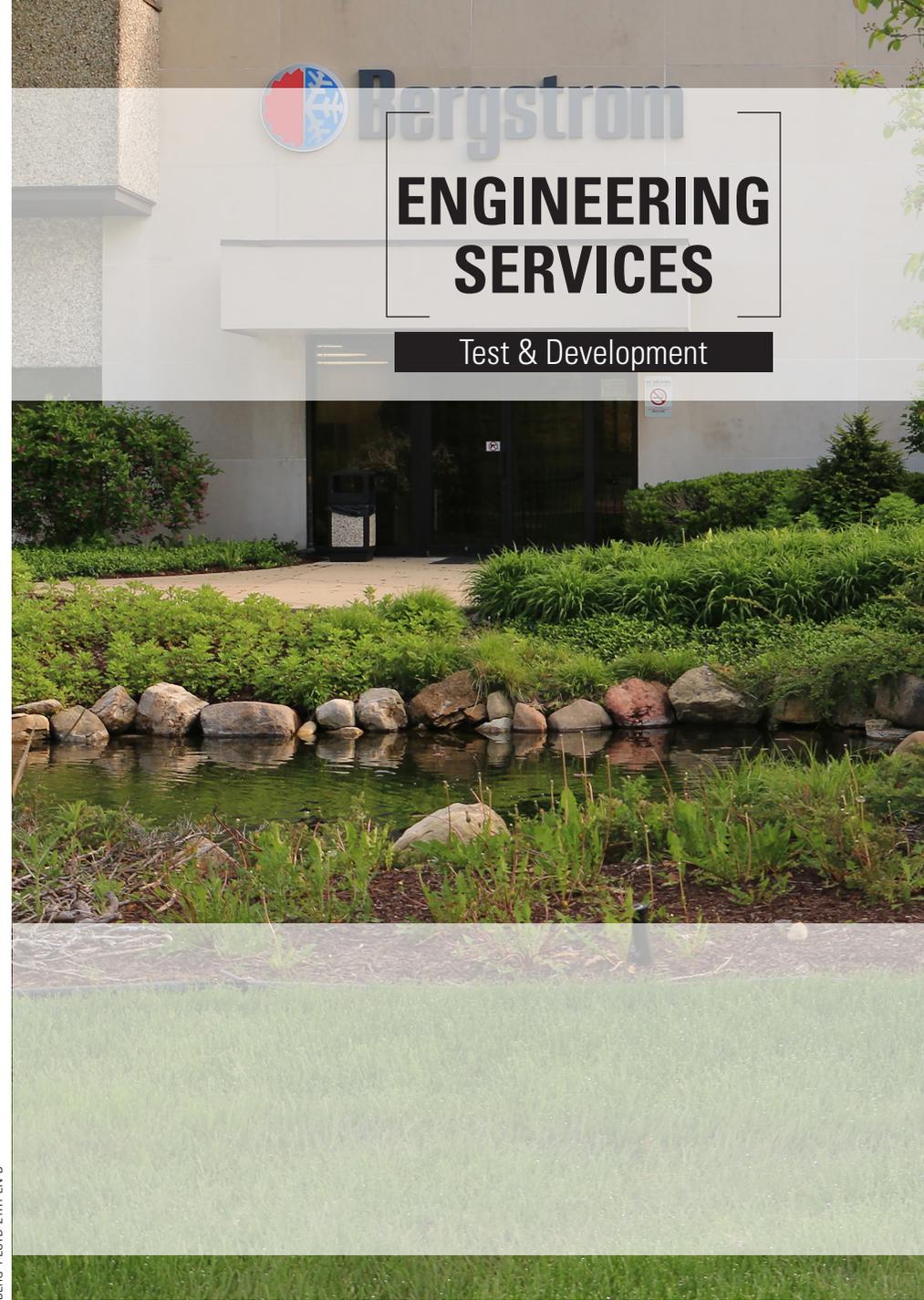
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BERG-TESTD-21RI-EN-B



## Vehicle Environmental Chamber

With the automotive industry constantly changing and adding new innovative technology, the need for testing either for research or manufacturing is more important than ever. All components and systems can be tested in environments that reflect weather conditions all over the world. Our team can help customize your specific environmental testing applications.

Available services

- Full vehicle instrumentation
- Vehicle component simulation, cabin only testing
- High speed data acquisition
- Data analysis
- Comprehensive test report

Test ranges include

- Temperature: -20°C ~ +52°C
- Relative Humidity: 10% ~ 98%
- Air Flow: 1.5m/s ~ 8.5m/s
- Coolant Temp: -18°C ~ +91°C
- Max Coolant Flow: 17L/min
- Chamber Size: 4.9m X 14.6m X 5.8m
- Door Size: 3.6m X 5.5m
- Max Solar Power: 1000W/m<sup>2</sup>

Available testing and evaluations

- Air Conditioning System Performance
- Heater System Performance
- Defrost System Performance
- Cab Insulation Testing
- Air flow
- Cabin pressurization
- Infra-Red Evaluation
- ATC Development
- Charge determination



## Halt Testing

Bergstrom offers HALT (highly accelerated life test), a stress testing methodology for improving product reliability. We work with customers to define and direct the testing process, using the temperature and/or vibration stresses available in accelerated life testing independently or in combination

Typical approach to component durability analysis

- Temperature step study
- Vibration step study
- Combined temperature and vibration study

Test ranges include

- Temperature: -100°C ~ +200°C
- Max. Temp. Change Rate: 60°C/min
- Vibration Level: 80Grms
- Vibration Table Size: 1m X 1m
- Frequency Range: 20Hz ~ 5000Hz



## Vibration and reliability

The demands made on HVAC equipment performance and reliability are constantly changing as the world around us gets increasingly more automated and as the machinery gets more powerful. One of the key components to testing the performance of products and systems is by using shock and vibration testing to measure and understand a product's response to a dynamic environment. Our skilled team can help properly gather and analyze the shock and vibration data for performance evaluation.

Environmental (AGREE) Chamber

- Cooling rate of 2.5C/min
- Temperature: -70°C ~ +150°C
- Relative Humidity: 25% ~ 98%
- Chamber Size: 1.4m X 1.3m X 1.5m

Data Acquisition and Analysis

- 16 channel measurement in application
- Ability to analyze and combine profiles
- Develop accelerated vibration profile from recorded data
- Vibration profile control with Kurtosion method

Vibration Table

- Large 48"x48" & Small 32"x32" Slip Tables & Head Expanders
- Force, Sine and Random: 68.5kN
- Force, Shock: 137kN
- Usable Frequency DC: 2500Hz
- Max Velocity (sine): 1.8m/s
- Max Acceleration (sine): 100G
- Max Static Payload: 1000kg
- Armature Load: 62kg
- Armature Diameter: 480mm
- Max Acceleration, Shock: 100G

