



ROADIES TO RICHES

Niche Power Specialist Steps Up Gears | BY LORI MUSSER

Predecessor companies of energy specialist APR Energy were the progeny of visionary rock and roll roadies who recognized a widespread need to provide temporary power to large-scale but underserved music venues.

One of those visionaries was APR Chairman John Campion, who parlayed an entertainment-venue power niche into a global turnkey power plant business.

APR Energy was established in 2004. It now defines itself as providing flexible, cost-effective electricity when and where clients need it, for as long as

they need it. If an earthquake disables a power grid, or a city suffers from repeated solar power lapses, or an EPC needs to power up a remote site, APR offers an energy service. Its pins on the map show operations from Myanmar to Mexico. APR President and COO Chuck Ferry said he expects global growth to continue, most notably in Australia, Europe, U.S., the Caribbean and Canada.

Founded in Jacksonville, Florida, APR Energy specializes in fast-track flexible power generation. Following its 2013 acquisition of General Electric's turbine rental business,

APR Energy became one of the largest turbine rental suppliers in the world, according to Ferry. Competitors include the likes of Aggreko, Siemens and Pratt & Whitney.

"We have installed more than 60 power plants totaling more than 5 gigawatts of capacity across more than 35 countries, keeping cities and industries running," Ferry said.

While a conventional power plant can take perhaps five years to build, a modular plant made with mobile technology can take just a few weeks. APR's modules can be transported by ocean, air, rail or truck, and the power

ABOVE: A modular power station is installed in South Australia. / CREDIT: APR ENERGY



CHALLENGING POWER PROPOSITIONS

Puerto Rico's widespread infrastructure damage following Hurricane Maria created an immediate need for generating capacity and stabilization of the fragile power grid.

Three weeks after the hurricane, with 90 percent of Puerto Rico still out of power, the U.S. Army Corps of Engineers and its federal contractor Weston Solutions hired APR Energy to rapidly install and operate two mobile turbines at the Palo Seco power plant near San Juan.

Mobile turbine technology was favored for high-power density, lower emissions and its ability to stabilize the grid – reducing the risk of

blackouts. APR installed two TM2500 turbines producing 70 megawatts.

APR Energy was then awarded a separate contract to install a TM2500 at the Yabucoa power plant in southeast Puerto Rico, generating 25 megawatts of emergency power. The plant became fully operational 20 days later.

Logistics were a definite challenge. Ferry said: "So many relief vessels were trying to get access to port, all at the same time. We worked closely with the Coast Guard, Customs, the port ... and others. We had a great team, and terrific cooperation, which helped us move equipment through areas and along roads that were badly damaged."

is scalable and reliable – so reliable it is often used to stabilize renewable energy grids or provide supplemental generation for peak-demand periods. It can also be easily integrated into existing infrastructure.

APR Energy handles engineering, procurement and construction via a turnkey approach that offers installation, operation, maintenance, security, fuel management (when needed) and flexibility and balance of plant (the infrastructure over and above the turbines such as fuel forwarding systems, high and medium-voltage cable, transformation gear, switch gear and other connective tissue). And because APR builds, owns and operates its power plants, Ferry said customers get the electricity they need in a one-stop shop.

FLEXIBLE FLEET

Ferry claimed that APR's power generation fleet is the newest in the industry and features fuel-efficient technology from GE. Because emissions control is increasingly important, APR's feature turbine is the latest generation TM2500, a unit that is dual-fuel capable, burning diesel, natural gas, LPG, LNG and other alternative fuels.

"We really specialize in aeroderivative mobile turbines that can deliver blocks of power from 5 megawatts up to 300, 400 or even 500 megawatts anywhere," even to the far reaches of the world, Ferry said. These turbines offer up to 94 percent reduction in NO_x emissions compared with diesel reciprocating engines typically found in the temporary power market, according to Ferry. Adapted jet engine technology results in a lighter, smaller turbine. The turbines require regular maintenance by highly skilled technicians and the service life of the turbines, when properly maintained, is about 25 to 30 years.

"APR also deploys ancillary power plant equipment, some of which the company manufactures itself, such as containerized fuel forwarding, transformation and switchyard equipment," Ferry said. The components are usually shipped by sea, and while most of the pieces can be containerized, the modularized aeroderivative turbines are trailer-mounted. Each comes in two or three trailers, which are out-of-gauge. The trailer-mounted turbines can be piggy-

backed on a multi-axle lowboy. The oversized loads sometimes require special permits depending on the country, but are otherwise relatively easy to move. “We can pull right up to a ship to easily load or offload. They run about 50 to 80 tons depending on the piece. They can also be moved by an Antonov aircraft – in two or three lifts. Following the earthquake in Mexico we airlifted two Gen 8 turbines for PEMEX,” Ferry said.

“Over the years, GE has improved its mobile turbines. First, they have increased from 20 megawatts in older versions to 35 megawatts in the newest version,” Ferry said. They are increasingly modular and easier to transport, and fuel and heat efficiency have been improved. There have been enhancements to software, to allow newer machines to help stabilize a customer’s grid, and to lower NO_x and CO₂ emissions. Ferry said APR Energy’s ongoing relationship with GE and its research and development capacity has provided a continuous stream of advancements.

POWERING DEMANDS

The well-established power rental market is highly fragmented by provider. According to the Technavio Research report, *Global Power Rental Market for Utilities 2018-2022*, demand is growing about 3 percent annually. The strong demand is largely due to increasing global infrastructure activity. Several takeaways from the study were reported by *BusinessWire* in its October 2018 review:

- In 2017, the diesel generator segment accounted for nearly 70 percent of the power rental market and will continue to dominate the global market over the next five years.
- In 2017, Europe, the Middle East, and Africa held the leading market share, at nearly 43 percent; 48 percent of market growth is expected to originate in the region through 2022.
- Connected devices, Internet of Things and cloud computing are encouraging the development of smart and automated cities, leading to increased global power consumption and increased demand for continuous, reliable, quality power.

Because mobile power can be rapidly deployed it is an obvious solution for big projects with accelerated schedules.

“We have two main types of

requests for our business. One follows a natural disaster or unexpected permanent power plant outage, when there is an immediate need,” Ferry said. “Two stems from a situation where utilities and countries need replacement power for a short to mid-term period when buying replacement power generation is otherwise prohibitive. For example, when a power plant operator takes large generator sets offline for maintenance, or when a large coal or nuclear plant is shifting over to renewables, they often need interim power to bridge the gap.

“Renewables are especially hot now. They are coming online faster than experts may have expected just a few years ago, but they are less stable because the sun doesn’t shine and the wind doesn’t blow all time,” Ferry said. That leads to a third important market for APR: as older plants reach the end of their lives and are replaced with renewables, the loss in stability of the grid needs to be addressed, and fast-firing aeroderivative turbines, combined with batteries, can be a solution and effectively serve as an inexpensive form of spinning reserve.

GLOBAL DEVELOPMENT GOALS

Helping restore power quickly to industries and utilities following natural disasters and other unexpected power emergencies is another strength of fast-track flexible power. But it also serves industry in a more structured, proactive manner. It can be used as a cost-effective bridge for permanent power that is temporarily on the blink, for distributed generation for remote locations, for rapid response following disasters, or for dedicated generation for power-intensive industries such as mining.

Fast power can and does serve project owners around the globe. Ferry said: “We’ve taken a number of enquiries of late related to the oil and gas exploration boom. Some of the projects are in very remote areas where the utility company is challenged to reach the site in a timely manner. And some are for pipeline construction and compression stations from remote areas to port locations.” Ferry said this market is an important growth area for his industry.

Based in the U.S., Lori Musser is a veteran shipping industry writer.

RAMPING UP THE POWER

The Bangladesh Power Development Board, or BPDB, required massive supplemental power over a five-year period to complete large-scale coal and nuclear facilities under construction. APR Energy was contracted to provide 300 megawatts.

The sheer size of the project was a challenge. Ferry said: “The site [near the Pangaon container terminal port in Keraniganj] wasn’t hard to get to, but the project required a tremendous amount of equipment – roughly equivalent to 8,000 20-foot-equivalent-units – plus diesel power plant.”

In September 2018 the installation and 100-hour commissioning test was completed. The plant is owned and operated by APR Energy Bangladesh Ltd., which will also manage all fuel logistics and handling.

This was one of APR Energy’s largest projects to date. “Unprecedented population growth and economic expansion make Bangladesh one of the largest electrical markets in the world,” said APR Energy Chairman John Campion. “While the country continues development and implementation of numerous long-term solutions, BPDB recognized a need for a fast-track power solution that would help them meet their peak electricity demands over the next five years.” **BB**

