



KEEP COMPRESSORS AT THE TOP OF THEIR GAME

Compressors play a vital role across the natural gas supply chain. Upstream producers rely on compressors to push gas from low-pressure wells, or to keep production going when reservoir pressure declines. Midstream operators use compressors to move natural gas through gathering systems, and to maintain sufficient air pressure to keep the product flowing through pipelines that cover extremely long distances. Compression also is essential for the efficient movement of gas into and out of downstream storage and processing facilities.

No matter their place in the supply chain, natural gas companies all recognize a single metric as a key indicator of both their operational and financial performance. That metric is compressor uptime.

Strategies for achieving maximum compressor performance with minimum downtime are outlined in a webcast presented by CFE Media and Technology. The broadcast features experts from Archrock, the world's largest supplier of contract compression, with more than four million horsepower in its fleet. Archrock also serves a large customer base in the aftermarket service arena, maintaining and repairing customer units, as well as retrofitting units to fit unique customer requirements.

Archrock®


**OUR TIME IS
YOUR UPTIME**

PEOPLE · POWER · PARTNERSHIP



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SHARING BEST PRACTICES

“Archrock’s approach to compressor maintenance is driven by our position as the largest contract compression provider,” says Kyle Jantzen, Archrock’s director of sales for aftermarket services. “It’s our business to be able to maximize our uptime while minimizing the operational expenses related to maintaining our contract compression fleet.”

In the CFE Media webcast, Jantzen also notes that Archrock’s aftermarket service business essentially is a vehicle for sharing the company’s expertise and best practices for maximizing compressor performance with companies throughout the natural gas supply chain. A fair amount of that expertise is shared during the webcast, with speakers covering topics such as:

- **Developing and executing maintenance programs that yield the maximum possible compressor uptime at the lowest possible costs**
- **Re-purposing existing compression equipment to fit new business or environmental conditions**
- **Best practices for maintaining critical compressor components**
- **Smart strategies for maintaining turbochargers, which increasingly are becoming standard equipment on compressor engines.**

When it comes to compressor maintenance, Archrock believes a methodically planned—and strictly followed—program makes good business sense. Some management teams may balk at the cost of following a strict maintenance schedule. But that cost will pale in comparison to the expense of repairing a catastrophic compressor failure.

CATASTROPHIC FAILURE



“It hurts pretty bad on a budget when something fails outside of the major maintenance schedule,” says Bernard Capello, Archrock’s senior sales manager. “If you have a plan for conducting major maintenance events throughout the year, and something happens before you reach the next scheduled event, at least you have money in the budget to cover some of the unexpected repairs.”

Unexpected failures aside, Capello says there is one major practical reason for adopting a planned maintenance program. “Maintenance is something that has to be done. It’s also the largest dollar expenditure you will ever have related to an engine, outside of the initial purchase price. So, you should want to have a regular plan—and a regular budget—for that expense.”

While major maintenance events are infrequent, a solid maintenance management program requires that all units are monitored on a regular basis—daily if possible—and that detailed records on the wear and tear of components are kept. “We’re speaking about daily monitoring of oil and other fluids levels, making sure all of the day tanks and capacities are full,” Capello says. “If all of those things are not taken care of on a regular basis, your engine may not get to its next major maintenance event.”

REVAMPING IDLE ASSETS

As the largest supplier of contract compression, Archrock has become extremely adept at fitting equipment to meet customers' unique needs. Ultimately, it turned that expertise into a separate business unit called AMS Engineering.

"For Archrock, AMS Engineering essentially is figuring out how we can take a customer's existing equipment and modify or revamp it to work in a new application, to basically give it a new life," says Tyler Davis, Archrock's AMS engineering manager.

Archrock's AMS Engineering works falls into four basic categories:

- **Reconfiguration** This involves changing the basic operating structure of an engine to meet a new need. It could entail going from a high-pressure design to a low-pressure design or vice versa, or some other engine modification.
- **Job-Specific Modification** In these jobs, customers have a specific requirement, such as the need to meet new regulatory compliance standards, and they state exactly how they need existing equipment modified to meet that requirement.

- **Authorization** These jobs can involve various applications such as upsizing or downsizing compression capacity based on available gas, moving assets to a new site to more effectively use available horsepower, or even displacing equipment a customer is leasing with equipment they own that currently is sitting idle.
- **Modernization** As the name implies, this entails taking older equipment with obsolete engines, compressors or control panels and retrofitting them with newer, more modern equipment.



Archrock AMS engineers also provide field support for customer needs ranging from compressor engine or cooler performance checks to finding solutions to problems with customer-owned equipment in the field.

TURBOCHARGERS ACCELERATE YOUR UPTIME

Turbochargers are becoming standard equipment on new gas compressors for two primary reasons:

- They give engines more horsepower, enabling compressors to operate more efficiently
- They reduce the amount of carbon that engines emit, making it easier for natural gas suppliers to comply with increasingly stringent environmental regulations.

As operators find more turbocharged compressors in their fleets, they are having to learn the proper methods for ensuring these components operate at maximum efficiency.

Mitch Opat, Archrock's manager of turbochargers, likens these components to the parts of the human anatomy that enable breathing. "Just like us, engines have to breathe," Opat said. "The turbocharger enhances this process for the engine." An engine's inhalation process is called intake, and what the engine exhales is known as exhaust. A turbocharger uses engine exhaust to drive a single-stage turbine that is connected to a compressor wheel by a metal shaft.

The compressor wheel compresses ambient air running through the engine to a higher density, creating a higher rate of charge to power engine cylinders, generating greater horsepower than a conventional engine.

Some turbocharger parts also differ from those of conventional engines, which is why companies running turbocharged compressors must learn some new maintenance strategies.



"In today's dynamic natural gas market, companies may find that their existing compression equipment is not suited for new operating needs. Whether it's developing major maintenance programs, retrofitting equipment for new users or getting a handle on turbocharger management, Archrock has the expertise to help you keep your compressors running at the top of their game," Opat concluded.

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