May 2008

CompressorTech Two

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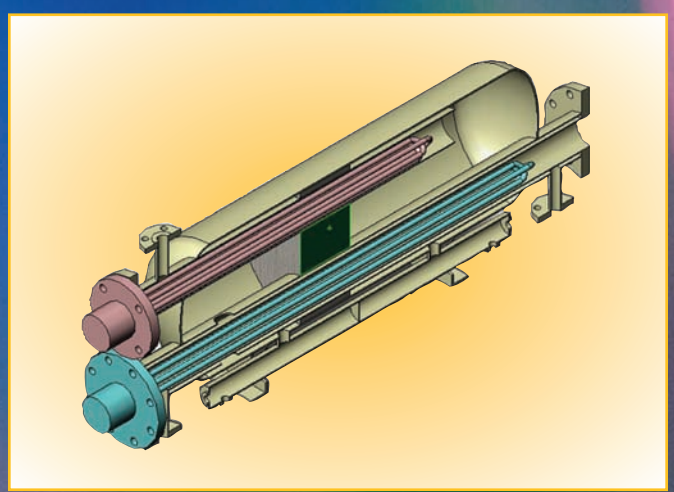

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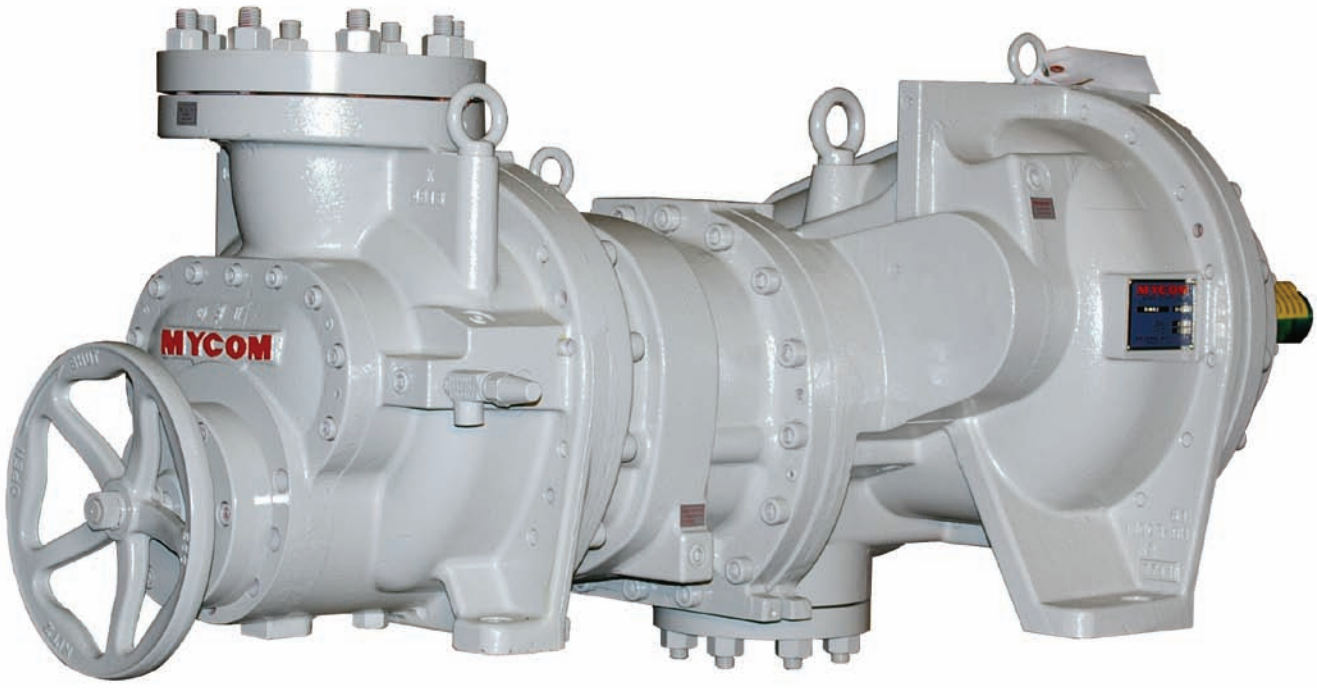


■ As well as being efficient, the 160GLR screw compressor is also flexible. Fully adjustable internal volume ratios, a selection of five integral speed-increasing gears, and manual slide valve capacity control allow for a maximum discharge pressure of 260 psi (17.9 bar).

NEW SCREW COMPRESSOR HELPS CUT ENVIRONMENTAL EMISSIONS

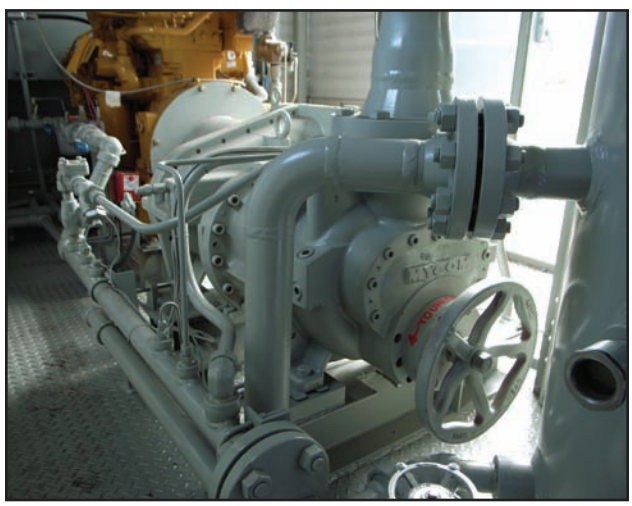
Increased Efficiency of Mycom's New 160GLR Screw Compressor Series Helps Reduce CO_2 Emissions

By Neil Purslow

"Mycom is very concerned about the environment," said Kelly Sasaki, general manager of screw compressor OEM, Mycom Canada in Vancouver, British Columbia. "We have developed a variety of high-efficiency products — including the 160GLR series screw compressor — to reduce emissions to the atmosphere. These compressors provide up to 30% better performance when compared to conventional screw technology. This increase in efficiency results in a significant reduction in CO_2 emissions from the natural gas-fueled engines used to drive the compressors."

The 160GLR screw compressor series was developed specifically to boost the pressure of natural gas. The compressor's increased efficiency begins with a change in rotor design. The new profile uses a male rotor with five lobes and a female rotor with six. The male rotor's diameter is larger than the female's. This new design, referred to as the "J-profile," minimizes internal gas leakage and uses less compression forces, according to Mycom.

The 160 GLR uses anti-friction radial thrust bearings, which eliminate the need for pre-lube oil pumps. This feature makes the compressors simple to operate and easy to package. Units have internal speed-increasing gears that can be used to match the output from the drivers to the compressors. There are five possible gear ratios: 1.05, 1.36, 1.80, 2.11 and 2.51. These ratios allow the compres-



■ The first Mycom 160GLR screw compressor was installed in October 2007 on a gas well located near Beiseker, Alberta, Canada. The compressor has been specifically built for natural gas applications. Its new rotor design was developed to be more efficient, to minimize internal gas leakage and to use less compression force. Mycom said that as such, up to 30% less horsepower is required to run the compressor when compared to conventional screw compressor technology.

■ **The gas compression package has been designed with ample room to operate and maintain the equipment. An FW Murphy control panel has been installed to monitor the operation of the package. The skid is equipped with heaters and an insulated building for cold weather operation.**

■ **The package has been engineered for placement on an engineered gravel pad in remote locations. To further reduce atmospheric emissions, solar panels incorporated into the unit use the sun's energy for operating the control and gas detection systems.**

sors to handle between 255 and 612 scfm (7.2 to 17.3 m^3/min) of natural gas displacement at 1800 rpm, using 30 to 300 hp (22 to 224 kW).

The series also comes with manually adjustable slide valves that control the flow of gas through the compressors from 100% down to 10%. In addition, four Vi settings can be used to efficiently meet various operating conditions for optimum compressor operation. Settings are manually adjustable at 2.30, 2.63, 3.65 and 5.00.

The first 160GLR was installed on a compressor package fabricated by Startec Refrigeration Services Ltd. of Calgary, Alberta, in October 2007. The package was used on a well located near Beiseker, Alberta, to boost the pressure of the natural gas from the well for injection into a delivery system. The 160GLR-1.80 was coupled to a Caterpillar G3306 natural gas-fueled engine. The engine is rated at 203 hp (151 kW) at 1800 rpm and 100% full load. The well is owned and operated by a major natural gas producer in Alberta.

On the Beiseker well, an inlet pressure of about 5 psig (0.34 bar) is delivered to the compressor and a discharge pressure of 92 psig (6.34 bar) is delivered to the pipeline system. To compress the gas, the 160GLR-1.80 requires 125 hp (93 kW) at 1534 rpm. The volume of gas flowing through the package is 123 Mscfd (3.49 x 103 m^3/d). This configuration results in a savings of 40 hp (30 kW) when compared to Mycom's screw compressor model 160VLR-2.22, which requires 165 hp (123 kW) under similar operating conditions. According to Mycom, the 40 hp difference decreases CO_2 emissions by about 345 tons (313 tonnes) a year.

A second package was completed and commissioned in January of this year. Mohan Ram, technical director for Startec said, "We have purchased three of these compressors to date and have installed them on packages. The first unit is working as expected and our customer is very happy with the performance. The second unit has been installed and is being tested. We are awaiting the gas well test results to put the unit into operation. Preliminary tests indicate that the compressor will perform to expectations. The third unit is being installed as this article is published."

"We've also started to manufacture J-series screw compressors for the industrial refrigeration market this spring," said Sasaki. "They use the same rotor profile as the natural gas compressors. We will be reviewing all of our products to achieve the goal of reduced CO_2 emissions to the atmosphere." ■

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160GLR Screw Compressor Series						
Gear Ratios		1.05	1.36	1.80	2.11	2.51
Weight (lb./ kg)		1450/ 660				
Rotor Profile		Mycom's "J-profile"				
Rotor Lobes and Profile (in./ mm)	Male Female	5 Lobes — 7/ 177 6 Lobes — 6/ 154				
Direction of Rotation		Clockwise				
Minimum Male Rotor Speed (rpm)		1450				
Maximum Male Rotor Speed (rpm)		4520				
Displacement @ 1800 rpm (cfm/ m^3/min.)		255/ 7.2	331/ 9.4	439/ 12.4	514/ 14.5	612/ 17.3
Displacement @ 1200 rpm (cfm/ m^3/min.)		170/ 4.8	221/ 6.3	293/ 8.3	343/ 9.7	408/ 11.6
Maximum Discharge Pressure (psi/ bar)		260/ 17.9				
Maximum Suction Pressure (psi/ bar)		75/ 2.1				
Maximum Discharge Temperature (°F/ °C)		230/ 110				
Maximum Oil Feed Temperature (°F/ °C)		160/ 71				
Mass Moment of Inertia WR2 (lb./sq.ft.)		29.0	48.1	69.5	95.5	123.0
Capacity Control		100 to 10% manually adjustable using hand-wheel				
Vi Settings		2.30, 2.63, 3.65, 5.00 manually adjustable				