



A Commitment to Action

Operate Sustainably is one of Ingersoll Rand’s five strategic imperatives. Led by inspired teams, it is part of Ingersoll Rand’s mission to offer mission-critical flow creation and industrial products and services that improve the lives of our customers while minimizing our impact on the world. In addition to operating our own facilities sustainably, Ingersoll Rand includes a goal to reduce our customer’s greenhouse gas impacts by greater than 15% from Ingersoll Rand products by 2030.

39% of the world’s energy is used to “pump something”. As pump manufacturers, we have a responsibility to design products aimed at making pumps more energy efficient.

ARO®, an Ingersoll Rand Business, shares in this commitment to develop new products enabling our customers to reduce their energy consumption and environmental impact. As pump technologies advance, we are committed to drastically increasing pump efficiency.

▶ EVO Series™ Pump Answers the Call

ARO’s latest innovation, the EVO Series™ pump delivers on our commitment to offer our customers more sustainable options for their mission critical processes.

The EVO Series™ pump has the highest energy efficiency ratings on the market when compared to other positive displacement technologies.

EVO SERIES™

THE EVOLUTION IN PROCESS PUMPS

▶ The EVO Series™ Pump:

- Does not require access to or use of compressed air
- High-performance materials that enable better process efficiency
- Significant energy efficiency improvement compared to other positive displacement technologies
- Lower maintenance cost
- Lower total cost of ownership compared to other positive displacement technologies

Utilizing electric pump technologies positions companies to reduce their carbon footprint – not just by reducing their energy usage of the pump itself, but by reducing the dependence on utilities and equipment upstream from the pump as well. Companies who place a priority on converting to clean energy-source products, can position themselves as green house gas emissions companies.

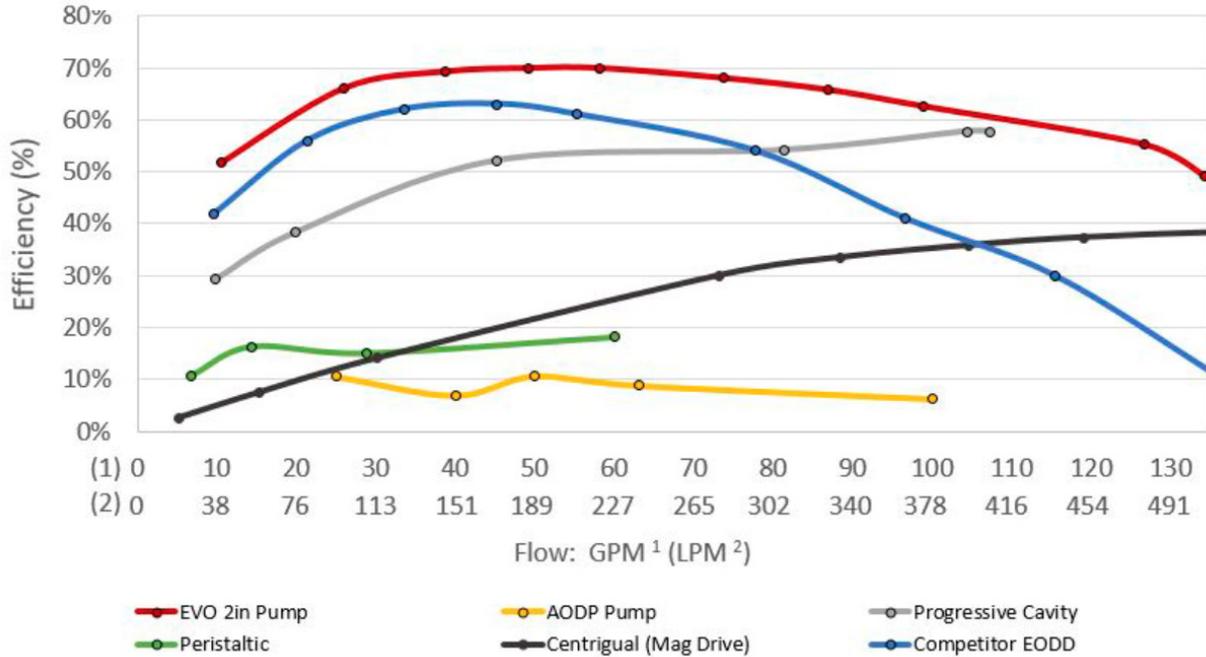
▶ The Technology Difference: Energy Efficiency Improvements Lead to Cost Reduction

Different positive displacement pump technologies exist to accomplish many different requirements and applications. Many of these technologies only achieve 10-60% “**wire to fluid pumped**”^{*} efficiency . When pumped in a controlled lab environment to simulate similar “wire to water flow,” EVO Series™ pump out-performed the other positive displacement technologies tested under similar conditions. The EVO Series™ pump is consistently achieving up to 70% “wire to fluid pumped” efficiencies.

^{*} Wire to fluid pumped” means not only the mechanical and hydraulic efficiency of the motor and gear box, but consider the efficiency of the full system (pump, gear box, motor, drive and any other electric equipment installed) measured on real applications.



EVO Series™ 2" Pump Efficiency Comparison

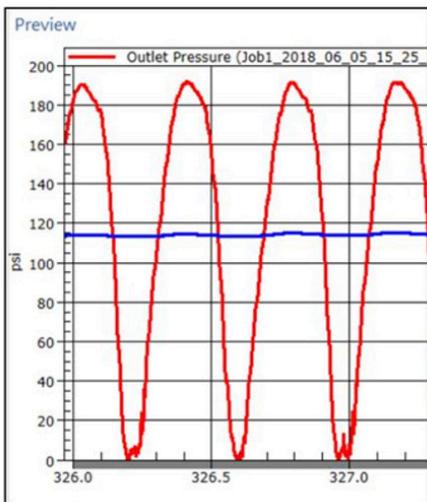


How Does EVO™ Series Accomplish Its Industry Leading Efficiency

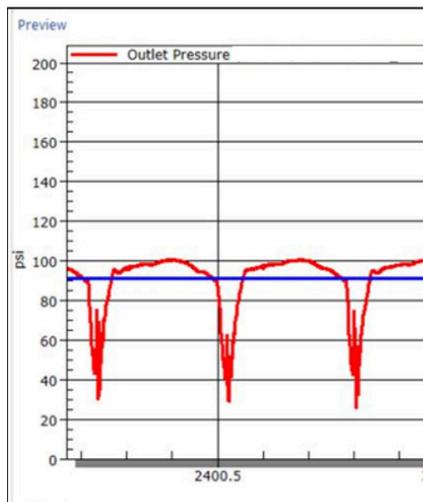
Many things in an engineering process can cause loss of energy efficiency. Heat, vibration and noise can all contribute to losses in a process. The EVO Series™ pump was specifically designed to minimize these losses.

The unique 3-diaphragm design of the EVO Series™ pump allows for a more balanced force within the system. This balance results in lower and more intertwined pressure pulsations. The lower pulsation band causes less momentum change of the fluid and the moving components such as the ball checks. All of these features help to minimize vibration and lower noise, which help reduce potential for energy losses.

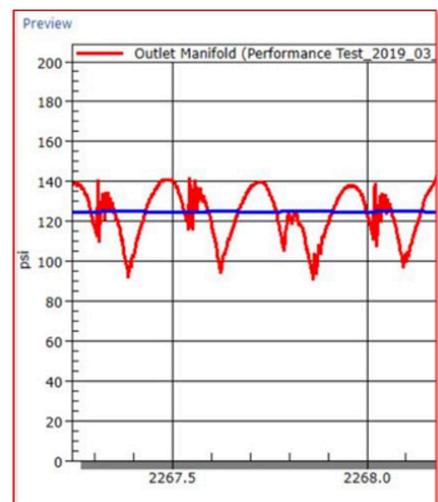
2 Diaphragm AOD



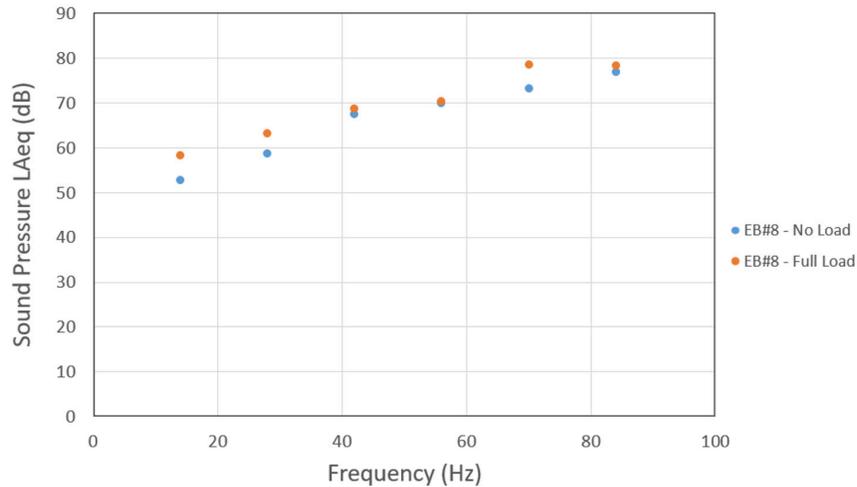
2 Diaphragm Electric/Air Hybrid Pump



3 Diaphragm ARO EVO Series™



2" EVO Sound Test Result

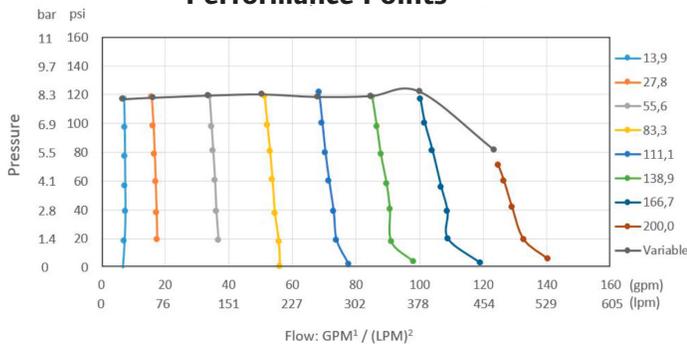


The EVO Series™ pump also has the ability to deadhead, which helps save additional energy in its processes. When a downstream valve closes, the EVO Series™ pump will deadhead. In this state, the electric motor comes to a stand-still, keeps constant torque and reduces its power consumption to 10% of its running energy consumption. The pump can stay in this deadhead state as long as necessary.

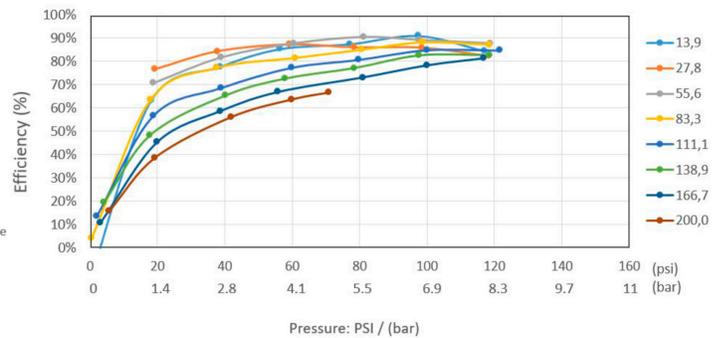
When the downstream valve is re-opened, the EVO Series™ pump gently spins back up without user intervention.

Below is a set of data results of pump efficiency versus backpressure, illustrating the lower use of energy to keep a constant pressure at different starting flow rates.

Constant Speed: Performance Points



Constant Speed: Pump Only Efficiency



Some positive displacement technologies experience significant noise, vibration while deadheading due to the lost motion mechanism. These pumps experience increased potential risks to damage internal hardware. Other positive displacement technologies attempt to reduce the noise and vibration levels by

requiring additional investment in expensive and sophisticated mechanism controls. The EVO Series's is designed for low noise and vibration not only during deadheading events, but also during the overall working process, offering a smooth operation.

Finally, the EVO Series™ pump generates very little heat while operating. This is especially advantageous in hazardous pumping environments. For hazardous fluid pumps or environments, there is a special motor option available that inherits the similar characteristic and capabilities of dead-head stall and low noise with the additional security of rigorous global certifications for safety.

Through its unique features and design, the EVO Series™ pump is achieving energy efficiency rates never seen before by positive displacement pumping technologies. It takes the best features from many different technologies and combines them into one new breakthrough pump.

Visit our website to read more about the ARO® EVO Series™ pump.

www.AROzone.com



About Ingersoll Rand

Ingersoll Rand Inc. (NYSE:IR), driven by an entrepreneurial spirit and ownership mindset, is dedicated to helping make life better for our employees, customers and communities. Customers lean on us for our technology-driven excellence in mission-critical flow creation and industrial solutions across 40+ respected brands where our products and services excel in the most complex and harsh conditions. Our employees develop customers for life through their daily commitment to expertise, productivity and efficiency. For more information, visit www.IRco.com.

We are committed to using environmentally conscious print practices

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IRITS-0722-018 EN 0723