



SOUTHWEST RESEARCH INSTITUTE



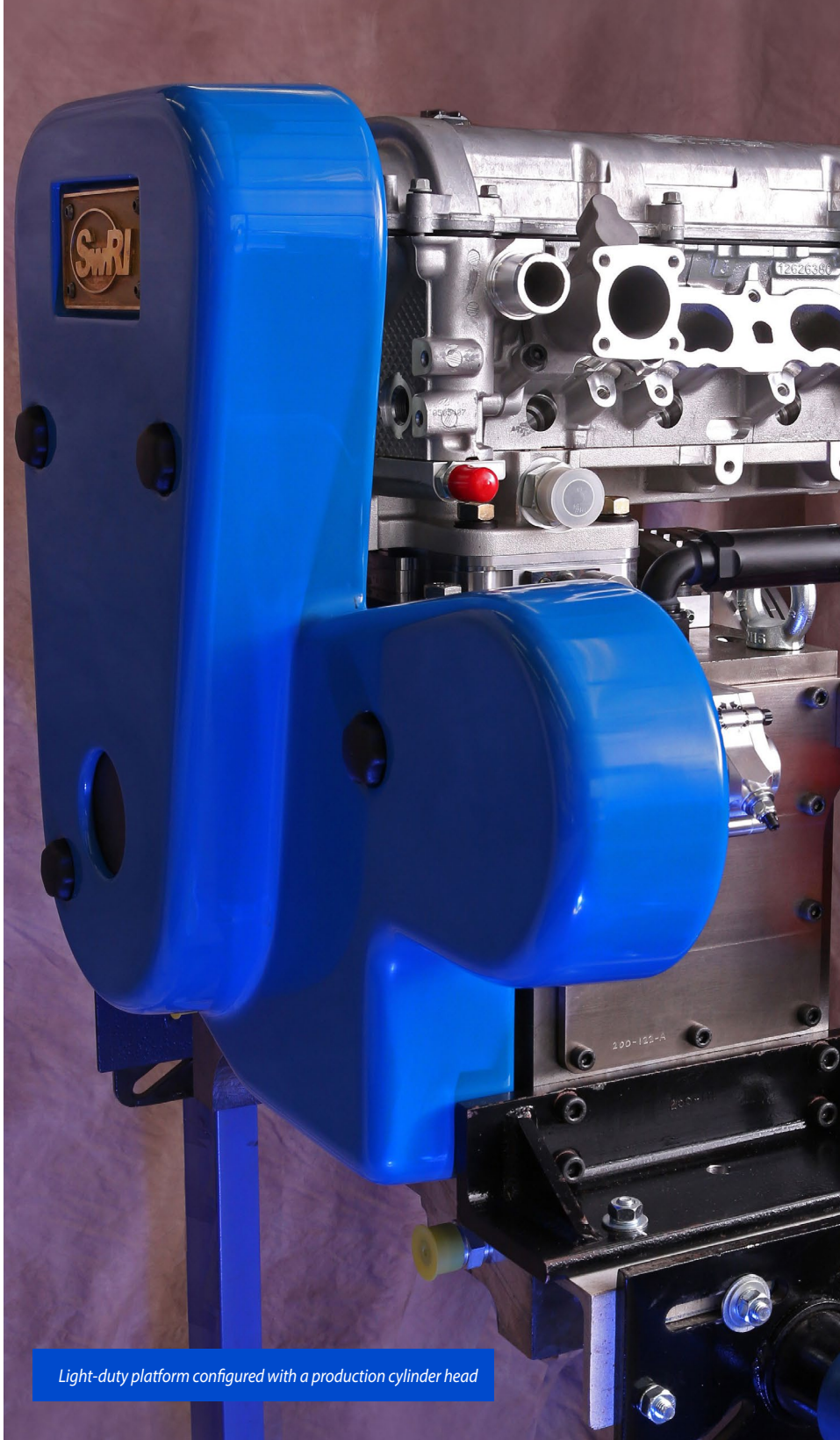
Single-Cylinder Research Engine

Southwest Research Institute® (SwRI®) offers a range of advanced single-cylinder research engines for use in combustion and tribology research and development.

These platforms are available for purchase for use in a client's laboratory or for contract research projects at SwRI.

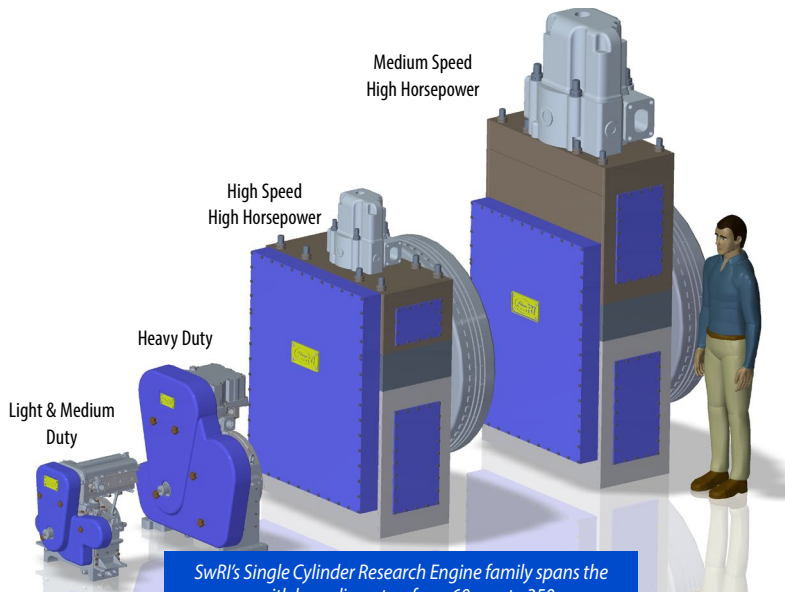
Unique Features

- The engines are designed for low-cost operation through the use of many commercial off-the-shelf replaceable components.
- Either customer-supplied or bespoke single- or multi-cylinder heads can be accommodated, to replicate the operation of production combustion systems and cooling strategies.
- Reconfiguration and customization options allow evolution over time. SwRI policy is to share CAD models of custom parts and interface drawings.
- Support, training, and documentation are offered with each engine, for straightforward commissioning, operation, ease of servicing, and to provide for accuracy and repeatability of measurement. This avoids hidden costs.
- Our highly flexible, affordable VVA (variable valve actuation) system is easy to operate, requires minimal electronic control, and is portable to different cylinder heads. Full authority, multiple-event VVA systems are also available.
- Various customization options are available to suit your specific needs and objectives.

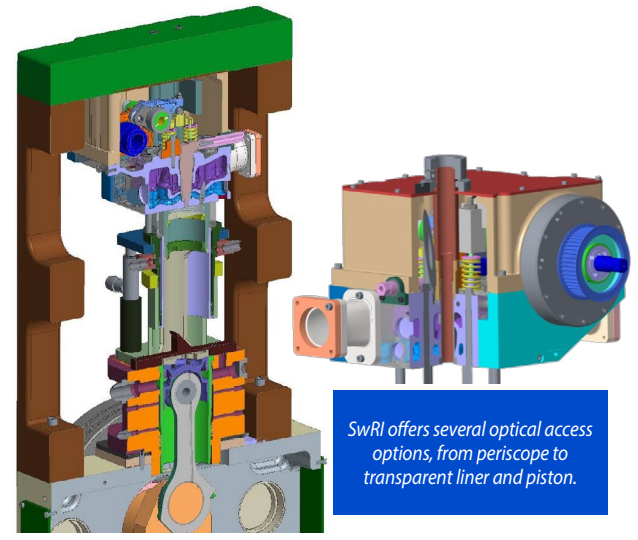


Light-duty platform configured with a production cylinder head

Advanced science. Applied technology.



SwRI's Single Cylinder Research Engine family spans the range with bore diameters from 60 mm to 350 mm.



SwRI offers several optical access options, from periscope to transparent liner and piston.

Specifications and Options

	Light & Medium Duty	Heavy Duty	High-speed High Horsepower	Medium-speed High Horsepower
Bore	60-110 mm	110-145 mm	150-200 mm	200-350 mm
Stroke	65-125 mm	110-185 mm	Up to 250 mm	Up to 450 mm
Peak Cylinder Pressure	200 bar at 110 mm bore	300 bar at 145 mm bore	300 bar at 200 mm bore	300 bar at 350 mm bore
Maximum speed	7000 rpm	2500 rpm	2000 rpm	1200 rpm
Variable cylinder offset	-5 to +20 mm	0 to 25 mm	Fixed	
Adjustable compression ratio		✓		
1st order balancing		✓		
2nd order balancing		Optional		✓
Cam phasing			Optional	
Advanced VVA			Optional	
Full authority VVA		Optional		
Optical access			Optional	
Grasshopper or piston telemetry			Optional	
Tribology pack			Optional	
Test cell boost cart			Optional	
Engine control		Optional – Commercial hardware and open source code		
Digital twin		Optional		



Our heavy-duty platform can withstand 300 bar peak cylinder pressure and has several customization options.

We welcome your inquiries. For more information, please contact:

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Southwest Research Institute is a premier independent, nonprofit research and development organization using multidisciplinary services to provide solutions to some of the world's most challenging scientific and engineering problems. Headquartered in San Antonio, Texas, our client-focused, client-funded organization occupies 1,500 acres, providing more than 2.3 million square feet of laboratories, test facilities, workshops, and offices for approximately 3,000 employees who perform contract work for government and industry clients.

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 Race/Color/Religion/Sex/Sexual Orientation/Gender Identity/National Origin/Disabled/Veteran
 Committed to Diversity in the Workplace

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