



FOCUSED ON **TESTING EXCELLENCE**

Lotus Engineering is at the forefront of efficient performance and clean fuel technologies, and leading the way in hybrid and electric vehicles.

Our multi-skilled technicians and engineers have extensive experience in developing and testing a wide range of powertrains including gasoline, diesel or alternative fuels as well as hybrid and electric systems. Over forty global test cells and emissions laboratories provide clients with comprehensive development and testing capability, from discrete tests to full development and validation on small or large powertrain programs, all to the latest worldwide legislation, emissions and conformity of production (CoP) requirements.

As an engineering consultancy and manufacturer of premium cars designed to excite and perform, our breadth of technical knowledge and understanding is unrivalled. Lotus Engineering's unique heritage as an OEM distinctively positions us in the market as an industry leading engineering consultancy. Our depth of knowledge, specialized skill sets, and test facility capabilities lend to that advancement.

Lotus Engineering is dedicated to meeting our clients' objectives and program deliverables on time, every time.

CORE SERVICES AND CAPABILITIES

- Engine durability and validation
- Transient diesel emissions development
- Powertrain development, article inspection and teardown
- Hybrid and electric powertrains
- Electric or internal combustion engine driven transmission testing
- Axle and driveline component testing
- Catalyst aging and component validation
- 24/7 operation of testing facilities

CERTIFICATION

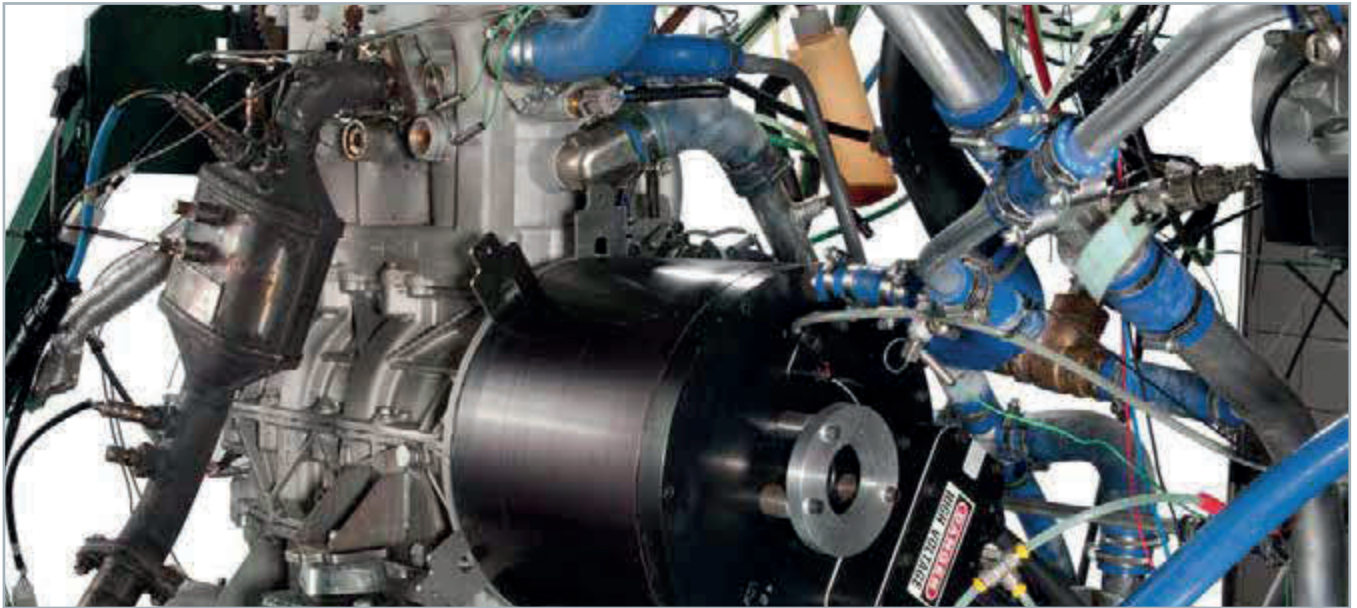
- EPA and CARB recognized for emissions certifications
- ITAR compliant (military)
- ISO 9001-2008 certified

POWERTRAIN LABORATORY

- Seventeen validation test sites
- Six development sites with extended powertrain length configuration capability
- Large powertrain development test site (long bedplate: 35 ft by 11 ft, wide bedplate: 20 ft by 14 ft)
- Large inventory of over 85 dynamometers
- Broad power range covering engines and powertrains from 2 to over 2,500 HP

EMISSIONS LABORATORY

- Two mileage accumulation chassis dynamometers for motorcycles and ATVs
- 48" chassis roll dynamometer
- Motorcycle dynamometer
- Evaporative shed
- Vehicle-soak room



SPECIALIZED TEST CAPABILITIES AND SERVICES PROVIDED

<p>Transient Diesel Emissions Testing</p>	<p>Provide calibration, development testing and durability testing to Tier 1 exhaust after-treatment system manufacturer.</p> <ul style="list-style-type: none"> • Map engine exhaust flow, calibrate air supply system, and determine transient and steady-state characterization. • Develop and optimize DPF regeneration light-off and performance control strategy. • Implement and validate control strategy utilizing continuous FTP and client defined multi-mode emissions cycles. • Verify NOx and PM reduction via emissions analysis and particulate measurement.
<p>Electric Motor Test, Development and Validation</p>	<p>Characterize the performance criteria of motor families from a leading global electric motor manufacturer.</p> <ul style="list-style-type: none"> • A Develop, build, implement and install necessary test sites capable of executing full suite of performance tests on hybrid electric motors. Including bespoke conditioning systems, bespoke cogging stand and bespoke spin loss stand.
<p>Calibration and Mapping</p>	<p>Perform fully automated engine mapping program in a test cell environment using ECM interfacing software for a leading global auto manufacturer.</p>
<p>Shipboard Marine Large Bore Engine Testing</p>	<p>Perform development and durability testing on engines displacing up to 92 liters and producing as much as 3,500 kilowatts of power for a leading global diesel engine manufacturer.</p>

LIGHTWEIGHT ARCHITECTURES - EFFICIENT PERFORMANCE - ELECTRICAL AND ELECTRONIC INTEGRATION - DRIVING DYNAMICS



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