# Air Flow Laboratory

AFL
GSPEL Laboratory

**GVSC's Ground Systems Power and Energy Laboratory (GSPEL) Team operates the Air Flow Laboratory (AFL) which supports the execution of component level testing on several critical mobility systems on a variety of military vehicles by use of Calorimeter and Air Filtration Testing.**

## Calorimeter Testing

### Benefits

- Evaluate new heat exchangers and ballistic grilles
- Repeatable simulated field environmental conditions
- Test up to three heat exchangers as a pack
- Unbiased first-article test and production quality assurance

### Components Tested

- Radiators
- Oil Coolers
- Charge Air Coolers
- Ballistic Grilles

*AFL Calorimeter Test*

## Filtration Testing

### Benefits

- Evaluate new air cleaner systems
- Replicate field failures
- Assess impact of add-on parts to air cleaner systems
- Assess maintenance efficiency
- Unbiased first-article test and production quality surveillance

### Components Tested

- Air cleaner systems
- Add-on components to air cleaner systems (i.e. ducting, housings, connections, etc.)

*AFL Filtration Test*

# Capabilities

## Calorimeter Capabilities

### Cooling Air

- Air Flow Rate: 800 to 60000 CFM
- Air Flow Velocity: 3000 to 7000 ft./min.
- Inlet Air Temperatures: up to 250°F

### Radiator Loop

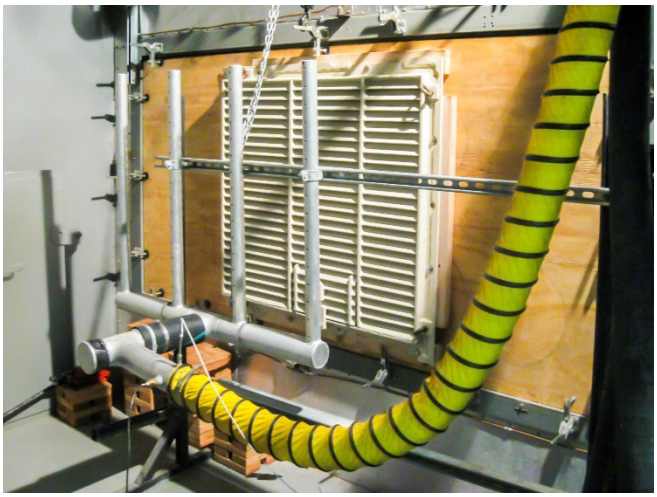
- Coolant Flow Rate: 10 to 300 gal./min.
- Coolant Inlet Temperature: 125 to 350°F
- Coolant Inlet Pressure: 0 to 125 psig

### Oil Cooler Loop

- Oil Flow Rate: 10 to 150 gal./min.
- Oil Inlet Temperature: 175 to 350°F
- Oil Inlet Pressure: 0 to 300 psig

### Charge Air Cooler Loop

- Charge Air Flow Rate: 30 to 150 lb./min.
- Charge Air Temperature: 150 to 650°F
- Charge Air Inlet Pressure: 15 to 90 psig



*Radiator Test Setup*

*Ballistic Grille Test Setup*

## Air Filtration Capabilities

Ambient air conditions are controlled in the Air Filtration laboratory. In addition to controlling temperature, the relative humidity can be set to the desired level.

### 250 CFM Bench

- Air Flow Rate: 8 to 250 SCFM

### 2000 CFM Bench

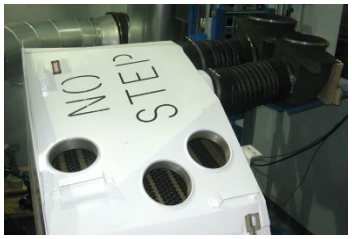
- Air Flow Rate: 80 to 2000 SCFM

### 5000 CFM Bench

- Air Flow Rate: 320 to 5000 SCFM

### 12000 CFM Bench

- Air Flow Rate: 800 to 12000 SCFM




*12,000 CFM Test*

*2,000 CFM Test Setup*

*2,000 CFM Test Setup*

DEVCOM GROUND VEHICLE SYSTEMS CENTER

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