

LEAN-ONE A CLEAN ONE

BluePoint Energy's new 260 kW CHP package includes EGR, catalyst system for low emissions

By Dawn M. Geske

First emerging into the distributed power generation market in 2001, cogeneration manufacturer BluePoint Energy Inc., Granite Bay, Calif., has developed its first combined heat and power module, a 260 kW lean burn, gaseous-fueled unit targeted toward utilities, energy service companies and commercial end users. Absent the typical selective catalyst reduction (SCR) systems found on many stationary engine systems, the Lean-One CHP module incorporates an exhaust gas recirculation (EGR) system and a Johnson Matthey catalyst to deliver emissions levels as low as 0.6 ppm NO_x, 1.5 ppm NMHC and 42.8 ppm CO at 15% oxygen, according to the company.

"We wanted to use a lean burn engine, but we wanted not to have to use SCR," said Tom Black, president at BluePoint. "To run a lean burn engine in California you need SCR. We decided to take a lean burn engine and integrate EGR to allow us to run a lean burn engine with the same characteristics as a stoichiometric engine to meet and dramatically exceed California emission requirements without the use of expensive SCR."

The system is driven by a 15 L, eight-cylinder, liquid-cooled Deutz 1015 gaseous-fueled engine rated 360 hp at 1800 rpm. The electronically controlled engine uses stoichiometric combustion, a 12:1 compression ratio and Deutz's TEM controlled lean burn gas mixture regulator. According to BluePoint, it's



BluePoint Energy's 260 kW Lean-One CHP module is equipped with a 325 hp Deutz gaseous-fueled engine incorporating EGR and a stoichiometric catalyst package.

able to combine the low emissions capabilities of a stoichiometric/catalyst package with the high efficiency and power density of a lean burn engine using its proprietary super-cooled EGR (SC-EGR) design. "As the exhaust comes out of the engine, we pull 15 to 20% of it," said Black. "We super cool it and put it back into the engine with the fuel.

"The output emission has no oxygen so we are able to use a standard inexpensive catalytic converter," Black added. "We are also using less fuel running in a lean burn mode."

Engine cooling is through a Radiator Specialties Inc. radiator packaged in the engine enclosure. The cooling package is rated for 1.3 mbtu at 110°F, Blue-



Point said. Additional cooling is provided by the intercooler cooling circuit.

A Leroy-Somer alternator provides the unit's 260 kW three-phase electrical output. The all-copper, single bearing alternator features class H insulation with 325 kVa and is rated to 268.6 kW with an 8.6 kW impedance for operation.

Along with its electrical output, the system also produces hot water from



The Lean-One CHP Module is targeted toward utilities, energy service companies and commercial end users.

the engine exhaust gas through an Alpha Laval plate and frame heat exchanger which maintains water temperature at 205° to 210°F. The hot water is used for a variety of purposes in athletic clubs, hotels, motels, nursing homes, plastics companies or other industrial companies, said Black. "You need a customer that has lots of hours," he said. "Health clubs are great because they're typically open until midnight and open again at 4:30 in the morning. They use a lot of hot water for showers, pools and spas."

BluePoint designed the Lean-One module as a plug-and-play unit with all its operating and control components housed within a 120 in. x 56 in. x 84 in. enclosure. The standard package includes a 78 dB(A) rating with the option of an industrial enclosure rated to 64 dB(A), created with the addition of internal louvers. EnCorp controls with paralleling switchgear are installed within the enclosure. The switchgear allows for peak shaving as the unit can be stopped and started using a remote signal sent from an off-site location or through individual synchronization. Additional control features include breaker input/output, manual start, remote access and control, as well as a full monitoring package which sends alerts via e-mail or pager and also incorporates automatic shutdowns.

The Lean-One CHP module is manufactured in Sparks, Nev., and marketed in the U.S. and Canada. BluePoint merged with Specialized Energy Products Inc., a privately held Nevada corporation, as a public company under its corporate name of Chapeau Inc. in April of 2001. ★