

■ Shown here is Atlas Copco Hurricane's largest booster compressor, a model 18T-855-62B-2000, at work on an Atlas Copco deep hole drilling rig, which also utilizes an Atlas Copco primary air compressor. The company points out that the combination of Atlas Copco drilling rig, primary air compressor and Hurricane booster compressor on a single application illustrates the complementary nature of Atlas Copco and Hurricane product lines, which are now joined by the recent merger between the companies.

## ATLAS COPCO HURRICANE MERGER GREATLY EXTENDS PRODUCT RANGE FOR BOTH COMPANIES

*Hurricane High-Pressure Boosters, Coupled With Atlas Copco Screw Compressors, Can Now Satisfy Needs for Both Primary and Booster Compression from 150 to 5000 psi (10.4 to 345 bar).*

By Richard P. Schook

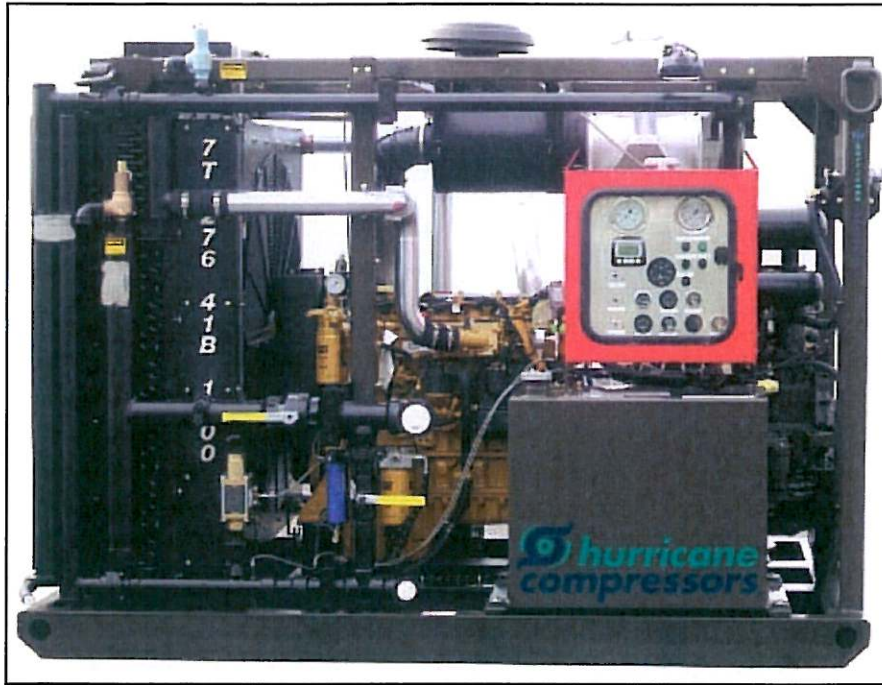
In May 2008, Atlas Copco announced the acquisition of Grimmer Industries, based in Franklin, Indiana, U.S.A., including Grimmer's Hurricane and GrimmerSchmidt business units. Bram Houppeline, general manager of Atlas Copco Hurricane LLC, explained that the combination will have unique benefits for both companies. Atlas Copco, whose portable compression products were previously limited to 450 psi (31 bar) discharge, can now fulfill customer needs up to 5000 psi (345 bar). Hurricane, whose booster compressors require 150 to 350 psi (10.4 to 24 bar) suction pressure from a primary compressor, can now offer a totally "in-house" compression solution utilizing an Atlas Copco oil-flooded rotary screw primary compressor, a Hurricane booster compressor, and a diesel or electric driver of the customer's choice. The GrimmerSchmidt Compressor line, with its towable and skid-mounted natural gas booster compressors and portable air compressors, was also acquired by Atlas Copco. Houppeline said that "in addition to the product benefits outlined above, the joining of the companies will give Hurricane access to the worldwide distribution, sales and service network of Atlas Copco, greatly expanding the market reach of the Hurricane products."

Richard Baker, vice president of sales and marketing for Atlas Copco Hurricane, outlined some of the 40-year history of Grimmer Industries, virtually all of which has been within his long tenure with the company. John Grimmer and Bob Schmidt founded GrimmerSchmidt Compressors in 1968 in El Paso, Texas, U.S.A., and in 1970 moved the company to its present location in Franklin, Indiana. Their initial compressors were aimed at the construction industry and featured its innovative MonoBlock air compressor in which four cylinders of a V8 engine are

used for air compression while the remaining four cylinders, sharing the common crankshaft, are used as the mechanical driver. The company branched into natural gas compression in the 1970s, and also developed high-pressure compression technology, which was initially aimed at the natural gas-powered vehicle refueling market. The Hurricane Compressor business unit was founded in 1993 to concentrate on the high-pressure booster compression market across a range of industries, including onshore and offshore oil and gas drilling and

■ A GrimmerSchmidt Model NGG 302 portable natural gas well booster at work on a wellhead. The compressor uses the MonoBlock driver/compressor where one bank of a V8 engine is used for power and the other for compression. The capacity of the NGG 302 is up to 354 Mscfd (10 Mm<sup>3</sup>/d).





■ A Hurricane Model 7T-276-41B-1000, which is a four-cylinder single-stage booster compressor with a maximum 1000 psi (69 bar) discharge pressure, at work with an Atlas Copco drilling rig, and with an Atlas Copco primary air compressor. A Frank W. Murphy control panel provides safety shutdown protection.

exploration, well servicing, pipeline cleaning and others. Hurricane has concentrated on booster compressors with a capacity range of 1400 to 4500 cfm (39.6 to 127.4 m<sup>3</sup>/min) and discharge pressures in the 750 to 5000 psi (51.7 to 345 bar) range.

Due to the synergies outlined previously, Grimmer Industries (Grimmer-Schmidt and Hurricane) agreed to be acquired by Atlas Copco. In recent years, the GrimmerSchmidt business unit has concentrated on wellhead natural gas boosters, both towable

and skid mounted, and the air compressor needs of the construction industry. The GrimmerSchmidt compressors generally have a capacity range of 100 to 900 cfm (2.8 to 25.5 m<sup>3</sup>/d) and discharge pressures in the *continued on page 86*



■ A Hurricane compound booster compressor is used offshore in a seismic exploration application where an air gun is fired to create undersea air explosions and pressure waves used to map formations below the sea bottom. The Hurricane compound compressor uses a single engine to drive two compressors; a rotary screw primary compressor and a reciprocating booster compressor, which in this case has a 3000 psi (207 bar) maximum discharge pressure.



100 to 125 psi (6.9 to 8.6 bar) range. The natural gas well boosters, designed to also use wellhead gas for fuel, operate with up to 9 psig (0.6 bar) suction pressure, 100 to 250 psig (6.9 to 17.2 bar) discharge pressure, and production volumes up to 422 Mscfd (11.9 Mm<sup>3</sup>/d).

Atlas Copco is a multinational company headquartered in Stockholm, Sweden. It has approximately 33,000 employ-

ees, and a turnover of €6.7 billion (US\$10.7 billion). Houpline explained that the Atlas Copco focus is on industrial productivity solutions in three main fields, compression, mining and construction, and industrial tooling. Atlas Copco Hurricane is now a part of the Compression Technique business area, portable air division of Atlas Copco, whose headquarters is in Antwerp, Belgium. Houpline said that Atlas Copco Hurricane will continue to maintain its own product development group and manufacturing in Franklin in order to fully concentrate on the needs of the booster compression markets they have served in the past, but will be supplemented as needed by the Atlas Copco engineering staff in Belgium.

Pete Grimmer, vice president marketing and sales for GrimmerSchmidt, explained that the GrimmerSchmidt product line marketing will continue to focus on two main markets — gas well booster compression and customized construction air compression. Gas well booster compression will use an oil-flooded rotary screw compressor driven by a GM 5.7 L or 8.1 L industrial engine. Suction pressures can be as low as 12 in. of vacuum and up to 9 psig (0.6 bar). Both designs operate on wellhead gas, incorporating fuel gas scrubbers and regulators. They also include suction scrubbers with mist extractors, bypass and blow-down controls, and are equipped for unattended operation with makeup oil tanks and an extensive safety shutdown system. On the construction air side of the product line Grimmer said that the GrimmerSchmidt primary air compressor product (towable, skid or truck mounted) will be focusing on special customized units. For standard products, the Chicago Pneumatic portable air compressors will be offered through the GrimmerSchmidt sales channels.

Richard Baker explained that Hurricane's marketing emphasis for its high-pressure air booster compressors will continue to be heavily oil and gas oriented, encompassing oil, gas and coalbed methane drilling; offshore and onshore oil and gas seismic exploration; oil and gas well cleaning and servicing; and pipeline testing and cleaning ("pigging"). The products are also marketed to the mineral exploration, water well drilling and geothermal industries.

A typical application for a Hurricane booster compressor is at a drilling or well servicing rig location, where primary air compressors are already at work bringing air from at-

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mospheric pressure to approximately 350 psi (24.1 bar) to satisfy the low-pressure compressed air requirements of the operation. A Hurricane booster compressor, which may be from one to five stages, utilizes the primary air compressor discharge of 150 to 350 psi (10.4 to 24.1 bar) as its suction pressure. The booster is used for a variety of specialized high-pressure operations depending upon the application. Its high-pressure discharge air (or in some cases nitrogen) which may be up to 5000 psi (345 bar) is used to maintain pressure on down the hole (DTH) hammers; flush cuttings and water from the bore hole; cement the casing; and aerate the drilling mud among other tasks.

Baker explained that the booster, such as the popular model 7T-276-41B-1000 – Caterpillar C7 turbocharged engine; 276 cu.in. (4.5 L) compressor block displacement; four cylinder, single stage; 1000 psi (69 bar) maximum discharge pressure, “has a number of proprietary features developed over the company’s 40-year history.” The compressor itself is built up from the modified block of a heavy-duty diesel engine. Booster pistons, whose size depends upon the required pressure and flow, are mounted on crosshead pistons. Both the engine block and compressor block are water cooled, and the engine also incorporates charge-air cooling and oil cooling. Booster inlet air, interstage air (if multi-stage), and discharge air are also passed through coolers. The compact assembly also incorporates a scrubber, load/unload valve, minimum discharge pressure valve, fuel tank and complete safety shutdown system.

Baker also described a unique compound compressor, which incorporates both a primary air compressor and a booster air compressor sharing a single driver. He says the Hurricane compound compressor is commonly used in seismic exploration applications. A model 12T-276-44SB-3000 is pictured at work in an offshore application. In this application the Hurricane booster provides charge air at up to 3000 psi (207 bar) for a seismic air gun. The air gun causes air explosions below the water surface, which in turn create pressure waves that penetrate the seabed. A hydrophone array picks up return echos from formations and strata under the seabed, allowing three-dimensional mapping of the formations. The compound compressor in this case utilizes a Caterpillar turbocharged C12 marine engine with seawater cooling. It drives a 276 cu.in. (4.5 L) displacement booster compressor block configured

as a four-cylinder four-stage compressor, and an integral oil-flooded rotary screw primary air compressor. The primary air screw compressor drives off the flywheel end of the engine while the booster compressor drives off the front end. As with other Hurricane designs the scrubber, coolers, control valves and safety shutdown system are all integral to the compact package. Baker also said that among several new products in work is an offshore containerized and weather-protected booster, which will incorporate Det

Norske Veritas (DNV) certification and carry CE marking.

Houppeline, Baker and Grimmer report that they are all “excited about the synergies in terms of both product range and marketing reach which have resulted from the Hurricane and GrimmerSchmidt acquisition, and look forward to continued service to air and gas compression markets worldwide as well as creation of new products to better serve customers.” ■

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