

John Crane adds to its "Aura"

Company releases compact dry gas seal designed to combat methane emissions. By **Dj Slater**

Gas compression technology of the 1950s and 1960s wasn't known for being emissions conscious. That same technology, however, is still in service today across the United States, allowing methane to seep out at costly rates.

John Crane hopes to put an end to this practice with a retrofitted option that allows operators to retain their legacy centrifugal compressors with a modern touch. The company, known for its compressor components, has added the Aura 120NS dry gas seal to its existing lineup of similar technology. John Crane officially debuted this product at the Turbomachinery & Pump

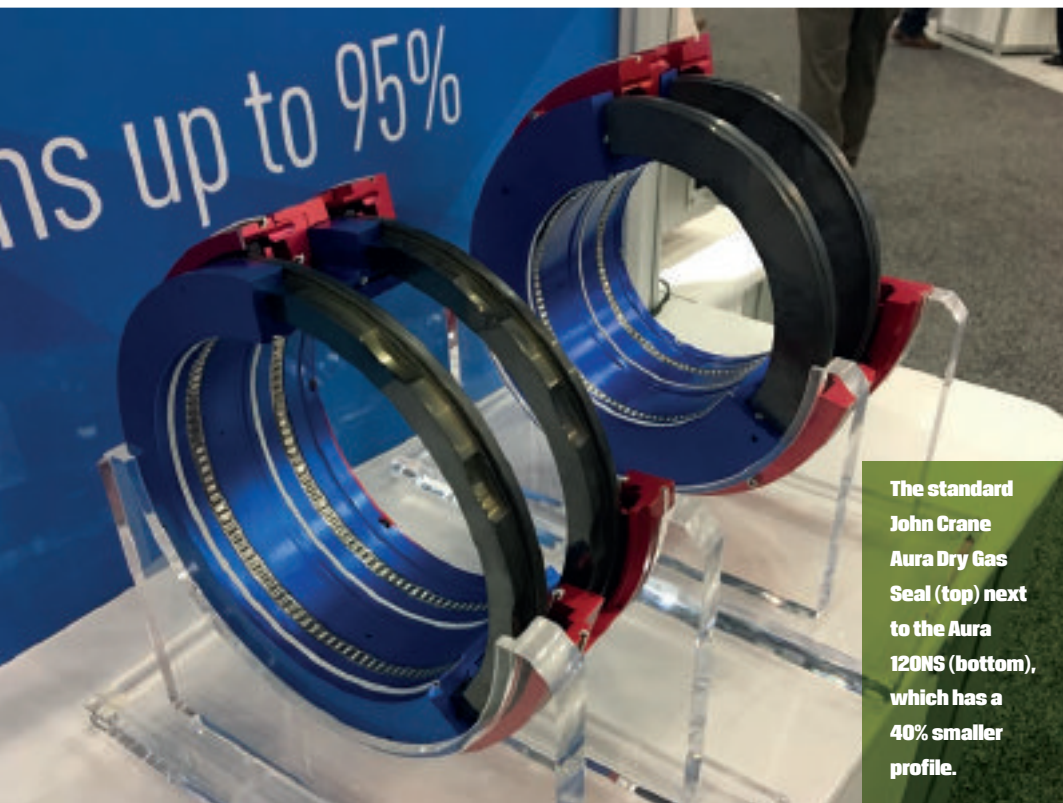
Symposia in September in Houston, Texas.

The Aura 120NS takes on a comparable composition of its Aura gas seal counterparts – silicon carbide rotating and stationary sealing faces – but has a smaller footprint. Against John Crane's dry gas seal lineup, the Aura 120NS has a 42% reduced radial cross section and 22% reduced axial length, which allows it to fit in legacy compressors without requiring modifications to the equipment. Appropriately, the NS in the name stands for "narrow section."

"There was a need for a seal which had a smaller footprint than our standard offering to expand the availability of gas



seal technology to a larger percentage of the equipment that's out there today," said Paul Hosking, John Crane's global product manager. "It gives us the opportunity to reduce the methane emissions from the oil seal by about 95%."



The standard John Crane Aura Dry Gas Seal (top) next to the Aura 120NS (bottom), which has a 40% smaller profile.

Seal history

Decades ago, mechanical oil seals were the primary means of preventing natural gas from leaking out of compression equipment. Still, there were problems, Hosking said. The seal itself wasn't as effective as a dry gas model, operators had to inject oil into the seal face to prolong the component's life, and using oil created opportunities for the substance to enter the gas stream.

Dry gas seals emerged in the 1970s, and are now a standard technology on nearly all centrifugal compressors in the field, Hosking said. But many legacy compressors of yesteryear still use oil seals, making these centrifugals one of the top five sources of methane emissions in the natural gas industry, he said.

"There's an opportunity for us to move the industry away from oil seal technology and upgrade them to dry gas seals," Hosking said.

The Aura 120NS fits shaft sizes from 2.87



"If we have a big methane emissions problem, that tarnishes the industry's reputation. This is a strategic issue for the industry."

PAUL HOSKING, global product manager, John Crane

John Crane added the Aura 120NS dry gas seal to its existing Aura lineup. The Aura 120NS is designed for legacy centrifugal compressors.

to 6.10 in. (73 to 155 mm), with bore sizes from 5.5 to 8.78 in. (140 to 223 mm). It has static pressure limits up to 1740 psi (120 bar) and dynamic pressure limits up to 1450 psi (100 bar). It can handle speeds of 328 fps (99.9 m/s) and temperatures from -58° to 392°F (-50°C to 200°C).

Environmentally conscious

The debut of this dry gas seal comes at an interesting time. In May 2016, the U.S. Environmental Protection Agency (EPA) updated its emissions standards to reduce 2012 methane emissions levels from the oil and gas sector 40 to 45% by 2025. This September, however, the EPA proposed rolling back these regulations to save US\$484 million (or US\$75 million annually) in regulatory costs from 2019 to 2025 (See related story on page 39).

No matter how EPA adjusts its regulations, Hosking said companies are starting to take a "greener" approach.

"There is increasingly more and more momentum in the industry and globally to address this issue," he said.

That momentum can be characterized by companies within the industry. On Sept. 18, Shell revealed its intentions to limit its methane emissions to below 0.2% of all its oil and gas operations by 2025. BP made the

same commitment in April, while Exxon Mobil declared its plans in May to drop its methane emissions by 15% by 2020.

The environment isn't the only factor to consider regarding lower methane emissions. Hosking said methane emissions amount to US\$27 billion in value. Additionally, methane emissions and gas compression don't have the best reputation in the public eye. Showing the public that the natural gas industry can be a better player in the emissions fight will help improve the relationship between the two.

"Natural gas is supposed to bridge fuel to the world," he said. "If we have a big methane emissions problem, that tarnishes the industry's reputation. This is a strategic issue for the industry."

John Crane's own strategy doesn't stop with the Aura 120NS. While emissions reduction efforts have advanced greatly over the decades, Hosking said his company is evaluating the feasibility of the next emissions benchmark – zero.

"It is possible and maybe in the future, and we are evaluating technology that might take us to it," he said. "Oil seals are sort of high emissions, gas seals are lower emissions, and we're evaluating how we get to zero."

For now, Hosking thinks the Aura 120NS will aid the industry in cleaning up emissions and its reputation.

"We see this (the Aura 120NS) as a means to improve the economics of the industry," he said. "This will help position natural gas as the clean bridge fuel between the old fossil fuels of the past and the new renewables and the promise they bring to the future." **CT2**

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