

Solar Turbines Changes Manufacturing, R&D

PRODUCTION:

3-D Printers Used in Work, Experimentation

■ By BRAD GRAVES

The old image of manufacturing — of wrenches and grubby factory floors — needs a reboot.

So said **Pablo Koziner**, president of **Solar Turbines Inc.**, adding that contemporary manufacturing involves so much more engineering, mathematics, robotics and computing power than most people realize.

Solar Turbines is just getting to the point where it can make certain metal parts with the additive process, better known as 3-D printing. The San Diego-based unit of **Caterpillar Inc.** has “invested heavily” in additive manufacturing. It still makes parts the old way, with molding and casting. But Solar has come to a point where certain 3-D printed parts are durable enough to go into turbine systems in the field, and cost-effective enough to produce.

3-D Metal Printers

Additive manufacturing “changes the entire pace of how you do research and development,” Koziner said. Engineers can make changes to a part in a fraction of the time it took before.

“We’re still in a high-ramp era, [and] not only in Solar,” he said. “Every company that does something similar to what we do is looking at this stuff. We’re all at different stages of incorporation [and] adoption.”

For the moment at least, highly complex parts produced in small quantities seem to be the best candidates for additive manufacturing, the executive said. Solar Turbines has 3-D metal printers for production, and others for experimentation.

San Diego is hardly the first place a person calls to mind when they think of the oil and gas industry, but a big oil and gas player sits at Pacific Highway and Laurel Street. Solar Turbines manufactures midsize industrial gas turbines, used to power offshore oil facilities and keep product moving through gas pipelines. Their products also generate electricity and power and heat for universities and hospitals.

3,200 Local Employees

Solar Turbines is a heavy manufacturer in the same vein as the shipyards of Barr Logan. The downtown plant is on 28 acres; a second campus in Kearny Mesa covers 150 acres. The operation reported 3,200 San Diego employees in 2017, up from 3,129 in 2016.

“We’re growing. We’re looking for people,” Koziner said.

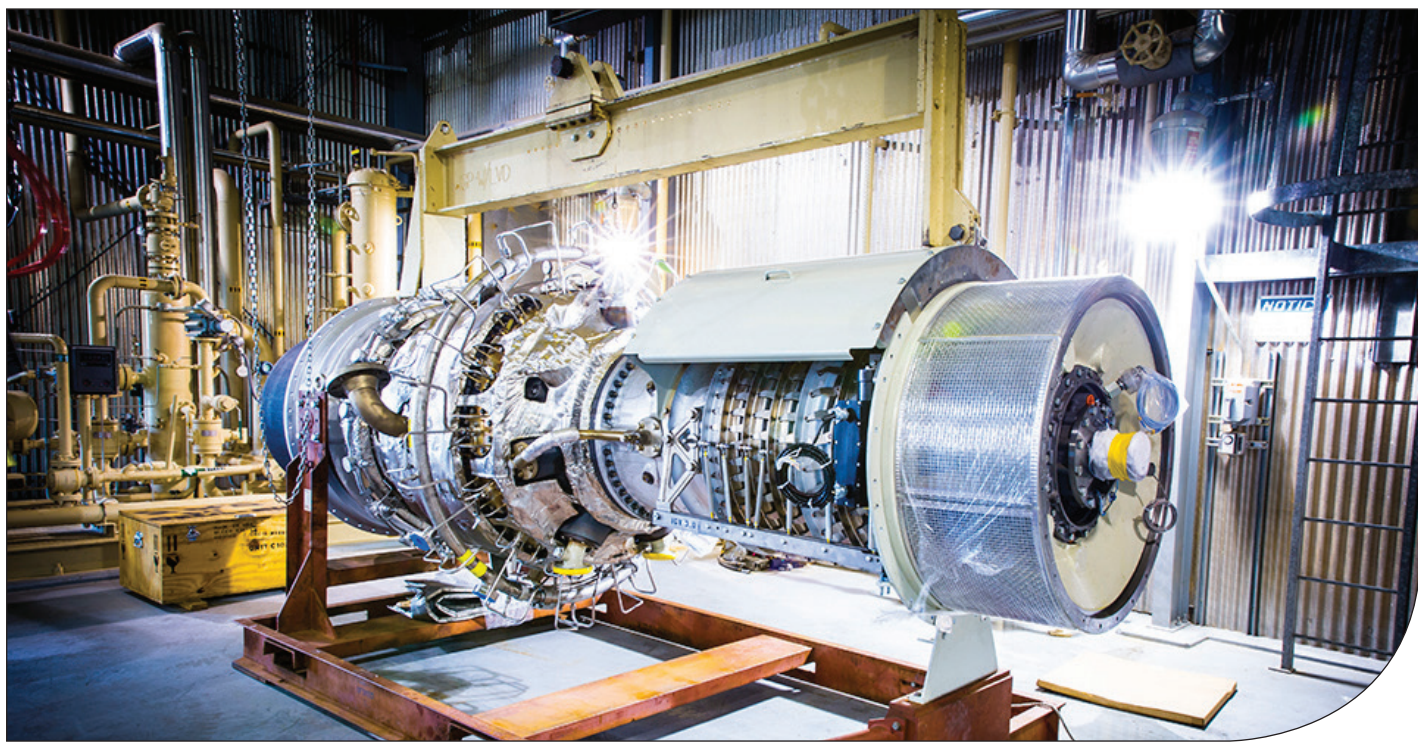
Despite technical advancements, “it’s still a very manually heavy type of business,” Koziner said. “There’s a lot of human touch in building these turbines.” Koziner recalled how **Betty Reed**, Solar Turbines’ longest tenured employee, showed him how to grind, de-burr and file down gears for the company’s finished products.

The manual aspect to the business will likely continue, he said.

Caterpillar does not disclose revenue for its Solar Turbines business. The corporation’s energy and transportation segment — of which Solar Turbines is a member — had revenue of \$15.96 billion in 2017, up from \$14.41 billion in 2016. In other locations, the energy and transportation segment produces piston engines and diesel-electric locomotives.

Increased demand for equipment and after-market parts drove increased sales in the energy and transportation business, according to Caterpillar’s 2017 annual report. The demand came from the oil and gas sector as well as the industrial sector.

Koziner said there is strong demand for pipeline compression in the United States, noting discoveries of shale gas. On top of that, he said, stable oil prices over the last 18 months have “created an uptick in opportunity.”



Photos courtesy of Solar Turbines Inc. Solar Turbines produces midsize industrial gas turbines for the oil and gas industry. The products also generate electricity and provide heat to college and hospital campuses. Right, Pablo Koziner’s career with Caterpillar Inc. took him around the United States and Latin America. He took the president’s job at Solar Turbines Inc. in 2015. Bottom, Two employees at Solar Turbines Inc. work with an industrial gas turbine.



Parent company Caterpillar also produces its signature, yellow-painted construction equipment as well as mining equipment. The corporation also has a financial services arm. The parent company’s total revenue in 2017 was \$45.46 billion, up from \$38.54 billion in 2016. The corporation as a whole had 96,000 employees in 2017, down from 99,500 employees in 2016.

Solar Turbines has some 7,500 employees in its worldwide network of locations. The company says it has more than 15,000 of its turbines installed in more than 100 countries.

Support Relationships

Selling a piece of machinery is only the beginning of a relationship with a customer, Koziner said. The support relationship can last 20 or 30 years, through economic booms and downturns. Naturally, the business of upgrading and modernizing products in the field slows down when times are tough, but it picks up once times improve, he said.

Koziner, 45, was born in Argentina and received his bachelor’s and law degrees from **Boston College**. Initially he worked at New York City law firms. Caterpillar recruited

him in 2001. The company was looking for an attorney with an energy focus, who could work on projects in Latin America. From that job in Miami, Koziner worked his way up through jobs with greater responsibility, arriving at Solar in San Diego in 2015.

Koziner has two children, ages 15 and 12. The family enjoys the outdoors. Koziner said he has taken up cycling since coming to San Diego and has yet to get back to flying small aircraft.

The family is strong, the executive said, after his wife Julie died of cancer in July. He said that friends, family, business associates, customers and the wider San Diego community have been supportive. While the loss was great, Koziner recalled his wife as a source of strength and optimism, one who chose to live each day fully.

Making the Choice

“I think ultimately every person has a choice to make about the way they’re going to live their lives, despite how difficult times may be,” he said. “... You may have every right to check out, and be upset, and no one would ever question that. In fact, they would

expect it. But ultimately that’s your choice. ... Her lesson in this was, ‘It’s your choice.’”

The executive shares his business and personal philosophy in a slide titled “My 10 Operating Principles.”

The first is that an employee has to earn his or her spot every day. As it is in sports, there is no tenure, no entitlement. “If you’re not performing, coaches will make changes,” he said.

Listening with an intent to learn is also part of the list, as is humility.

Change Is Going to Happen

“Life is going to humble you,” Koziner said. “Whether you’re humble or not humble, you will find that things will not play out the way that you designed them in your mind. And you have to have the humility and the courage to face these things, and understand that change is going to happen.”

“And [change], in business, happens more frequently than you can imagine. You only have so much control over the markets and other things. You have to be adaptable.”

SOLAR TURBINES INC.

Solar Turbines
A Caterpillar Company

President: Pablo Koziner

Revenue: Undisclosed

No. of local employees: 3,200

Investors: Solar Turbines is part of publicly traded Caterpillar Inc. (NYSE: CAT)

Headquarters: Downtown San Diego

Year founded: 1927, as Prudden-San Diego Airplane Co.

Company description: Producer and servicer of midsize industrial gas turbines.

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