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Remote monitoring system helps efficient power production

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BAGHDAD, Iraq – Obtaining the greatest efficiency and ensuring full service life of Iraq's combustion gas turbine power generation plants is the goal of a new Remote Monitoring System keeping watch on key indicators of the plants' performance.

Monitoring of the fleet of gas turbine power generation plants throughout Iraq from a central location is now possible thanks to an Iraq Relief and Reconstruction Fund provided project managed by the U.S. Army Corps of Engineers.

Iraq's Ministry of Electricity has increased the total megawatts produced on the electrical power grid as quickly as possible by building new gas turbine power generation plants. Construction of gas turbine power generation plants is typically years faster than building thermal power generation plants with extensive boiler and steam turbine systems which take much longer to manufacture and construct. Combustion gas turbine engines, essentially like those propelling large commercial aircraft, however, are more susceptible to fuel quality, ambient temperatures and dirty conditions which makes them harder to control and can also reduce their power output and cause greater wear.

The Remote Monitoring System, or RMS for short, is designed to back up Ministry of Electricity plant operators by watching a series of key parameters of power plant

performance. The RMS center will also capture and store this data for historical records of plant performance and data related to plant trips and failures.

"All the power plants are controlled locally," said Jeff Larkin, PB Program director for the O&M contract in electricity for the USACE Gulf Region Division, "but turbine specialists monitoring through RMS can contact plants via telephone if they see readings going off."

The system developed by Turbine Technology Services Corporation is not quite real time – information is sent by satellite from twelve plants (once fully commissioned) to a central RMS facility collocated at one of the Ministry of Electricity power plants. From there, turbine specialists can watch, download and store data for trend analysis to forecast maintenance requirements and look for greater operational efficiencies. Installation began in September 2006.

Turbine specialists monitoring RMS will be key players in keeping plants operating efficiently, said Robin Pratt, Generation Program director. He said the facility gives the Ministry of Electricity the ability to watch essential parameters and react before a problem that local plant operators may not notice gets to a critical level. This facility can also give the Ministry of Electricity the opportunity to maximize the use of the skills and experience of their spe-

specialists to monitor and advise operation staff in real time across many plant locations when previously these specialists have only been able to provide real time advice at the one plant where they are located, Pratt explained.

Among the readings observed by the RMS are temperatures for wheel space, bearing metal, generator and exhaust, fuel flow, vibration, lubricating oil, revolutions per minute, megawatts produced and frequency.

"RMS is set up internally for the Ministry of Electricity," Larkin said. In the States, the monitoring role is typically provided by the equipment manufacturer through an operations and maintenance type contract. Setting up RMS at one of the plants gives the Ministry of Electricity complete ownership, relying on their own specialists rather than an O&M contractor outside of the country, he said. Additionally, the Director Generals can dial up a Website and access a summary of plant performance and even check turbine power production unit by unit from home or a hotel room.

RMS gives technicians the ability to monitor plant performance over long periods of time and to see what deteriorates and determine when maintenance needs to be done before critical failure. This also enables wear rates to be predicted and long lead parts to be ordered in good time to enable best value, rather than make emergency procurements. In that way RMS will be part of "...a huge cultural shift to go to preventive, periodic maintenance" away from the failure maintenance practiced under the past regime.

Larkin said the Ministry of Electricity is embracing the latest technologies they have been starved of the last 12 years due to international sanctions. He estimates in two years time they should be fully up to speed with industry standards.

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