

Service Firms Cut Compression Costs

By Colter Cookson

The old adage that a penny saved is a penny earned may not have as much impact as it did when a kid could put a penny on the counter and get a bottle cap or piece of bubble gum in exchange. But for natural gas producers and the compression companies that help their products reach market, the concept resonates.

Indeed, compressor manufacturers, packagers, and contractors say they are doing everything they can to help producers find small savings that add up. For many, that means rolling out advanced remote monitoring systems, streamlining manufacturing, and developing new products that combine flexibility with efficiency.

Couple-Free Technology

To help gas producers cut capital and operating costs in gathering and processing applications, GE Oil & Gas has added the 1,500 rpm speed CFR5 and the 1,200 rpm speed CFH6 compressor models to its portfolio. Bhupinder Dayal, GE Oil & Gas’ senior product manager for high speed reciprocating compression, says both compressors employ a couple-free design.

“In a traditional reciprocating compressor, there is an offset between the opposing throws, whereas in the CFR5 and CFH6 compressors, the opposing throws have a common centerline. In other words, they are exactly opposite each other,” Dayal describes. “This eliminates dynamic moments and couples, which are primary sources of vibration.

“Because the couple-free compressors have very low vibrations, their packages don’t require as much skid and pedestal

material and mass, so the packages cost less to build,” Dayal says. “Also, the low inherent vibrations make it possible for a compressor package to be placed on a compact caliche bed instead of being grouted into a cement pad.”

Not only will this significantly reduce package costs, Dayal states that lower vibration will extend equipment life. He says couple-free compressor technology has been proven extensively since the early 2000s in GE Oil & Gas’ 1,800 rpm, 580 horsepower CFA compressor, as well as the API 618 5,900 horsepower SHMB compressor.

In designing the CFR5 and CFH6, GE Oil & Gas has simplified maintenance, reports Jeffrey Raynal, GE Oil & Gas

product leader for reciprocating compression. “For example, the main lube oil system is internal to the frame, thus eliminating external piping and trip hazards. We used two-piece crosshead doors so operators could take off a small door for inspection instead of removing a large, heavy crosshead door. We also improved the auxiliary end of the compressor, making the lube oil and coolant plumbing connections easier to access,” he details.

The couple-free compressors utilize GE’s FlexFlow lined cylinders, which Raynal says offer a more economical alternative to replacing complete cylinders as operating conditions or flow requirements change.

“With FlexFlow cylinders, we can re-



This CFH compressor from GE Oil & Gas is one of many new products designed to minimize compression-related capital and operating costs. The CFH costs less to build than a traditional compressor thanks to a low-vibration design that reduces the need for skid and pedestal material.



move or add liners and replace piston rod assemblies to increase or decrease the cylinder's effective bore," he outlines. "The liners and piston rods cost less to purchase, store, and switch compared with complete cylinder assemblies. Depending on the application, they can reduce the total cost of reconfiguring a compressor's operating envelope from

\$125,000 to \$25,000."

By adjusting the compressor more frequently, Raynal says operators can utilize the engine's full rated horsepower more consistently, increasing the package's gas stream revenue by moving more gas.

"That adds up over time," Raynal assures. "To show benefits, I have used real-world wellhead depletion data to

map how much gas a compressor with unlined cylinders will move over two years. Then I repeated the exercise with a compressor deploying FlexFlow cylinders to adjust with the same depleting suction pressure. The total monetized gas flow difference between the two scenarios can be in the millions, depending on the application." □