

## OPE Update

December 2013

### Achates Power Signs Contract with Fairbanks Morse

Achates Power signed a [joint development and licensing agreement](#) with [Fairbanks Morse Engine](#) to reduce emissions and fuel consumption of its proprietary diesel and dual-fuel opposed-piston engines. A pioneer in opposed-piston engine design, development and manufacturing, Fairbanks Morse provides powertrains for a wide range of mission-critical applications including nuclear standby power, emergency stationary power and telecommunications networks. The company also develops marine propulsion and ship service systems for the U.S. Navy and U.S. Coast Guard.



*"It will take us a couple of years to get the actual technology developed and incorporated into our engine," said Stephen Macadam, president and CEO of Fairbanks Morse's parent company, EnPro Industries. "But it could be a game changer for us in terms of providing a product that is far and away better from a fuel efficiency and emissions standpoint and cost standpoint than comparable engines in our size range."*

### Engine Demonstrates 24% Efficiency Advantage

The Achates Power opposed-piston engine has increased its fuel efficiency advantage from 21% to 24% over

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one of the best diesel engines on the road, the Ford Power Stroke. When compared to the Power Stroke, the

Achates Power engine demonstrates 24% lower cycle average brake-specific fuel consumption (the engine is over 50% more efficient than conventional, gasoline engines). These results come as Achates Power approaches a milestone of 5,000 test hours on its state-of-the-art opposed-piston engines. Click [here](#) for more detail.

## Top Industry Execs Join Advisory Board

Achates Power recently [announced](#) the formation of a new Industry Advisory Board. Comprised of global leaders in the automotive and commercial vehicle industries, the Advisory Board will help accelerate the company's product development and commercialization efforts.

"Having spent 43 years at GM--focused almost exclusively on powertrain engineering--I know how critical improving engine efficiency is to the future of sustainable transportation," explained Industry Advisory Board member Daniel Hancock. "After reviewing the Achates Power engine technology and results, I am excited to work with the company on its commercialization efforts."



*Industry Advisory Board members. From left: Dr. S.M. Shahed, Daniel Hancock, Dr. Karl Viktor Schaller and Bruno Linsolas. Not pictured: Dr. Walter Bryzik.*

The Industry Advisory Board complements the existing Achates Power [Technical Advisory Board](#)--which was formed in 2004 to advance the company's opposed-piston engine technology.

## Company Closes More Than \$35M in Series C Financing

In early October, Achates Power announced the close of its [Series C financing round](#), generating \$35.2 million in venture capital funding. All existing Achates Power [investors](#) participated. The Series C financing follows a \$19 million Series B round in 2009 and brings the total raised by Achates Power to nearly \$90 million since its 2004 founding.

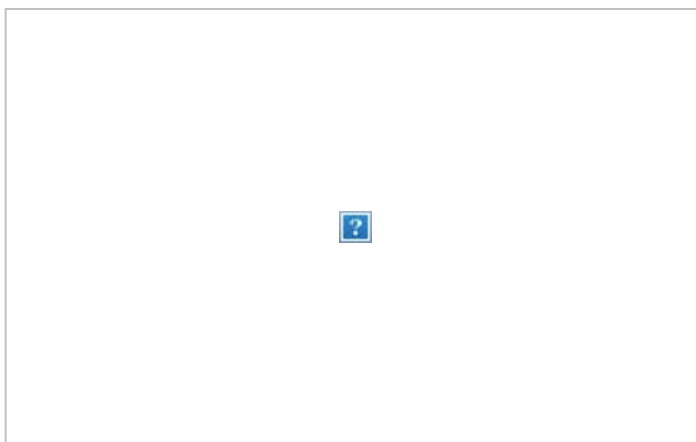
## And the Winner Is. . .

Thanks to your votes, Achates Power was [selected](#) as the first runner-up in [Securing America's Future Energy](#) (SAFE) Energy Security Prize competition. The award recognizes the top three U.S. companies that are developing technologies to significantly reduce America's long-term oil dependence.



*Laurence Fromm presents to attendees of the OPEC Oil Embargo +40 Summit.*

A written application, two in-person presentations and two rounds of public voting determined the winners. Click [here](#) to view the presentation Laurence Fromm, Achates Power vice president of business and strategy development, delivered to attendees of SAFE's OPEC Oil Embargo +40 Summit, held on October 16 in Washington, D.C.



*CEO David Johnson accepts the CONNECT Most Innovative New Product Award.*

Achates Power also received the CONNECT [Most Innovative New](#)

[Product Award](#), in the sustainability category, for its next-generation combat engine designed for the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC). CONNECT promotes ground-breaking technology and life sciences products in San Diego County. The announcement followed a December 6 luncheon honoring the top three finalists in each award category.

## "Under the Hood"

### Not All Two Stroke Engines Are Created Equal



By Dr. Gerhard Regner  
VP, Performance & Emissions

Suramya Naik  
Chief Engineer

Does a conventional two-stroke have the same efficiency advantages as the opposed-piston, two-stroke (OP2S) engine? If you answered "no", you're right. But, do you know why? One reason is due to heat transfer. As we highlighted in an [earlier post](#) and [technical paper](#), the favorable surface area-to-volume ratio of the OP2S contributes to the engine's inherent thermal efficiency benefits. So too does the architecture itself, which uses a different scavenging method than other two strokes. [Read more.](#)

## In the News

- [Walton-Family Backed Achates Raises \\$35.2 Million](#)  
(Bloomberg)
- [Fueling the Future](#)  
(CNBC Nightly Business Report)
- [Achates Power Eyes India](#)  
(Commercial Vehicle Magazine)
- [Re-Engineering Internal Combustion Engine Could Deliver Big MPG Boost at Lower Cost with Fewer Emissions](#)  
(The Energy Collective)
- [Opposed-Piston Engine Company Achates Power Raises \\$35.2M in Series C Financing: New Industry Advisory Board](#)  
(Green Car Congress)
- [Fairbanks Morse Engine and Achates Power Team Up on Opposed-Piston Engines](#)  
(Green Car Congress)
- [Achates Technology for Fairbanks Morse](#)  
(HHP Insight)

Achates' Innovations Drive Fairbanks Deal  
(*San Diego Business Journal*)

- [Achates Power Refuels with \\$35M for Cleaner, Fuel-Efficient Engine](#)  
(*Xconomy*)
- [Achates Power Signs Joint Development Agreement with Fairbanks Morse](#)  
(*Xconomy*)
- [Achates Power Nets \\$35.2 Million in Capital](#)  
(*UT San Diego*)
- [The Diesel Engine Reborn, in San Diego](#)  
(*UT San Diego*)
- [Achates Power Secures \\$35M to Fuel Efficient Engine Development](#)  
(*Venture Beat*)

## Upcoming Events

Achates Power will visit Europe in early 2014 for the:

- [International Engine Congress 2014](#)  
February 19, 2014 at 10:00 a.m.  
Baden, Baden, Germany  
**Presentation:** Optimizing Combustion in an Opposed-Piston, Two-Stroke (OP2S) Diesel Engine
- [FISITA 2014 World Automotive Congress](#)  
June 2-6, 2014  
Maastricht, the Netherlands  
**Presentation:** Modernizing the Opposed-Piston Engine for Clean, More Fuel Efficient Transportation

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