

# CTS

# Climatic Testing Systems

Bringing the Desired Climate to Your Doorstep



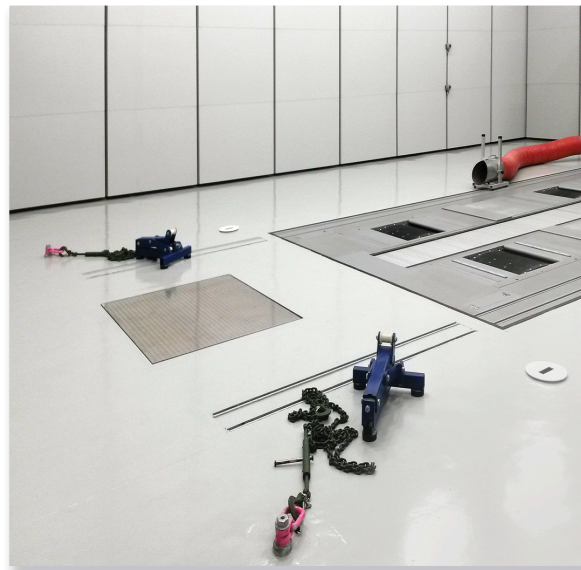
## NVH DRIVE-IN ACOUSTIC TEST FACILITIES



Full Vehicle Hemi-Anechoic and Anechoic Test Rooms with full climatic simulation to provide the ultimate acoustic development tool with high and low temperature function for test of all types of cars and light trucks. It provides the high temperature and low temperature environment for the automotive interior noise and vibration test and the NVH performance evaluation, analysis, diagnosis and improvement, etc., which meet the relevant test standards.

### System Design & Features

Parameter	Specifications
Outside Dimensions	12.255 m (L) X 9.255m (W) X 5.255m (H)
Inside Dimensions	12.0 m (L) X 9.0m (W) X 5.0m (H)
Clear Height for Vehicle	5.0 m
Walls and ceiling panel insulation	127mm thick Polyurethane Density > 45 kg/m 127mm 45 kg/m
Walls and ceiling interior finish	Stainless Steel, with embedded steel plate to install the acoustic material.
Walls and ceiling exterior finish	White Galvanized Steel
Floor Panel insulation	127mm thick Polyurethane
Floor interior finish	Stainless Steel, Anti-Slip surface
Floor Load	1,500 kg/wheel
Vehicle Entry Door	3.5m (W) X 3.0m (H), 127mm thick, Qty. 1, Double leaf swing door with heated door frame
Window Observation	Qty. 2, 1m (W) X 1m (H), Qty. 1 heated thermo pane window.
Lights	LED Lights, 500 Lux @ 20°C and 1m above floor, operation at -30°C.
Others	Sealed connections for Fresh air and Exhaust
Monitoring Camera	Qty. 4



(Over for more information)

### Test Chamber Temperature Specifications

Dry Bulb Temperature Range	-40°C to +50°C
Temperature Control Stability at NO heat load	≤±1°C
Temperature Control Stability at steady state running conditions with vehicle running	≤±2°C at 0.5m in front of the wind fan ≤±2°C,
Temperature Uniformity without heat load. <sup>1</sup>	≤±2°C
Control Type	PID with feed-back
Sensor Type	Platinum RTD
Measurement Accuracy	±0.1°C
Sensor Location	Air discharge of Wind fan

### Test Chamber Humidity Specifications

Humidity RangeFor	-30°C ≤T<7°C, No humidity Control -40°C ≤T<7°C For 7°C ≤T<40°C, 5%RH to 95% Limited by high dewpoint limit of 27°C
Humidity Control Stability with no vehicle running	≤±3%RH
Humidity Uniformity without heat load. <sup>2</sup>	≤±5%RH
Control Type	PID with feed-back PID
Sensor Type	Capacitive Film Humidity Transmitter
Sensor Accuracy	±3%RH
Sensor Location	Chamber air discharge

### Test Chamber Refrigeration System Specifications

Refrigeration Compressor	Semi-Hermetic Screw Compressors. 2 x 75hp compressors with economizer. Variable load capacity control with Hot gas bypass with staging
Refrigerant	R-404a
Cooling Coils	DX-Direct Expansion
Compressor Capacity	See system Heat load and capacity table

### Test Chamber Air Circulation and Conditioning Specification

Air Flow rate	40,000 m3/h
Minimum Evaporating Temperature	-50°C
Cooling Coils	DX-Direct Expansion
Conditioner Location	Located at the Air Handling Unit
Return Air Duct Connections	900mm x 1100mm
Supply Duct Connections	900 mm x 11000mm
Noise at duct entering muffler	≤50 dB(A)
Heat Type	Sheathed Electric Heater
Heating Capacity	60 kW
Heating Capacity Control	SCR

### Make-Up Air System Specifications

Fresh air flow to chamber	≥ -30°C = 500 kg/h ≥ -20°C = 500 kg/h ≥ 0°C =1,000 kg/h ≥ +10°C =1,500 kg/h
Pre-Cool	DX Coil
Pre-Heat	Electric Heater
Dehumidification	Desiccant Wheel
Pressure in the chamber	10 to 50 Pa
Intake air location	Outside the building, 0 to +40°C, 60%RH to 90%RH
Air Supply Min. dew point	≤-30°C
Air Supply Max. Temperature	≤+25°C

### Wind Fan System Specifications

Max. Flow	40,000m3/h
Nozzle Size	1.2m (W) x 0.8m (H)
Nozzle outlet Area	0.96m2
Wind Velocity	10 to 40 km/h
Control tolerance	±10%
Control Method	Variable speed drive with braking
Control Type	PID with feed-back PID
Sensor Type	Hot wire anemometer
Sensor Location	Center of Nozzle discharge

<sup>1</sup>Measured inside and within 1 m of the Test Vehicle Area.

<sup>2</sup>Measured inside and within 1 m of the Test Vehicle Area.



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### Climatic Testing Systems

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