



case study



# New manufacturing practices speed fan deliveries for Thai gas-turbine project

case study 21

Halifax Fan Ltd, with its long experience of serving the requirements of the power generation industry, has recently supplied a batch of 12 fans from their new Flexible Bespoke range which, drawing on manufacturing and scheduling techniques developed in the automotive industry, enabled Halifax to meet their client's exact specification, but on a very tight delivery schedule from their Shenzhen factory.



Baltec gas-turbine exhaust and heat recovery system

Baltec Inlet & Exhaust Systems ordered the fans for a major power generation project in Thailand. Baltec IES is an Australian owned & operated company providing a wide range of services to the gas turbine power industry and offers a variety of products such as gas turbine inlet filtration systems (filter houses), inlet cooling or fogging systems and complete exhaust systems with diverter dampers. Although not previously having dealt with Halifax Fan, Baltec selected them from a vendor list supplied by their client, Hyundai Engineering Co., for this latest project.

The fans, rated up to 11kW, with narrow impellers complete with 12 full and 12 half backward inclined

blades which boost the pressure while maintaining high efficiency, will be used to provide a 'seal air' system for Baltec's diverter dampers which in turn are used to control the flow of high temperature exhaust gas from a gas turbine. Using the diverter damper, gas flow can be split in any proportion between the heat recovery steam generator (HRSG) downstream of the diverter and a waste heat bypass. The diverter consists of a flanged and braced plenum chamber which is internally lined with stainless steel and insulated with ceramic fiber. This ensures, for safety and reliability reasons, that the equipment has an exterior temperature typically less than 50°C, even with exhaust gas temperatures in excess of 600°C.

Contained within the plenum, an insulated blade assembly contains two rows of seals around its perimeter; one to provide a seal on the HRSG side and the other to provide a seal on the bypass side. The electrically-driven blade assembly pivots from the top in a 90-degree arc, providing any amount of opening from closed to fully diverted to the steam generator.

The seal air system operates in both the fully closed and fully open positions and supplies air, through inter-connecting pipe-work, to the inter-space between the two rows of seals at a pressure above that existing within the plenum, usually at least 250Pa above the plenum pressure. This ensures that any gas



**halifax fan**

leakage is into the plenum, not out of it, providing 100% isolation of the gas turbine exhaust gases. The differential pressure is measured by pressure transmitters and monitored by a PLC control system.

Halifax Fan's Shenzhen factory completed the order for the 12 Brighthouse designed Flexible Bespoke fan assemblies to Baltec's specification and on-time in only 8 weeks from receipt of order. Phil Dart, Senior Project Manager of Baltec remarked "It was a pleasure dealing with everyone at Halifax Fan.



*Gas-turbine exhaust waste heat discharge flue*

#### Application benefits

- Bespoke design to customers exact specification
- Delivery in 8 weeks from order to on-site
- High efficiency, boosted pressure design
- Designed for high temperature turbine exhaust gases
- Designed in the UK, manufactured in China to full BSI EN standards.

Response to any query, technical or commercial, has always been prompt and comprehensive. We're now looking forward to a long relationship between our two companies".

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