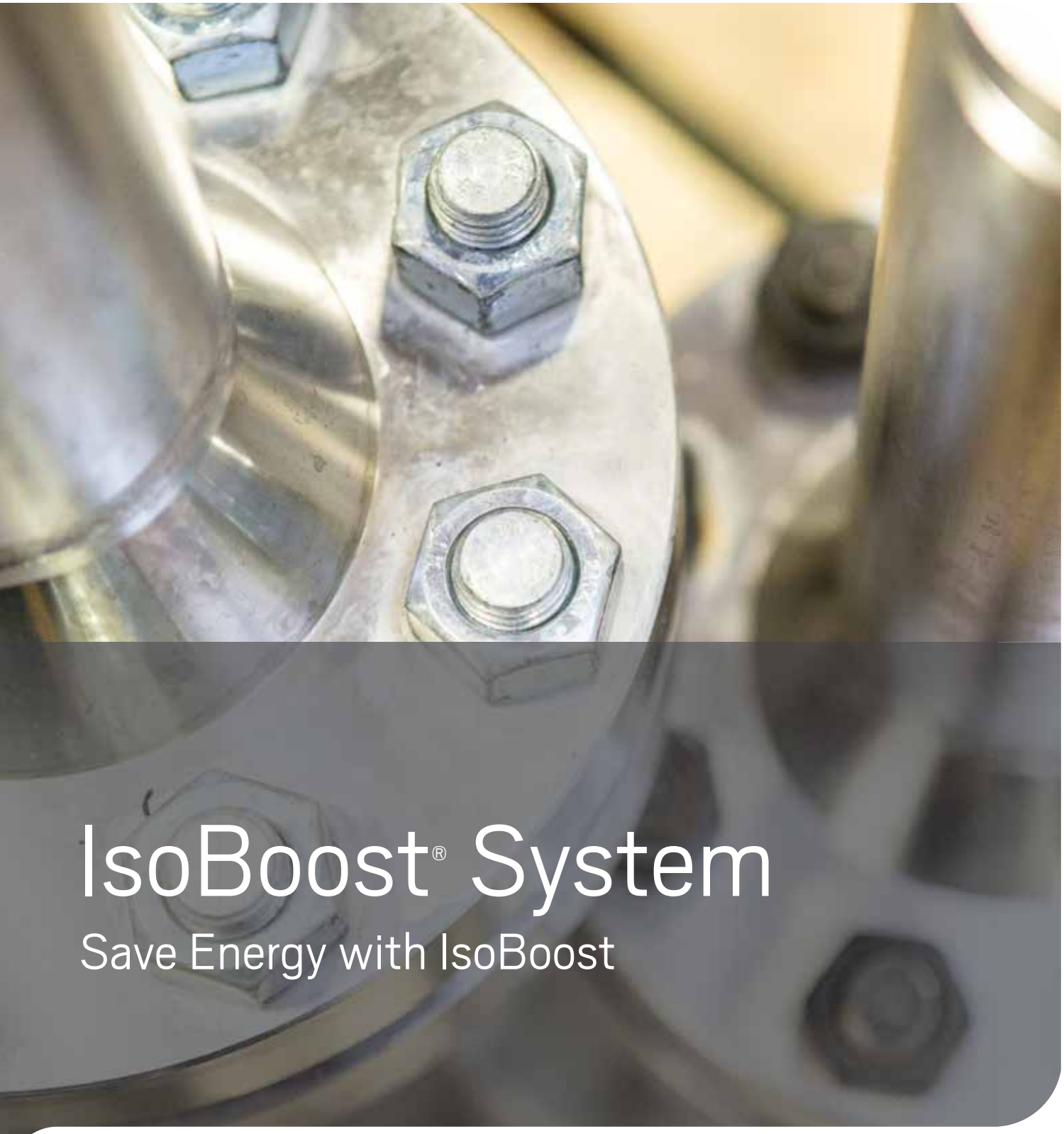


IsoBoost® System

Save Energy with IsoBoost

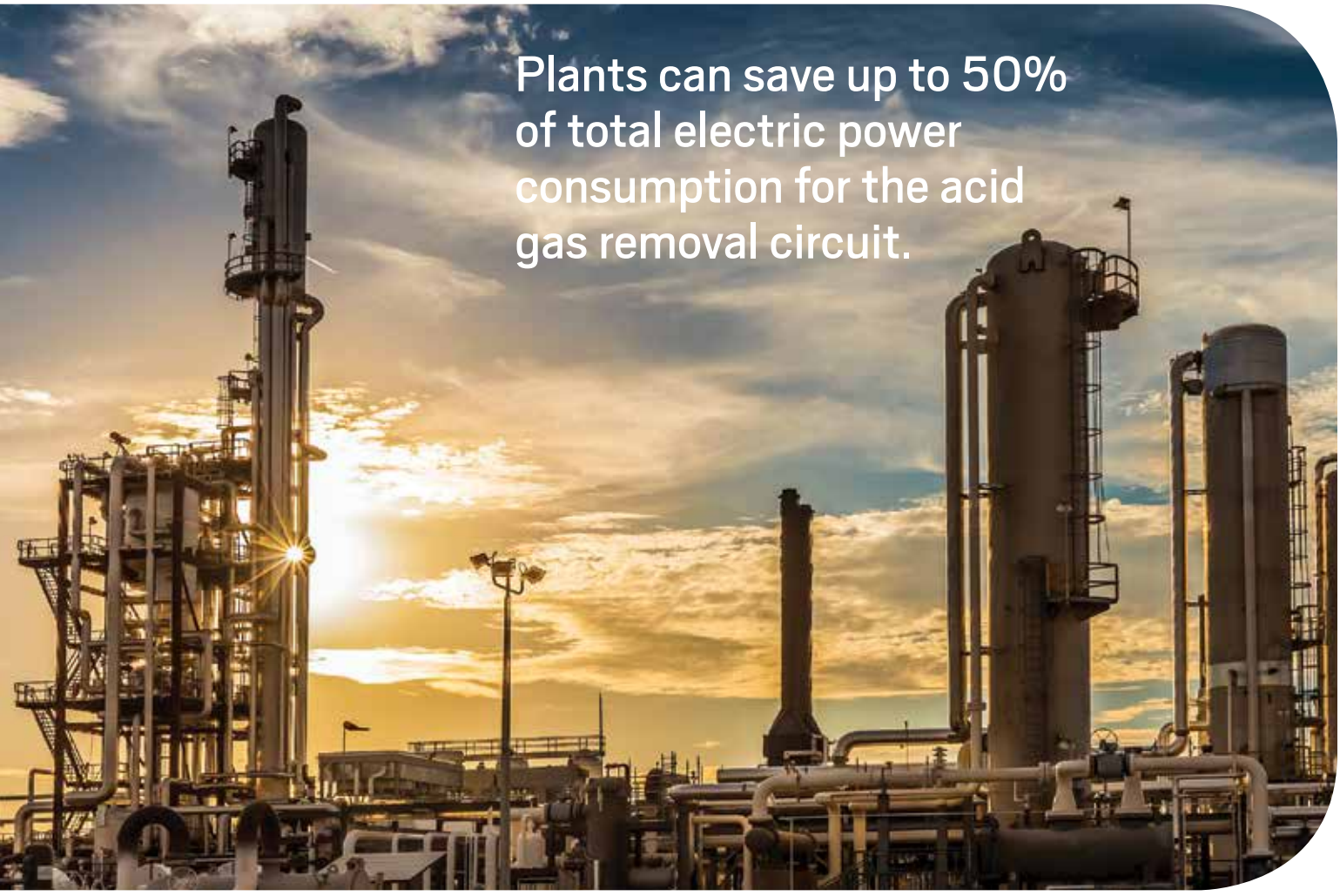
energy recovery™

IsoBoost Overview

Energy Recovery's IsoBoost is a hydraulic system that recovers pressure energy and increases the reliability of pumping systems. In ammonia production, IsoBoost is used in CO_2 removal, while in gas processing, the system is used in acid gas removal. It helps plants save energy, reduce maintenance, and run more profitably.

The core of IsoBoost is a proprietary liquid-to-liquid turbocharger. With three times the reliability of a traditional pump, the turbocharger recovers energy from the letdown of a high-pressure fluid and transfers it to a low-pressure fluid to reduce the energy required for pumping.

By replacing a complex pump and motor system with the simple and efficient IsoBoost, plants can expect millions of dollars in energy savings and a big drop in maintenance over the life of a plant. With IsoBoost, plants save up to 50% of electric power costs.



IsoBoost Delivers Multiple Benefits to Plants

Save Energy

IsoBoost will save millions of dollars in energy over the life of a plant. Plants can save up to 50% of total electric power consumption for the acid gas removal circuit, and the system will perform at up to 80% efficiency.

Estimated Savings with IsoBoost

Amine System Economics	Savings for 3x50% Pump Configuration	Savings for 2x100% Pump Configuration
Electric Power	50%	80%
Maintenance Savings in CO2 Removal Unit	50%	20%

NOTE: 3x50% refers to a plant configuration using three parallel pumps; in this configuration, two pumps handle 50% flow each, with the third pump installed for redundancy (50% flow). 2x100% refers to a plant configuration using two pumps; in this configuration, a single pump will handle 100% flow, with the second pump installed for redundancy (100 % flow).

Improve Reliability, Availability, Maintainability

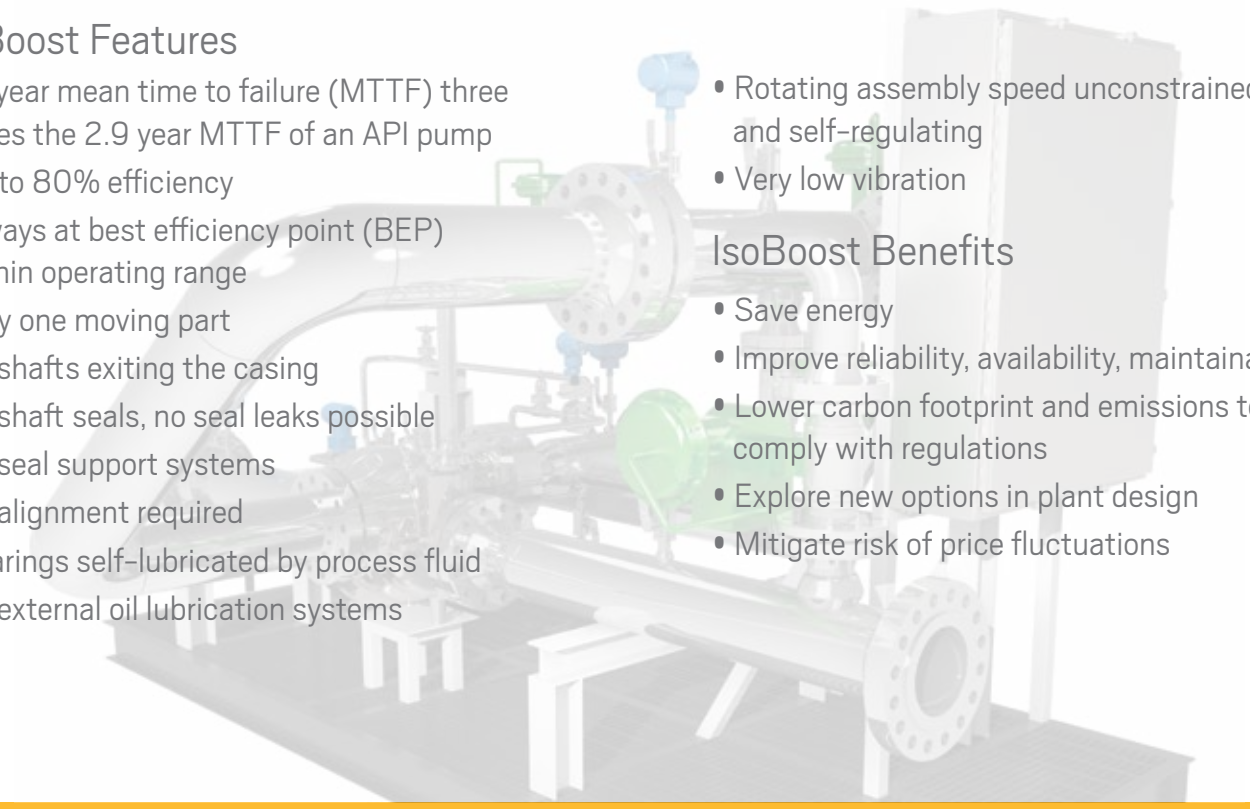
IsoBoost is up to three times as reliable as a pump. Compare its mean time to failure (MTTF) of 10 years to the 2.9 years MTTF of a traditional multistage, centrifugal motor driven pump. Expect fewer breakdowns, and a big drop in maintenance costs.

IsoBoost Features

- 10 year mean time to failure (MTTF) three times the 2.9 year MTTF of an API pump
- Up to 80% efficiency
- Always at best efficiency point (BEP) within operating range
- Only one moving part
- No shafts exiting the casing
- No shaft seals, no seal leaks possible
- No seal support systems
- No alignment required
- Bearings self-lubricated by process fluid
- No external oil lubrication systems
- Rotating assembly speed unconstrained and self-regulating
- Very low vibration

IsoBoost Benefits

- Save energy
- Improve reliability, availability, maintainability
- Lower carbon footprint and emissions to comply with regulations
- Explore new options in plant design
- Mitigate risk of price fluctuations



Lower Carbon Footprint and Emissions to Comply with Regulations

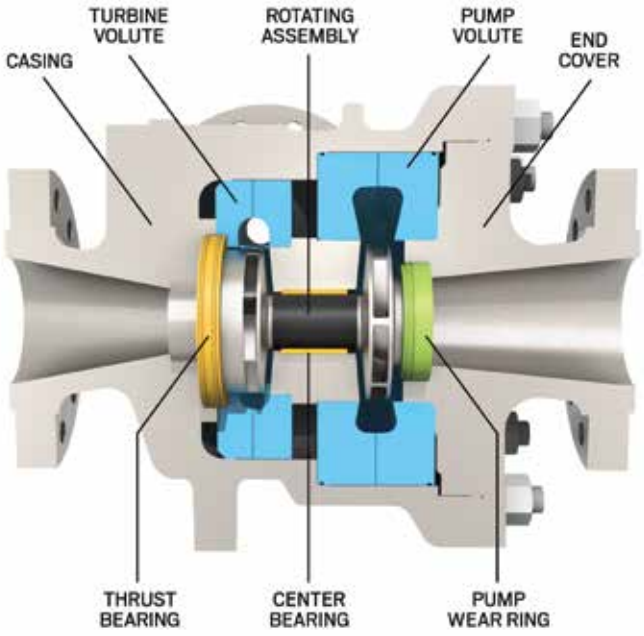
Reducing carbon footprint and emissions with IsoBoost can help plants comply with legislation. With plants requiring less energy to run, IsoBoost can help meet standards set by current regulations, increase plant capacity without impacting regulatory compliance, or reduce the risk that operations will be compromised by future regulatory standards.

Explore New Options in Plant Design

IsoBoost offers plants a new freedom in designing their operations. Plants can use IsoBoost in place of an additional high-pressure pump to increase capacity without adding energy costs, or replace a high-pressure pump with IsoBoost to optimize capital expenditure and operating expenses.
The system also features replaceable volutes that allow for flexible flow rates.

Mitigate Risk of Price Fluctuations

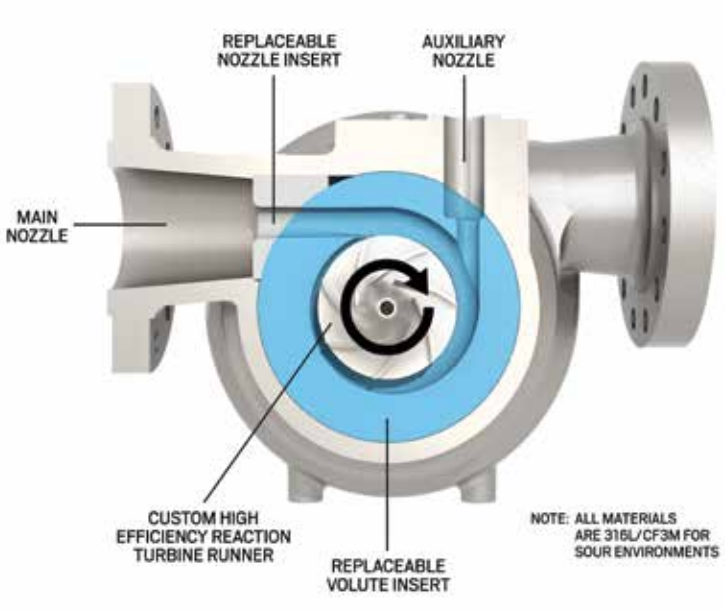
Plants rely on power, and are challenged by electricity price fluctuations. By using more recovered energy, plants can mitigate this risk, because less power will be drawn from external sources.



HOW ISOBOOST WORKS

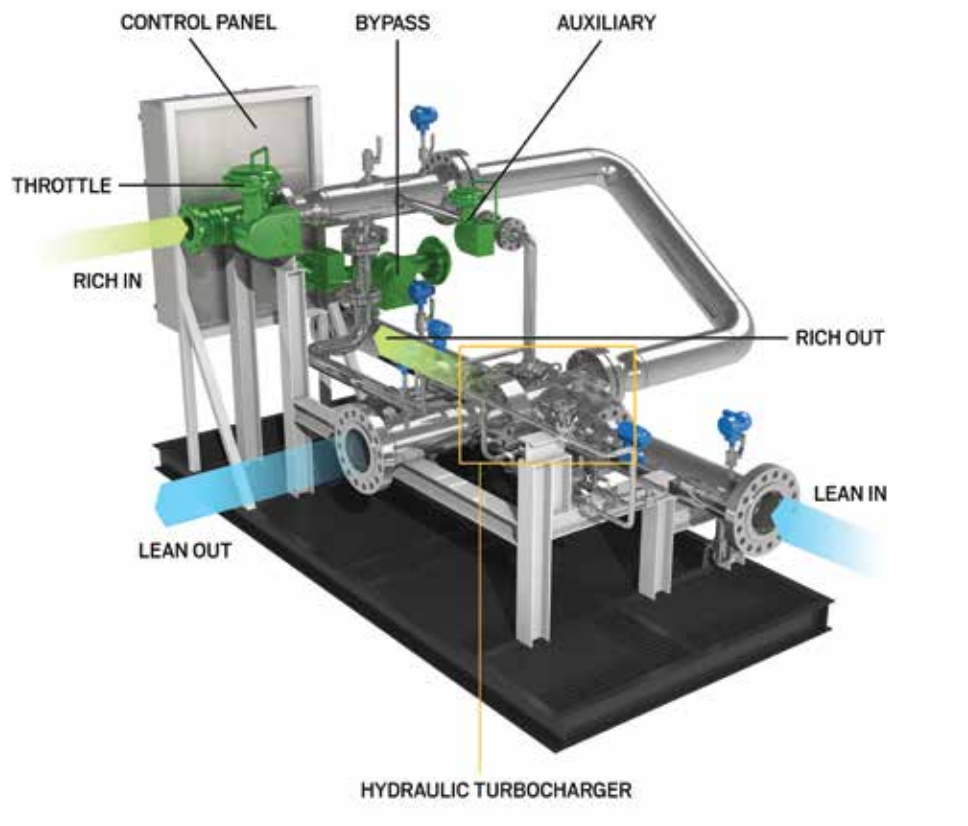
The Turbocharger Heart of IsoBoost

The core of the IsoBoost system is a liquid phase turbocharger, which consists of a high-efficiency turbine and centrifugal pump in a single casing. It is designed to create a pressure drop in one liquid process flow while boosting the pressure in an adjacent flow.



High-pressure fluid enters the turbine side and is let down to low pressure. In this process the turbine runner absorbs energy from the flow and utilizes it to drive an integral pump via a common shaft. Hydraulic energy is recovered at up to 80% efficiency, so plants can replace or downsize pumps.

Its unique design features include only one moving part, no shaft seals, and process lubricated bearings, which make for a compact and reliable turbine-driven high-speed pump. The system built around the turbocharger is modular to fit within any plant configuration.



How IsoBoost Optimizes Efficiency

The flexible design of IsoBoost has a distinct advantage over similar technologies. Unlike reverse running pumps, or hydraulic power recovery turbines (HPRTs), which perform at just one best efficiency point (BEP), the IsoBoost is the first system that allows operators to optimize efficiency within a flexible range, what we call a best efficiency range (BER). This is achieved with an auxiliary turbine nozzle and auxiliary nozzle control valve. IsoBoost controls modulate the auxiliary nozzle valve in order to direct more or less flow into the turbine, resulting in maximum efficiency across the turndown range.

ISOBOOST FOR AMMONIA PRODUCTION AND OTHER SYNGAS APPLICATIONS

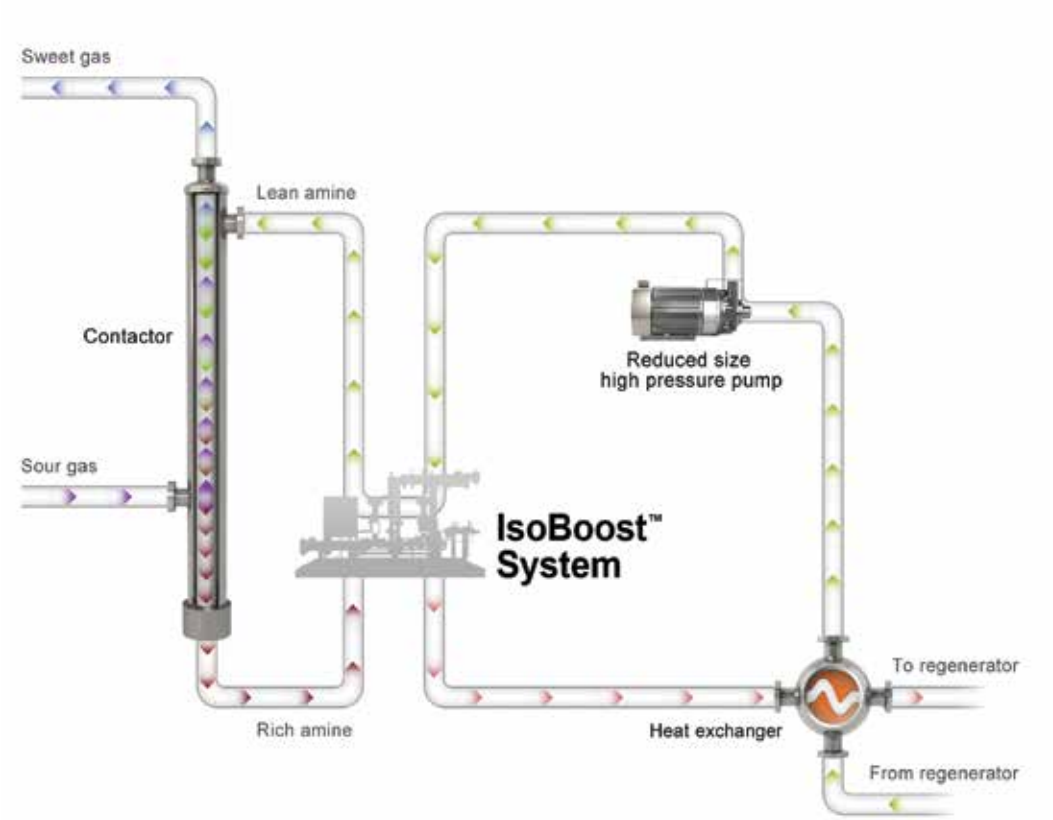
Outperforming Competitive Technology in Ammonia Production and Other Syngas Applications

In ammonia production, the process of CO_2 removal is a significant contributor to overall plant energy consumption. Energy Recovery's IsoBoost system provides a more efficient and reliable alternative to existing technologies for

hydraulic energy recovery. IsoBoost is custom designed and configured for the specific application. IsoBoost is the first turbocharger-based system for CO_2 removal in ammonia production that uses recovered pressure energy to save energy cost and boost reliability of operations. Compared to the hydraulic power recovery turbines (HPRTs), or reverse running pumps, that have been used for decades, this represents a giant leap forward in operational efficiency, reliability, and maintainability.

How IsoBoost Works in CO_2 Removal

CO_2 laden feed gas must be purified before it is utilized in ammonia synthesis. It flows up through a high pressure absorber tower while a solvent is injected into the top of the absorber and flows downward. The solvent absorbs the CO_2 to produce a purified gas stream that exits the absorber, ready for use at the plant. The solvent, rich in absorbed CO_2, is then routed to the regenerator circuit through a level control valve. This valve releases the pressure from the high pressure in the absorber to the low levels required for regeneration. The regenerator heats the rich solvent to release the absorbed CO_2. The now lean or semi-lean solvent flows to a massive, energy-intensive pump that raises the pressure back up to the high pressure required for the absorber; and the cycle repeats. In this closed loop, enormous amounts of energy are wasted through the repeated pressurization and pressure letdown phases.



ISOBOOST INTEGRATION INTO ACID GAS REMOVAL PROCESS IN NATURAL GAS PROCESSING

With Energy Recovery's IsoBoost, plants can recover up to 80% of the energy that is dissipated by the level control valve. With IsoBoost, the process is almost the same as before, but the rich solvent flow is now directed through the IsoBoost, which replaces the letdown valve and the energy-intensive high-pressure pump. IsoBoost now serves as a self-powered pump to provide all or most of the required energy to circulate lean solvent.

Adding Reliability to Amine Gas Processing

By recovering pressure energy in the acid gas removal, or gas sweetening, process, IsoBoost helps midstream gas processors save energy and decrease maintenance. In addition to saving millions of dollars in energy cost, the IsoBoost system dramatically reduces maintenance, making plants more reliable.

Amine units are widely used to remove acid gases, H2S (hydrogen sulfide) and CO_2 (carbon dioxide), from raw natural gas by pumping lean amine into a highly pressurized contactvessel (up to 1,200 psi) where the amine reacts with the incoming gas stream and absorbs the H2S and CO_2. The large pressure differentials in acid gas removal present a unique opportunity to recover energy and produce substantial amounts of power.

Energy Recovery has proven itself in the science of reusable pressure from fluid flows, with 17,000 systems installed around the world that save our customers over $1.7 billion in energy costs every year.

How IsoBoost Works for Acid Gas Removal

During the acid gas removal process, highly pressurized rich solvent from the contactor, or absorber, is directed into the turbine side of the turbocharger. Here, pressure that would normally be wasted is captured and converted into hydraulic energy. After depressurization, the rich solvent leaves the turbine and flows to the regenerator circuit. Lean solvent is directed into the IsoBoost system, where it enters the pump side of the turbocharger and is boosted to high pressure. The pressurized lean amine from the IsoBoost system is then routed directly to the contactor tower.

Multiple IsoBoost Systems Installed in Largest New Gas Processing Plant in the Middle East

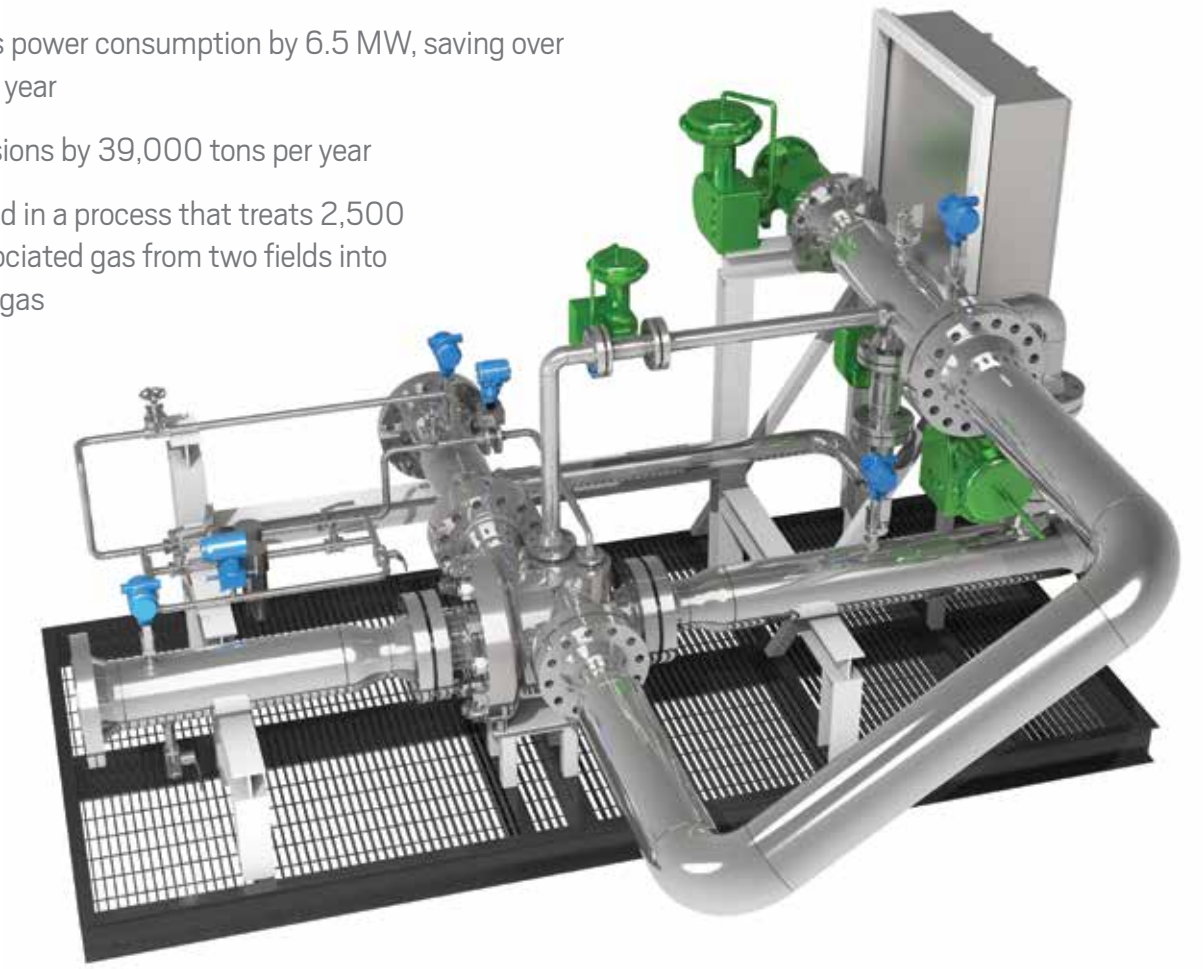
Location: Middle East

Energy Recovery has recently been awarded a project to install multiple IsoBoost systems in a gas processing plant in the Middle East. When completed, it will be the largest plant of its kind in the world.

The project also represents the first multiple IsoBoost system installation, and following the commissioning of Energy Recovery's first IsoGen system, secures the company's presence in the Middle East as a provider of disruptive technology in gas processing and chemical production.

At this new plant, Energy Recovery's IsoBoost system:

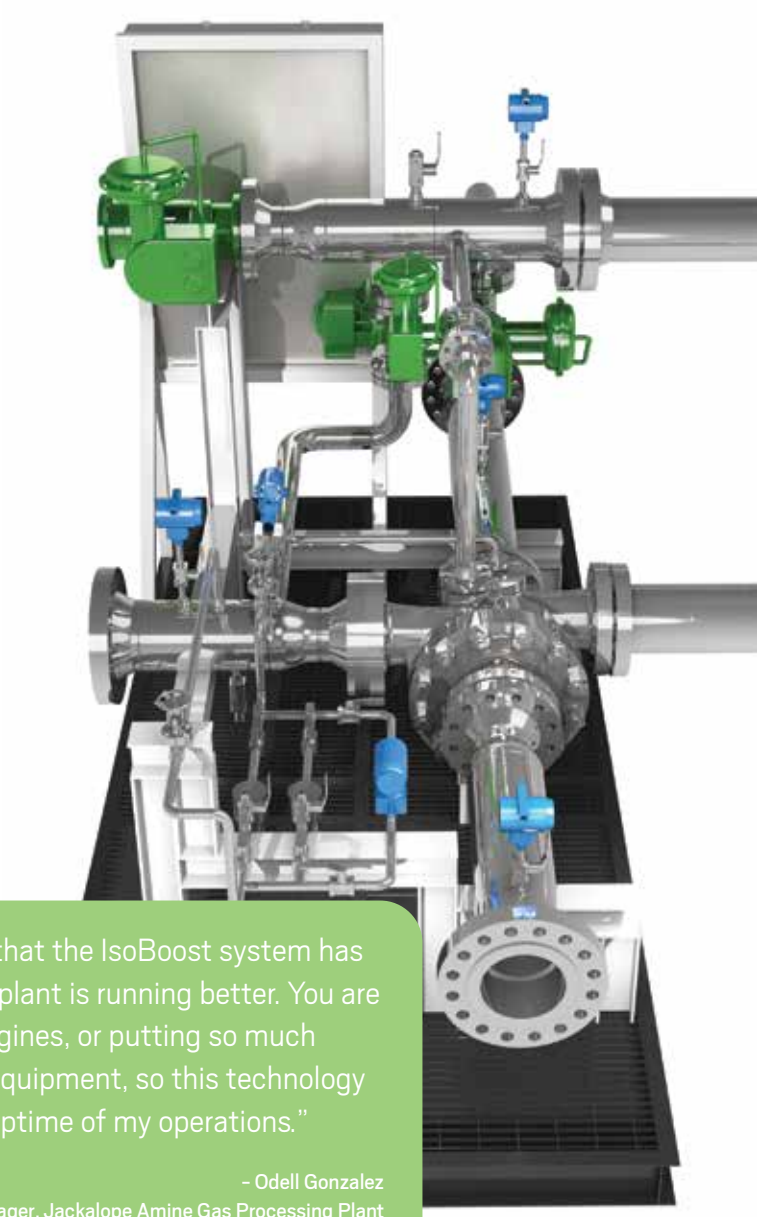
- Will be designed for a flow capacity of 6,000 gallons per minute in each system
- Will reduce the plant's power consumption by 6.5 MW, saving over 57 GWh of energy per year
- Will reduce CO_2 emissions by 39,000 tons per year
- Would be implemented in a process that treats 2,500 MMSCFD of non-associated gas from two fields into clean-burning natural gas



IsoBoost Drives Energy Savings

Company: Energy Transfer
Location: Texas, USA

In 2008, Energy Transfer was faced with a dilemma at their Jackalope Amine Gas Processing Plant in Hebbronville, Texas. The plant has an amine flow rate of 750 gpm and produces approximately 50 million cubic feet of natural gas per day. They'd been using gas-powered plunger pumps to inject pressurized amine into their contactor vessel, but with tightening environmental regulations in the state of Texas and emission rates already at their limits, the pumps needed to be decommissioned and replaced with a more energy efficient option.



Their goal was not only to reduce emissions below the admissible levels for Texas, but also to find a long-term, economically viable solution that could significantly cut energy costs over the remaining lifespan of the plant. Energy Recovery partnered with Energy Transfer to implement an IsoBoost system using our proprietary turbocharger technology.

Since it was installed, Energy Recovery's IsoBoost system has:

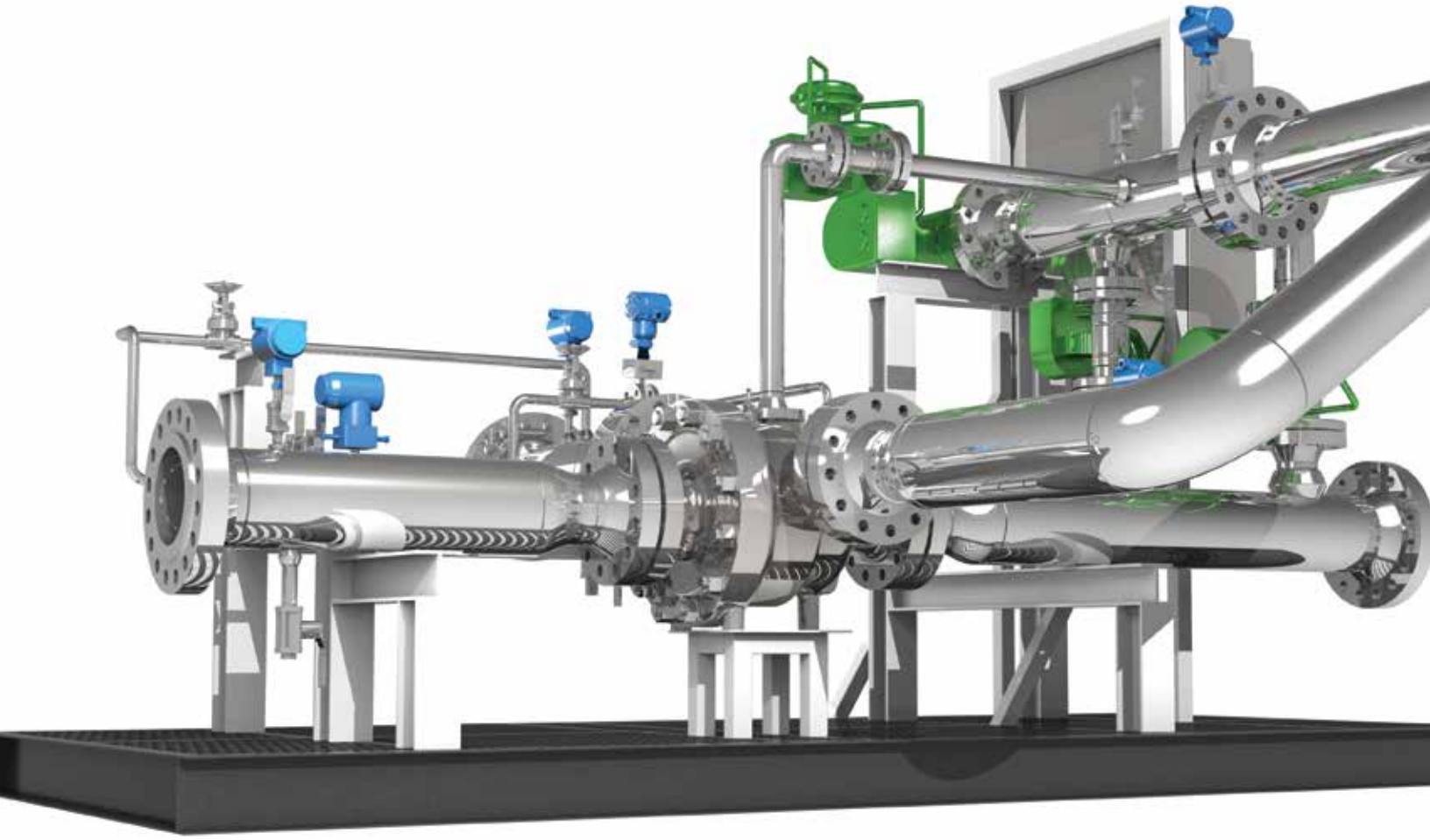
- Run continuously, requiring virtually no maintenance
- Reduced emissions at the plant by a total of 14.4 million pounds of CO_2
- Saved the small plant close to a $1 million in total energy savings

"In the seven years that the IsoBoost system has been operating, the plant is running better. You are not using the big engines, or putting so much strain on electrical equipment, so this technology adds to the overall uptime of my operations."

– Odell Gonzalez
Plant Manager, Jackalope Amine Gas Processing Plant
Energy Transfer

Seamless Support Beyond Installation

Energy Recovery offers complete service and support throughout the lifetime of the IsoBoost system. Our service and support group, known as Team 360, has been deployed all over the world for the past 25 years, ensuring seamless operations in water desalination, oil and gas, and chemical processing.



Our Team 360 is located in North and South America, Asia, Middle East, Africa and Europe. We provide onsite system support and operational training, and can help during the installation process and continue to support your plant to make sure the IsoBoost system remains the most reliable piece of your plant.

The Untapped Potential of Pressure Energy

Energy Recovery specializes in recycling pressure energy to improve the efficiency and profitability of industrial systems.

Industrial processes represent about one-third of the world's total energy consumption. With the mammoth amount of energy required for industry, it has become natural to consider how much energy is wasted in these processes.

Over the past century, the practice of energy recycling has been built into industrial processes as a necessary step to minimize what would be otherwise wasted energy. Most are familiar with the concept of waste heat recovery, where heat that would have been dissipated and lost is returned to manufacturing and industrial processes. Waste heat recovery has helped companies become more efficient and more profitable. But many companies have yet to apply energy recovery to another form of energy—pressure energy.

Much like heat, pressure is often wasted in industrial processes through letdown in valves or other devices. This squandered energy increases a plant's energy consumption and carbon footprint. But pressure energy presents a world of opportunity.

By harnessing this often overlooked energy source through Energy Recovery technology, companies can save millions of dollars and dramatically reduce maintenance costs.

About Energy Recovery

Energy Recovery (NASDAQ:ERII) develops award-winning solutions that harness unused pressure energy to improve reliability and availability of industrial pumping systems. Our technology protects vulnerable equipment and saves substantial energy and maintenance costs for operators within the oil & gas, chemical, and water industries. With more than 17,000 devices worldwide, our products save clients more than $1.7 billion (USD) annually. Headquartered in the San Francisco Bay Area, Energy Recovery has offices in Shanghai and Dubai.

Recent Awards

- Oil and Gas Awards, 2014, Finalist
- New Technology Development of the Year
- West Coast, Southwest and Midcontinent
- IET Innovation Awards, 2013, Winner Power & Energy Category

Contact

1717 Doolittle Drive
San Leandro, CA 94577
USA
T +1 510.483.7370
F +1 510.483.7371
info@energyrecovery.com
energyrecovery.com

energy recovery™