TESTING & SIMULATION SYSTEMS

DRIVING OPTIMAL PERFORMANCE

AUTOMOTIVE A/C SYSTEM TEST ROOM

The Automotive System Test Room Facility was designed as a self-contained, state-of-the-art environmental research facility that will allow the user to simulate temperature, humidity, refrigerant and coolant conditions in order to test automotive A/C Systems. The support equipment was designed for continuous operation and ease of maintenance. ETC was selected to supply the Test Bench Facility based on our experience in providing environmental test facilities, comprehensive design, in-house manufacturing capa-bilities and a network of highly skilled service technicians located in the Detroit area.

APPLICATION

The purpose of an A/C Test Bench is to evaluate component performance for automotive HVAC Systems, as well as individual heater cores, evaporators and condensers. These systems simultaneously test vehicles with dual HVAC systems such as minivans, mini buses and sport utility vehicles and reduce set up and test time.

PROJECT RESPONSIBILITIES

Design/Build Services - Including turnkey construction of the A/C Test Bench Facility and supporting equipment.

Project/Construction - Including project management, on-site construction management and site supervision.

Commissioning Services - Including acceptance testing to verify facility performance, commissioning of the facility and training customer personnel.

AUTOMOTIVE SYSTEM TEST ROOM SPECIFICATIONS

PARAMETER*	SPECIFICATION*
Condenser	
Temperature Range	59° to 122°F (15 to 50°C)
Relative Humidity	20 to 90%
Frontal Velocity	0 to 26 ft/sec. (0 to 8.0 m/sec.)
Maximum Capacity	54, 592 BTU/Hr (16 KW)
Evaporator/Heater Core	
Air Temperature	32° to 122°F (0 to 60°C)
Relative Humidity	20 to 90%
Evaporator/Heater Core Airflow	50 to 500 cfm (85 to 850 m³/hr)
Maximum Capacity	36,000 BTU/Hr (10.5 KW)
Refrigeration Loop	
Refrigerant	134a
Compressor Drive Motor	30 HP
Capacity	36,000 BTU/Hr (10.5 KW)
Speed Range	400 - 6,000 RPM
Coolant Loop (50/50 glycol)	
Flow Rate	0 to 10 gpm (0 to 37 l/min)
Temperature Range	Ambient to 212°F (100°C)
Airflow Rate	50 to 500 cfm (85 to 850 m³/h)
Heating Capacity	36,000 BTU/Hr (10.5 KW)
Control Parameters	
Room Dry Bulb Temperature Range	50°F to 122°F (10 to 60°C)
Room Dry Bulb Control	PID with remote setpoint
Stability	± 0.3°C
Room Dewpoint Range	41°F to 95°F (5 to 35°C)
Room Dewpoint Control	PID with remote setpoint
Stability	± 0.3°C
Evaporator Air Supply Temperature Range	32°F to 122°F (0 to 60°C)
Evaporator Air Supply Temperature Control	PID with remote setpoint
Stability	± 0.3°C
Condenser Frontal Air Velocity Range	0 to 26 ft./sec. (0 to 8 m/s)
Condenser Frontal Air Velocity Control	PID with remote setpoint
Stability	± 3%
Compressor Drive Speed	400-6000 rpm PID with remote setpoint

*Consult factory for extreme performance conditions

APPLICATIONS	SOFTWARE
A/C System and Component Performance	Windows Environment using NI Labview

125 James Way • Southampton PA 18966
www.ETCEnvironmental.com

ETC TESTING & SIMULATION SYSTEMS