

# SGS REAL WORLD PEMS EMISSIONS TESTING

## SGS PROVIDES A COMPREHENSIVE SUITE OF PORTABLE EMISSIONS TESTING SYSTEM (PEMS) SERVICES

The team at SGS has extensive experience providing engine, vehicle, emissions and performance testing services and is able to take that experience on the road. We offer a complete range of Portable Emissions Measurement System (PEMS) services to complement emissions testing in-use or in the laboratory. SGS's team of industry experts will provide comprehensive program solutions by working to understand your objectives, providing insight into industry trends, and developing a plan incorporating PEMS technology into your upcoming project.

### EMISSIONS ISSUES IN THE NEWS

The Real Driving Emissions (RDE) legislation (EU582/2011, EU6c (future)) in Europe and the heavy-duty diesel engine in-use compliance regulations in the US (per 40 CFR 1065) have driven advancements in portable emissions equipment and measurement methods. SGS recognizes the need for our customers to overcome these current and pending challenges for the purpose of compliance, regulation, and decision-making for engine development in both the traditional laboratory and real-world driving environments.

SGS continues to make significant investments in gas and PM instruments and measurement techniques for the development of next-generation vehicle and engine testing. Our customers now have the ability to fully test their vehicles on the road as well as correlate the recorded results within the test cell.

### CONTACT US

To request a quote or discuss your testing needs in detail, please call +01 844 730 4175 or email [us.transportation@sgs.com](mailto:us.transportation@sgs.com).



### CAPABILITIES

- In-vehicle or in-lab use
- GPS tracking
- Advanced data acquisition technology
- Photo-acoustic real time soot measurement & gravimetric PM sampling capability
- Compliance with 40 CFR 1065, EU582/2011 & pending EU6c
- Measurement of THC, NO, NO<sub>2</sub>, CO, CO<sub>2</sub> & O<sub>2</sub>
- Operating temperatures from -30°C to +45°C
- Sensors for ambient temperature, humidity & atmospheric pressure
- OBD/CAN interface
- Exhaust flow measurement
- Can test anything from vehicles, trucks, boats, and aircraft to generators and power plants

### INSTALLATION

- No vehicle modifications required
- Compatible with a wide range of vehicle types
- Small size & minimal weight
- In-vehicle, trailer hitch or custom mount

### SERVICES

- Installation & set-up
- Unit calibration & maintenance
- Vehicle procurement & certified driver
- Route planning & drive cycle
- Data collection, download & validation
- Engineering support & evaluation
- Part procurement & fabrication
- Field service & technical support

### REAL WORLD OR TEST CELL APPLICATIONS

SGS's PEMS can be used for in-use testing of new and older vehicles or machines including: validating engine or after-treatment control and on-board diagnostic (OBD) strategies, compliance against NTE limits, detecting "emission defeat" strategies, and capturing real-world driving cycles for playback in the laboratory.



# SGS EMISSIONS ANALYTICS SUPPORT

Extracting full value from in-use test data can be elusive due to the control system complexity and the massive amount of information that is logged at high frequency. Data analysis is made even more difficult by the real-world nature of in-use testing. The weather, drive route, road grade, traffic and driver tendencies can all have a profound impact on emissions. Interpretation of test data is far more challenging outside of the dynamometer laboratory because in-use tests are not reproducible. SGS has tested prototype and production launch vehicles using PEMS to provide our customers with real-world information that supports the vehicle development process.



## LET SGS ASSIST YOU WITH ANALYZING YOUR PEMS DATA

SGS has developed data analytics software and services to help engineers discover hidden relationships between emissions, fuel consumption and control system behavior.

- Test data are segregated into different modes of operation to provide statistics-based visualizations for an individual test or for the entire test campaign
- Pre-configured dashboards allow visualization of test data by subsystem and by event to provide insight for deeper data exploration
- SGS has developed clustering and association algorithms to explore low temperature operation, engine and catalyst control tradeoffs and emissions implications, as well as causation analysis for malfunctions and anomalies
- Machine learning is employed to isolate control system differences in situations where good and poor performance have been observed
- SGS provides a hierarchy of analytics solutions ranging from ad hoc data exploration to big data computing on a production scale

## SGS GLOBAL & LOCAL

**90,000 EMPLOYEES | 2,000 OFFICES & LABS AROUND THE WORLD**

### FUEL & COMPONENT SYSTEMS TESTING

Lapeer, MI

### MILEAGE ACCUMULATION CENTER

Jackson, MI

### ROCKY MOUNTAIN HIGH ALTITUDE TEST CENTER

Empire, CO

### VARIABLE ALTITUDE ENGINE & VEHICLE TESTING

Aurora, CO

### TEST CELL SOLUTIONS, SOFTWARE AND VARIABLE HORSEPOWER ENGINE AND VEHICLE TESTING

Columbus, IN

### CATALYST AGING & COMPONENT TESTING SERVICES

Taylor, MI

### COMPONENT TESTING & ENGINEERING SERVICES

Troy, MI

# SGS

WHEN YOU NEED TO BE SURE