achatesPOWER Fundamentally Better Engines

**Achates Power Announces Plan to Build a Light-Duty Truck Engine that exceeds CAFE 2025 Regulations**

*The Opposed-Piston Engine demonstration vehicle will be more efficient, cleaner and cost less than current fuel economy solutions*

**Detroit – Jan 11, 2017** —Achates Power, Inc., today announced the development of an engine for a Light-Duty Truck demonstration vehicle, which will surpass CAFE 2025 regulations. The Opposed-Piston Engine, will be 30-50 percent more efficient than comparable engines, reduce emissions and cost less than alternative technologies under development for meeting CAFE.

The new Achates Power 2.7 liter Opposed-Piston Engine will make 270hp, 650Nm, the vehicle will achieve 37 MPG, above the 33 MPG fully phased-in CAFE 2025 requirement for a full-size, light-duty pick-up truck (65-70 sq. feet). The demonstration engine will be integrated into a drivable prototype in 2018; development engines will also be available for automakers.

“While we continue to work on our customer programs, and research and development programs (like Gasoline Compression Ignition), we are excited to showcase the fuel efficiency, low emissions and outstanding driving characteristics of our Opposed-Piston Engines,” said David Johnson, president and CEO, Achates Power. “There is no technical solution to respond to the proposed 2025 CAFE regulation that is as cost effective, compatible with our existing vehicles and fuels, ready for production and adaptable to future renewable fuels as our Opposed-Piston Engines.”

The EPA’s draft Technical Assessment Report released in 2016 forecast cost increases to integrate fuel saving technology, using this information and a related National Academy of Sciences report, Achates Power determined that including the Opposed-Piston Engine in the roadmap to achieve CAFE will be at least $1000 less expensive

The Opposed-Piston Engine uses fewer parts, including the eliminating the cylinder head(s) and related components, eliminating the valvetrain and related components, and a reduction in the aftertreatment system size and cost, among other things. A comparison between the 2.7L OP Engine and a comparable V6 with supercharger shows a part reduction of more than 60 percent, enabling an approximate 10 percent cost reduction.

“In 2014, we presented a peer-reviewed technical paper, Meeting Stringent 2025 Emissions and Fuel Efficiency Regulations with an Opposed-Piston, Light-Duty Diesel Engine, at the SAE World Congress showing how we were able to meet CAFE 2025 regulations in a Full-Size Truck,” said Fabien Redon, vice president, Technology Development at Achates Power. “And in 2018 we will have a demonstration vehicle that proves an internal combustion engine is able to cost effectively meet the CAFE standard, does not require the adoption of costly vehicle modifications, infrastructure upgrades, or a change in how the driver operates or maintains the vehicle.”

Achates Power has spent 13 years improving the opposed-piston engine, a historically efficient engine originally developed in the late 1800’s. The Achates Power Opposed-Piston Engine features two pistons per cylinder, working in opposite reciprocating action; the Opposed-Piston Engine does not need cylinder heads, which are a major contributor to heat losses in conventional engines. Ports in the

cylinder walls replace the complex poppet valves and friction-creating valve trains of conventional engines. The intake ports at one end of the cylinder and exhaust ports at the other are opened by the piston motion and enable efficient uniflow air scavenging. The two-stroke, compression ignition engine has been engineered to achieve superior thermal efficiency by the virtue of its lower heat losses, higher expansion ratio, lean combustion and reduced pumping losses.

“The OP Engine confirms what the industry already knows; the technology needed to exceed these standards and deliver fuel economy and cost savings to customers is currently available, and works with existing infrastructure and fuels,” said Johnson. “We have a development program underway to create the engine and look forward to coming back to the North American International Auto Show in 2018 to show our progress and we’re even more excited to drive the vehicle later that year.”

Achates Power currently has engine programs under development with 12 leading engine manufacturers, including work with Cummins on the Advanced Combat Engine for the US Army, an Opposed-Piston, Gasoline Compression Ignition Engine for the US Department of Energy’s Advanced Research Projects Agency-Energy (ARPA-E) in partnership with Argonne National Laboratory and Delphi Automotive, and Fairbanks Morse.

**About Achates Power, Inc.**

Achates Power, Inc. was founded in 2004 with the mission to build cleaner, more efficient engines. The San Diego-based company has an experienced staff of engineers and scientists focused on applying their proven technical know-how and expertise, coupled with the industry’s leading-edge testing, simulation and analysis tools. It is backed by top private equity firms Sequoia Capital Partners, RockPort Capital Partners, Madrone Capital Partners, InterWest Partners and Triangle Peak Partners. For more information, visit www.achatespower.com.

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