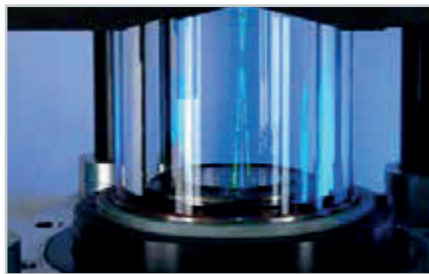
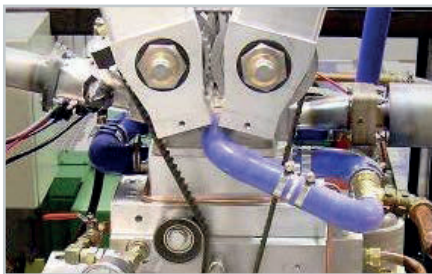


IN PURSUIT OF KNOWLEDGE

Lotus is a leading expert in powertrain research and development. We develop and apply that knowledge using unique single cylinder engines that facilitate cutting edge research, adopting individual customer requirements into our engine designs enabling direct correlation to multi-cylinder performance.

Single cylinder combustion research supports the development of new combustion systems and engine design without the investment in multi-cylinder prototype hardware for the benefit of faster and lower cost validation of new concepts, enabling new technologies and operating strategies to be developed using realistic engine conditions.



SCORE

Lotus thermodynamic single cylinder research engine (SCORE) is the entry system for research into combustion and engine design.

- Port fuel injection (PFI) and central direct ignition (DI)
- Spark ignition
- Gasoline based
- Capable of flex-fuel operation
- "Quick change" camshafts
- Lotus engine control system
- Cost effective, adaptable design, upgradeable to SCORE
- Accommodates Lotus AVT™ system

SCORE

Lotus single cylinder optical research engine (SCORE) expands the SCORE allowing real-time images of various phenomena inside the cylinder such as fuel spray dispersion and flame propagation to be captured.

- Unimpeded optical access to the whole of the combustion space
- Maximised angular access compatible with all modern laser measurement techniques
- Quick removal of the glass cylinder liner for cleaning <15 minutes
- High speed operation 5,000 rpm
- Cylinder pressures up to 60 bar

AVT™

Lotus Active Valve Train (AVT™) is an electronically controlled, hydraulically operated system that provides the control of individual valve lift profiles. Compatible with both SCORE and SCORE

- Full independent control of each valve with cycle to cycle variation
- Operates at real engine loads and speeds up to 8,000 rpm
- Rapid testing and development of engines without the need to change engine hardware
- Simulating camshaft designs without physical changes to the engine
- Adaptable to fit on a variety of single cylinder research engines



LOTUS SINGLE CYLINDER SPECIFICATION		
	SCORE & SCORE	OPTIONS
Bore	88.0 mm	To client's requirement * Limits between 80 mm to 100 mm
Stroke	82.1 mm	To client's requirement * Limits between 80 mm to 100 mm
Capacity	0.5 litre	Dependent on bore and stroke
Compression Ratio	10.5:1	To client's requirement
Valvetrain	4 valves – fixed timing and lift	To client's requirement • Number of valves • Mechanical VVL and VVT • Active Valve Train (AVT™)
Max Engine Speed	SCORE – 6,500 rpm SCORE – 5,000 rpm	AVT™ – up to 8,000 rpm
Combustion System	Lotus port and combustion chamber	To client's requirement
Fuel System	PFI or central DI	To client's requirement
Fuel Type	Gasoline, ethanol and methanol	To client's requirement • Diesel, JP8
Ignition System	Spark ignition	To client's requirement
Intake System	Lotus standard intake system	To client's requirement • Variable length • Intake depression • Pressure charged
Exhaust System	Lotus standard exhaust system	To client's requirement • Exhaust back-pressure
In-cylinder Measurement	SCORE – optical access	To client's requirement • Pressure transducer position and number
Cooling		Independent cooling system
Lubrication		Independent lubrication system
Installation		To client's requirements • Part or complete test-bed supply • Installation • Commissioning
Training	Operation and service training provided	Bespoke training packages available

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



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