

MORE POWER TO YOU

Microturbines

Generate Savings for Oil and Gas Industry

MORE POWER TO YOU: MICRO-TURBINES GENERATE SAVINGS FOR OIL AND GAS INDUSTRY

In 2005, Dresser-Rand became a global distributor and service provider for Ingersoll Rand microturbines in the oil and gas market. *But what exactly is a microturbine?*

As the name implies, a microturbine is a small gas turbine that provides power directly to a facility's electrical distribution system. Microturbines have proven to be highly efficient and very clean on-site sources of electricity. (By producing electricity at the point of use, microturbines lower demands on overburdened power grids, and offset the carbon emissions typically produced by conventional power plants.)

But all on-site power producers are not created equal. When compared with commercially available gas and diesel engine generator sets and other microturbines, Ingersoll Rand microturbines offer several advantages. These include lower emissions, fuel flexibility, reduced noise levels, greater reliability, longer runs between service, reduced maintenance, and longer operating life -- all of which lower the life cycle costs to clients.

"Ingersoll Rand microturbines offer solid economic and environmental advantages," says James Heid, vice president, Global Business Solutions for Dresser-Rand. "When combined with our client relationships, sales channels, and marketing and service abilities, they offer a strong value proposition.

"In the long term," Heid predicts, "Dresser-Rand and Ingersoll Rand have the potential to become the unsurpassed leaders in design, manufacture, and support of superior environmental, industrial, and commercial microturbine solutions."

The distribution agreement between the two companies includes the model MT70, rated at 70 kilowatts, and the model MT250, rated at 250 kilowatts. Because of their size, relatively low capital expense, and anticipated low operation and maintenance costs, these microturbines are expected to capture a significant share of the distributed generation market.

GENERATING ELECTRICITY FROM FLARE GAS

Oil and natural gas are often found together. To prevent explosion, oil companies will separate and burn off the gas at the wellhead in a process called "flaring." But flaring wastes a valuable natural resource. Furthermore, tougher environmental regulations may no longer allow flaring, so oil producers are exploring alternatives to flaring of associated gases.

Microturbines enable producers to use flare gas to generate electricity and to reduce the harmful hydrocarbons produced by flaring. Compared to other commercially available technologies, only Ingersoll Rand microturbines offer a comprehensive, on-site electricity-generating system developed especially for associated-gas applications with an integrated fuel conditioning system. The system converts these associated gases into an acceptable fuel that enables the microturbine to not only generate continuous power, but also to reduce energy costs and lower greenhouse emissions significantly.

Considering the alternatives to effectively reducing emissions, the unique features of Ingersoll Rand microturbines are a perfect fit for many oil production operators facing tougher environmental standards. Ingersoll Rand's 250 kilowatt microturbine, for example, is the first and only one certified to be in compliance with the strict California Air Resources Board 2007 emission standards for distributed generation technologies. Compared with a typical utility-scale power plant generating the same amount of electricity, the MT250 microturbine reduces emissions of nitrogen oxide (a potent greenhouse gas) by more than two tons a year.

Microturbine-produced electricity can provide all the power needed on site to operate pumps, blowers, compressors, valves, and lift systems.



KEEP THE GREEN WHERE IT BELONGS...

...in your pocket.

Microturbines from Ingersoll Rand Energy Systems give you new ways to use gas that will help you control cash flow and generate revenue by –

- Generating onsite power
- Reducing emission control expenses
- Restarting shut-in oil production
- Using thermal energy output for enhanced oil recovery.

Ingersoll Rand microturbines offer some of the cleanest combustion technology available to eliminate potentially harmful flaring and reduce greenhouse emissions. Call us today to find out how this technology can benefit your business.



The Americas (713) 467-2221
European Served Areas 33-2-35-25-5225
Asia-Pacific 603-2093-6633
info@dresser-rand.com



>> www.dresser-rand.com

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When part of an integrated combined heat and power system, heat recovered from the microturbine can offset energy costs in the oil-water separation process and other field processes that require heat.

Furthermore, excess electricity generated by the microturbine can often be exported to a power grid for a reliable, economical source of energy.

THE SPARK SPREAD AND LOWER LIFE CYCLE COSTS

Another significant opportunity for achieving energy savings is the spark spread—the difference between the cost of buying electricity from a power grid compared to the cost of the associated gas fuel used to generate the same amount of microturbine electricity. A favorable spark spread is the key to determining both payback and bottom-line energy costs. For example, one California oil producer operating an Ingersoll Rand MT70 microturbine on associated gas is saving at least \$4,000 USD a month in electricity costs, and is projecting full payback in 14 to 18 months.

Microturbines are tightly integrated, comprehensive, and pre-engineered. These features are in sharp contrast to larger gas turbine systems that typically are a combination of several large components plus associated auxiliaries (fuel boosters, lubricating oil subsystems, and enclosures that are either added to the skid or located nearby). Ingersoll Rand microturbines are designed to meet the same standards found in industrial equipment such as water heaters and furnaces. And like these devices, an “off-the-shelf” approach can be followed when the same basic design is used for multiple projects. Installation cost and time are significantly lower when compared to similar types of equipment such as gas engines. Also, the microturbine package has very few connections; typically connections are electrical and fuel gas hookups,

controls/communications, and cold and hot water connections (if hot water is required).

Co-generation with a microturbine is a simple concept: turning clean-burning natural gas into cost effective, reliable electricity—plus steam for production processes, heat for water and building space, or even heat to drive absorption chillers for seasonal or process cooling. “It’s like getting two or three forms of energy for the price of one,” notes Duncan Swan, general manager of Dresser-Rand’s Microturbine Strategic Business Unit.

For example, heat recovery systems serve several purposes. Clients can capture exhaust heat directly for product curing and drying; heat water or industrial process fluids; produce steam for space heating, district heating, or industrial processes; or create steam to drive absorption chillers for space cooling or refrigeration.

“And co-generation is environmentally friendly,” asserts Swan. “Increased fuel efficiency reduces pollutants. Every percentage point gain in efficiency proportionally reduces CO (greenhouse gas) emissions.”

For clients who require electricity and thermal energy simultaneously, a cogeneration system can meet their requirements with a favorable return on investment. With turbine-driven cogeneration, users can capture more than 70 percent of the energy in the fuel they buy, contrasted to 30 to 35 percent in standalone power production. Many owners report paybacks on their investments in three to five years -- or even fewer.

“With the addition of the microturbine product line,” he emphasizes, “we’re in an even better position to provide our clients with solutions to increase their efficiency and reduce harmful greenhouse emissions while lowering their total life cycle costs.” ■