Solar® Turbines
A Caterpillar Company

COGENERATION PROJECT

Al Karam Textile Mills

Developer: Self Owned and Operated

Location: Landhi, Karachi, Pakistan

Installed: 1993

Al Karam Textile Mills Ltd. are Pakistan's leading manufacturer and exporter of cloth materials and they operate an integrated textile complex at Landhi comprising spinning, weaving, finishing, processing, dyeing and garmets units.

The textile mill uses more than 6.5 MW of electricity and 15 tonnes/hour of steam. The company used to buy its electric power from the national grid but because of the system's unreliability, several years ago they installed standby gas-engine generators.

Then, in 1992, Al Karam decided to install their own cogeneration plant that serves as a stable and reliable on-site source of their electric power and process steam and also enables the company to enhance its competitive position by substantially reducing its energy costs.

TUMA Turbomach, a *Solar*® gas turbine packager based at Mezzovico, Switzerland, provided Al Karam with a complete turnkey gas turbine cogeneration plant.

Single-shaft, dual-fuel (natural gas/distillates) *Centaur*® 50 industrial gas turbines manufactured by Solar Turbines power the two turbogenerators at Al Karam. They can deliver a total of 6 MW at 11 kV on a 32°C day. The exhaust heat from both units goes into a single heat recovery boiler that produces 15 tonnes/hour of steam at 15 bar for process applications in the textile mill. The old standby generators were retained as peaking units.

The cogeneration plant was commissioned in late 1993 less than one year after placement of the order.

By May 1994 each gas turbine had logged over 5500 hours of operation and the cogeneration plant has an overall thermal efficiency of 82%. Al Karam Textile Mills expects a 2 1/2 to 3 year payback for the entire cogeneration plant.

DSCP-AK/507/EO