

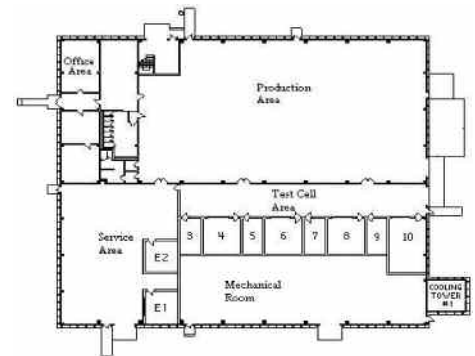
## ONE-STOP, ONE SOLUTION

- RESEARCH
- DEVELOPMENT
- TESTING
- MAPPING
- DURABILITY
- CERTIFICATION
- AUDIT
- COMPLIANCE
- CONSULTING

## ENGINE AND EMISSION

### FACILITIES:

Intertek Carnot Emission Services is located at KellyUSA, in a 29500 ft<sup>2</sup> facility previously utilized by the US Air Force for conducting hydraulic equipment testing on overhauled TF39 jet engines. The cooling tower capacity and compressed air supply is extensive. Power availability includes: 480, 230, 208, and 120 VAC. Test cells are equipped with conditioned intake air. There are eight test cells located along the main hall, and two test cells in the service area. Test cell capacity is from 20hp to 500hp with varying speed ranges up to 9000rpm.



### QUALITY:

Intertek CES is 9001-2000 certified.

### EQUIPMENT:

Intertek Carnot Emission Services uses AC dynamometers to control engine speed or torque. In-line torque transmitters measure torque during steady-state and transient operation. For generators, electrical load banks are available for 25 kW and higher power applications.

Emission development, audit, and certification testing is accomplished with full flow dilute CVS-PDP exhaust gas measurements of hydrocarbons (HC), nonmethane hydrocarbons (NMHC), nitric oxide (NO), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), oxygen (O<sub>2</sub>), and particulate matter (PM). Intertek CES can also measure exhaust gas recirculation using an intake CO<sub>2</sub> analyzer.

### EXPERIENCE:

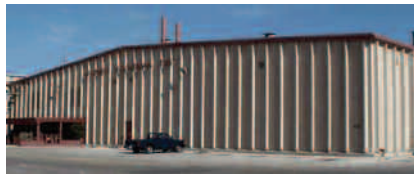
Intertek Carnot Emission Services' staff boasts over 50 years of combined engine research and emissions experience on engines ranging from 300 W to more than 1500 kW. This experience includes lawn and garden,



utility, marine, on-highway, agricultural, material handling, marine, locomotive, unmanned aerial vehicle, high performance, and other engine applications. Furthermore, Intertek CES' staff is experienced with gasoline, natural gas, liquified petroleum gas, diesel, and other alternate fuels, like E85.

Intertek CES' staff has conducted numerous programs requiring engine and emission research, development, general testing, mapping, durability, and certification including the following certification and compliance:

- 40 CFR 86 Subparts E/F  
- Motorcycles
- 40 CFR 86 Subparts I  
- FTP Smoke
- 40 CFR 86 Subpart N  
- On-Highway HD
- 40 CFR 89  
- Nonroad Diesel
- 40 CFR 90  
- Small SI
- 40 CFR 91  
- Recreational Marine
- 40 CFR 94  
- Commercial Marine
- 40 CFR 1065  
- Test Procedures & Equipment
- 40 CFR 1039  
- Nonroad Diesel
- 40 CFR 1068  
- Nonroad Programs
- 40 CFR 1048  
- Large SI
- 40 CFR 1051  
- Recreational SI



**CLEANING THE WORLD  
ONE ENGINE AT A TIME.**

## **BACKGROUND**

Carnot is a contract-based corporation that is dedicated to meeting SORE, LSI, stationary, marine, and nonroad CI and on-highway heavy duty engine test requirements defined by 40 CFR Parts 86, 89, 90, 1039, 1048, 1051, 1065 and other federal and state regulations. We provide independent engine evaluations, emission testing, and consulting support. Intertek CES uses fixed price contracts for its services that are menu priced, and consulting support is based on a fixed-price level of effort.

Intertek CES staff has worked with manufactures to develop emission deterioration development plans and certification applications that have received approval from both the EPA and CARB. We can prepare and submit emission certification applications to the EPA and CARB and support manufacturers with production line testing (PLT).

## **TYPICAL TEST PROGRAMS:**

- FTP On-Road Transient Test Cycle
- Non-road Transient Test Cycle
- World Harmonized Transient Cycle (WHTC)
- Other transient testing protocol
- ISO 8178 testing
- X-mode testing (ie, 8 mode, 13 mode, etc)
- Other steady state testing protocol
- EPA test protocols (Part 86, 89, 94, 1065, etc.)
- Production audit testing
- Marine testing
- Certification testing
- Deterioration factor (DF) testing
- Design validation testing
- Performance development testing
- Aftertreatment testing
- Catalyst testing
- Calibration optimization
- Particulate mass studies

## **MISSION STATEMENT:**

Intertek Carnot Emission Services exist to provide onroad and offroad engine manufacturers with full-service research, development, testing, durability, certification, and other related contract and consulting services that reduce exhaust emissions. Intertek CES will provide technology transfer performed at a competitive price, conducted with quality equipment and staff, and delivered with urgency to bring your product to market.

## **CONTACT INFORMATION:**

Intertek CES welcomes your inquiries. For additional information, please contact:

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