

The Global Journal of Energy Equipment

MAY/JUNE 2021 • VOL. 62 no.3

# TURBOMACHINERY

## INTERNATIONAL

[TURBOMACHINERYMAG.COM](http://TURBOMACHINERYMAG.COM)



### Also in this issue:

Expanders • Oil & Gas • Power Generation • Bearings  
Turbines • Software & Controls • Compressors  
Components & Auxiliary Systems • Maintenance & Repair

# VITAL COMPONENTS

## Turbomachinery Components & Auxiliary Systems Loom Large

BY RORY PASQUARIELLO

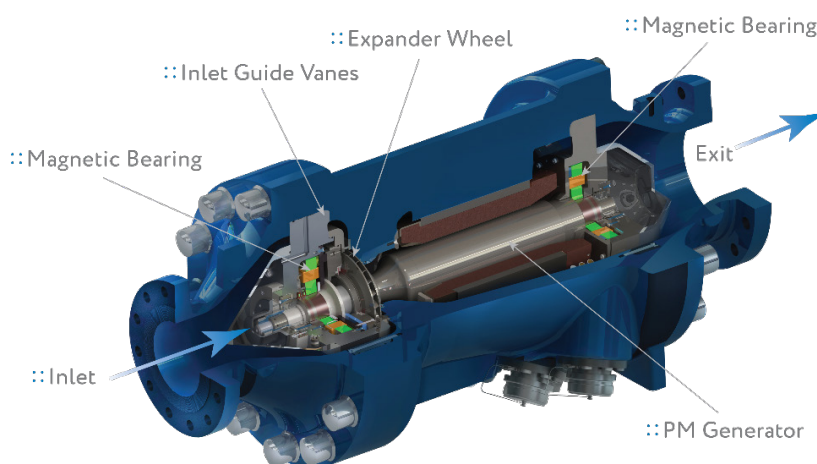
If only we could plug power lines directly into gas turbines, our energy problems would be far less numerous. The guts of the plants that electrify the world are necessary for a safe and reliable power supply. They are just as integral as the turbomachinery that lies at the heart of the plant. A vast army of component and auxiliary system manufacturers supply the sector with everything from seals, joints, and filters to software and sensors.

Turbomachinery International Magazine interviewed many of these vendors about trends in the industry as well as the new products and services they're developing. For many, 2020 was a rough year. Energy consumption dropped and budgets were suspended, leaving plant operators with little choice but to defer maintenance and upgrades. But 2021 has a much rosier outlook. Sidelined projects have been revived. Spare parts are in higher demand. The move towards carbon reduction is being served by component manufacturers via better filtration and tighter seals. With remote monitoring becoming the norm, the market for software and sensors has strengthened.

### CALNETIX

Calnetix manufactures high-speed permanent magnet motor generators, magnetic bearings systems, and power electronics. The company is particularly attuned to the industry shift towards the electrification of drive systems for sustainability.

It is seeing higher demand for integrated machinery in applications such as air separation, offshore source gas compressors, gas processing companders, gas storage compressor and expanders, compressed air energy storage, supercritical CO<sub>2</sub>-based waste heat recovery equipment, and hydrogen compressors and expanders. Integrated high-speed machines add value but have higher costs. For example, hermetically sealing a high-speed compressor requires redundant seals and sealing controls. But integrated machines offer a minimum of a 1% to 2%



Cutaway model of the FreeSpin In-line Turboexpander (FIT).

**"We will soon see more hermetically sealed drive solutions being used in turbomachinery applications,"** said Venky Krishnan, Vice President of Business Development and Business Unit Leader, Calnetix.

efficiency gain, and the cost of deployment (equipment, installation, commissioning, and field work) is lower.

Calnetix has created a subsidiary, Sapphire Technologies, to focus on auxiliary expander systems. That unit developed FreeSpin In-line Turboexpander (FIT) systems that use magnets in a hermetically sealed system to capture the energy lost in pressure reduction from natural gas and hydrogen applications.

FIT produces electricity by extracting energy from gas pressure let down processes. High-pressure gas flows into the FIT and expands through the radial turbine wheel. The expansion energy is converted to rotational energy, which drives the shaft coupled to the permanent magnet generator. All rotating components are levitated by the active magnetic bearing system, providing



**Venky Krishnan**  
Vice President of Business Development and Business Unit Leader, Calnetix.



frictionless operation. The generator produces electricity and transfers it to the variable speed drive (VSD), where the frequency and voltage are regulated to match the local grid. After expansion, the gas exits the FIT with the same conditions as the existing downstream gas network.

### CDI ENERGY PRODUCTS

CDI Energy Products manufactures polymer products and components for the oil & gas, LNG, fluid handling, aerospace, power generation, refining & petrochemical, and industrial processing industries. It produces materials such as elastomers, fluoropolymers, and thermoplastics.

2020 brought a rethink in operational planning, plant footprint, and traditional office structure. This included the relocation of manufacturing equipment.

The company sees 2021 through a much more optimistic lens. It has several products and

materials in the research and development phase. It is about to launch something for the well service packing market and hydraulic fracturing industry as part of its Tuff Breed line. It addresses a major pain point service providers face with frac pump efficiency and fluid end failure.

One of the materials in the company's dures brand was recognized in the API 610 Twelfth Edition for stationary wear or rotating parts applications selection. The proprietary thermoplastic polymer composite used in dures 200 was developed to service applications with aggressive acids and bases, aromatics, and amines. The dures brand also includes the A451 and XPC2, both of which were recognized as meeting API 610 standards for stationary wear or rotating parts applications. Items produced with dures include case and stationary wear rings, impeller and rotating wear rings, throat or stuffing box bushings, and bowl bushings.



**CDI Energy Products** produces materials such as elastomers, fluoropolymers, and thermoplastics.



## USING LESS AND USING IT SMARTER

With Regal facilities worldwide, we can recertify your Kop-Flex® API-671 specified coupling anywhere, at any time, and bring it back to like-new condition, with a typical savings of 50% compared to new. As part of our journey with a continuous improvement mindset, we set targets to reduce our footprint in every Regal location around the world.

For more information about how we can help with your coupling needs, call Application Engineering at 800-626-2120.

[regalbeloit.com/KopFlexRecert](http://regalbeloit.com/KopFlexRecert)  
Creating a better tomorrow™ ...

Regal, Creating a better tomorrow and Kop-Flex are trademarks of Regal Beloit Corporation or one of its affiliated companies.  
©2016, 2021 Regal Beloit Corporation, All Rights Reserved. MCAD20008E • Form# 10042E

