PRODUCT PERFORMANCE

**Engine Test Cells**
- Measurement of gaseous and particulate emissions
- Measurement of on-engine aftertreatment and acoustical performance
- Component durability
- Multiple Test Cells in U.S. and Europe

**Test Cell Capability**
- Computerized steady state and transient test cycles
- Up to 2000 HP absorbing dynamometer
- Multi-channel data acquisition in each test cell
- 24/7 durability testing
- Web-based test cell monitoring

**Exhaust Gas Benches**
- Dynamic measurement of CO, CO₂, NOₓ, O₂, SO₂, VOC and HC
- Temperature Programmed Desorption (TPD; TGA-MS)
  - catalyst activity, loading and desorption profiles as a function of temperature

**FTIR Analyzer**
- Allows transient speciation of gases for aftertreatment development
- Quantifies multiple gas species including NO, NO₂, N₂O, and NH₃

**Sierra Instruments BG-3 PM Sampler**
- Measures steady state and transient particulate matter emissions
FIELD TESTING

Experience with a Wide Variety of Vehicles
- U.S. and European on-road, medium- and heavy-duty trucks
- Refuse haulers
- Special municipality vehicles; i.e., sewer vacs
- Off-road equipment: construction, mining and agricultural

Extreme Operating Conditions
- Hot to cold climates (California, Minnesota and Canada)
- High and low altitudes

Data Collection
- Filter weight
- Visual and mechanical inspection
- Collect real-time data from data logger
- Operational check

Performance Monitoring
- Rapid data collection rate to collect temperature, backpressure and other system performance parameters
- Review daily, weekly and monthly reports to analyze operational trends
- Telemetry data acquisition with GPS for real-time data collection