

Shown is a Ruston TB 5000 gas turbine with the Continental Controls Corp. AGV 10 (gas valve) installed as part of an upgrade.

Upgrades Improve GT Performance in Mexico

Continental Controls Corp., San Diego, California, U.S.A., has recently retrofitted almost 100 Ruston TB-5000 gas turbines in Mexico near Villahermosa for Pemex, the state-owned oil company, with the addition of its AGV 10 gas fuel valves, AVL 10 liquid fuel valves and other components. The gas turbines are used primarily on a gas pipeline at compression stations. These retrofits have included several products specifically designed to improve the starting and running performance of these turbines over the equipment that was originally provided with these engines.

Continental Controls' main focus has always been fuel control. The company has a history of offering controls and fuel valves for the gas turbines of Solar Turbines Incorporated. However, the company has discovered a need for specific enhancements to Ruston TA 1750 and Ruston TB 5000 gas turbines.

While working in Mexico on other gas turbines, representatives of Continental Controls and their distributor for Mexico (Grupo Cabrick) met several operators who indicated that they had problems starting their Ruston units. Further investigation revealed two main problem areas — the fuel and ignition systems.

The fuel system originally included on the turbines consisted of a Star valve that is driven by a rotary actuator. For starting, the valve is moved to a near closed position that activates a contact closure to indicate that it is in the starting position. The electronic driver is part of the OEM-provided control system and it is housed in its own EP box.

With this configuration, the valve itself requires maintenance for the seals while dirt within the valve can cause it to stick and not operate freely. Also, this system does not provide for confirmation of accurate fuel flow for

starting of the engine, so changes in ambient conditions or problems with the valve can cause inaccurate start flow of fuel.

Operators also found that the ignition system on the TB-5000 showed inconsistent operation if there was moisture or condensation on the igniter. This was particularly the case with liquid fuel systems on the TB-5000s.

To improve the operation of the TB-5000 turbines, Continental Controls has had success with fuel system upgrades that include the addition of its AGV 10 fuel valve and a small PLC-based fuel control safety module that replaces the fuel controller previously used on the turbines.

The AGV 10 valve includes a mass flow measurement in the valve, which measures the fuel flow to assure that the measured fuel flow matches the requested fuel flow under any ambient conditions and with all supply pressures.

According to Continental Controls, the accuracy of the flow is most critical for starting. Because of the inaccuracies inherent in position-based valves, the fuel demand signal is normally ramped through a range where it is possible to light off the turbine.

**ENGINE DIAGNOSTICS,
UPGRADES & SERVICE**



Also available is the Continental Controls Corp. high-energy ignition system kit for Ruston TB-5000 gas turbines.

Sometimes these turbines will light a little hot, sometimes they will light just right and sometimes they won't light at all.

With the AGV 10, the operator can determine the sweet spot for light-off and request specifically that fuel flow for starting and not ramp the start flow. Every start will be exactly the same, according to Continental Controls.

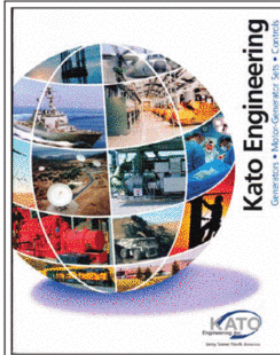
When the AGV 10 valve is installed on TB-5000 turbines with the original Rustronic controls, a safety control box is added during installation. This Continental Controls product consists of a mini-PLC that monitors the fuel demand and fuel feedback signal to ensure that the valve is always operating in an acceptable flow range. If the fuel flow exceeds a maximum set-point, the safety monitor would execute an emergency stop as well as close the fuel valve. The safety monitor also will serve as an interface between the control system and the valve so that no changes are required to the Rustronics system.

Continental Controls also offers an improved high-energy ignition system that includes a replacement for the exciter, the igniter and the ignition lead. The same ignition system will work with TB 5000s that are burning either liquid or gaseous fuels.

Continental Controls also offers fuel system upgrades for a wide range of turbines including GE, Allison, Solar and most other gas turbines.

SEE DIRECTLINK @
WWW.DIESELGASTURBINE.COM

POWER SYSTEMS LITERATURE



GENERATORS

A 20-page brochure is available from Kato Engineering. The brochure highlights the company's products as well as its design and construction features. The brochure also includes sections on bearings, voltage regulation, testing and special cooling and protection.

SEE DIRECTLINK @ WWW.DIESELGASTURBINE.COM



There are Many Ideas to Save Fuel.



KRAL Volumeter® - Fuel Consumption Measurement System.

**POWER GEN Europe 2009
Cologne**

Heavy Fuel Oil Capable Fuel Consumption Measurement.

Fuel oil prices continue to rise more than ever. Creative engineers endlessly develop methods to save fuel, no matter if the ideas are new or a known process which can be optimized. The KRAL fuel consumption measurement is capable of measuring heavy fuel oil with such accuracy, that the result can be verified right away.

Experience with heavy fuel oil.
The idea that precise meters are incompatible with high temperatures and abrasive heavy fuel oil components is still widely held. KRAL has many years of experience

with heavy fuel oil pumps and flowmeters. The technologies are long established and tested.

Precise KRAL Volumeter®.
KRAL Volumeter is accurate to ±0,1% over a wide flow rate range to 100:1. That makes them the most precise positive displacement meters for industrial applications such as oceangoing shipping, barges, fishing vessels, yachts and oil drilling platforms.

www.kral.at
www.kral-usa.com



KRAL AG, Bildgasse 40, Industrie Nord, 6890 Lustenau, Austria, Tel.: +43 / 55 77 / 86644 - 0, e-mail: info@kral.at
KRAL-USA, Inc., P.O. Box 2990, Matthews, NC 28106, USA, Tel.: (704) 814 - 6164, e-mail: sales@kral-usa.com

SEE DIRECTLINK @ WWW.DIESELGASTURBINE.COM