

Here are a few applications from the growing list of R&D and Manufacturing systems in use today. For more details, visit our website at <http://www.cybermetrix.com>

R&D Solutions	Description
Engine endurance testing.	Long term stress testing that characterizes and qualifies products to meet lifecycle objectives within predictable warranty limits.
Engine steady state and transient performance development testing.	Short-term testing that characterizes and qualifies engine hardware performance.
Engine calibration development testing.	Short-term testing that develops engine software parameters to meet performance and regulatory requirements.
Engine transient emissions testing.	Short term testing that characterizes and qualifies an engine configuration's transient emissions performance relative to regulatory requirements.
After treatment development testing.	Engine testing applied to development and characterization of various exhaust after treatment technologies.
Turbo endurance testing.	Testing to ensure the endurance of turbochargers through stressful life cycle testing.
Crank-angle resolved data collection and analysis.	Sub-cyclic in-cylinder pressure analysis, injection load and timing, and torsional analysis.
Emissions cart sampling and gaseous analyzer control.	Control and data collection of emissions carts that combine sample pumps, solenoids, gaseous analyzers and require both local and remote control.
CVS tunnel control.	Control of constant volume sampling tunnels used to perform transient emissions testing.
Mini-dilution tunnel control and sampling.	Emissions measurement system to precisely condition sampled exhaust gases.
Particulate emissions weighing and filter management.	Particulate matter measurement, environmental control and monitoring, and information management.
Oil cooler heat transfer testing.	Measuring and characterizing heat transfer through heat exchangers.
Head pressure drop and swirl rate testing.	Measuring airflows and pressure drops across an engine head. Measuring rotational energy in air to characterize in-cylinder air swirl rates.
Engine cold start testing.	Measuring and characterizing the performance of engine and emissions during starts at low temperatures.
Fuel injector endurance testing.	Long term testing to ensure that fuel injectors perform at specified levels throughout their lifespan.
Injector shot-to-shot variability testing.	Measures variability in injected fuel rates to support development low-variability metering and injection systems.
Facility control: Natural gas composition determination.	Measures, monitors, and distributes real-time natural gas constituent information for use in engine thermal efficiency measurements.

R&D Solutions con't	Description
Facility control: Facility support systems	Management of all support systems for a small engine test facility, including combustion air handlers, cooling tower & supply pumps, air compressors & dryers, test cell ventilation systems, hot water, chilled water, engine exhaust handling, and fuel supply.
Vehicle testing: data logging	On-vehicle analog and data link based data logging.
Vehicle testing: chassis dyno	Data acquisition from in-vehicle engine and cooling systems. Control of speed/load profile.
Control algorithm prototyping.	Controls prototyping development used to rapidly develop fueling and subsystem (variable geometry turbo, exhaust gas recirculation, etc.) controls for research purposes.
Vehicle, driver, and environmental simulation.	Real-time, Simulink-model-based vehicle and environmental modeling used to control and vary loads on products to measure and characterize driveability and performance during realistic use.
Turbo mapping and endurance testing.	Testing to characterize and develop the performance of turbines and compressors through their range of operations.
Manufacturing Solutions	Description
Manufacturing testing.	High cycle rate testing that ensures that shipped product conforms with engineering specifications.
Facility control: air-handling systems.	Manages air-handling valves, blowers, and humidity controls to support combustion air preconditioning.
Fuel pump production testing.	Ensures that fuel metering hardware performs within specified limits prior to on-engine assembly or shipment.

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