



New gas-fired power stations are one way of balancing our ever-growing demand for power with the need to increase energy efficiency. Technological improvements have enabled gas power stations to raise their efficiency levels from around 30 per cent to 50 per cent in the last couple of decades.

The development of ‘combined cycle’ power stations, which use steam turbines to reprocess much of the energy lost during the initial power production stage, have improved the efficiency of gas-fired power stations and energy efficiency is increasing all the time, with equipment manufacturers – such as Siemens, Alstom, General Electric and Mitsubishi – striving to boost the megawatt output of their models.

Balancing priorities

As governments tender the concession of power stations under a ‘build, own and operate’ contract over a period of 20–25 years, developers must juggle both the need to meet the government’s demands for a clean and inexpensive source of power with the goals of greater efficiency and higher output, in order to realise strong margins in an increasingly competitive world.

As Stuart Fatt, a Partner in Jardine Lloyd Thompson’s Construction division explains however, “As you increase mass flow, the size of machines and the firing temperatures, the inevitable outcome is increased stress on internal components, which bring about greater risk.” As manufacturers push the latest versions of their equipment into the marketplace as early as possible, the technological risks pass from the turbine manufacturer to the developer or owner of the power plant.

Cutting-edge technology risks

Owners and operators of the latest gas-fired power stations often face difficulties accessing suitable insurance owing to the perceived risks associated with new turbine technology. **By Lisa Cooper**

If equipment fails, or workmanship or parts are faulty, the operator could find itself unable to meet its contractual obligations to the government. According to Philippe Du Four, Senior Vice-President for Insurance at Suez Energy International (a division of Suez-Tractebel), "The project risk allocation needs to be fairly balanced to ensure the original equipment manufacturer takes an important share of the pure technology risk."

Consequential losses for power plant construction can run into hundreds of thousands, even millions, of dollars, for example if a delay in start-up forces the operator to begin servicing the finance it has raised before it is able to earn any revenue. And even a small component of little value, if defective, could end up causing considerable damage to machinery and delay to the start of the project.

Insurance, therefore, is vital, from the start of the project to the finish. An acceptable insurance policy is necessary to secure affordable financing to fund development costs in the first place, for the cost of borrowing will depend on the degree of risk perceived by the lender. And, of course, insurance is imperative to protect against loss of revenue during the construction and operation phases. As Du Four says, "What we expect from an insurance broker is a true partnership approach throughout all the different phases of the project."

Tailored insurance

Tailoring suitable insurance policies for owners and developers can be highly complex. Each party needs to understand exactly what its risks and obligations are and which risks it needs to transfer to ensure that each risk is insured only once. At the same time, they must ensure that

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neither exposes itself to unnecessary risk. "There is a minefield of contractual positions," concludes Fatt, "and owners need to be sure they are getting the balance of risk ownership correct in relation to the manufacturer and contractors."

According to Tony Rastall, a Partner in Jardine Lloyd Thompson's Construction division, "Most owner/operators seek to impose the full risk of loss onto the contractor during the construction period." However, one of the circumstances under which a contractor may not accept this risk is when there are questions over the technology. The other is in the case of natural catastrophe risk, where the site may be exposed to earthquakes or hurricanes and there is only a limited amount of insurance to cover loss or damage arising out of these events.

Many insurers are wary of assuming the risk associated with the latest cutting-edge range of gas turbines, considering the technology too new and untested. One way around this is for owner/developers to consider options for a number of different gas turbines and approach the insurance market to establish the insurability of each

of the designs, in order to help their decision making.

Design restrictions

Insurers may also restrict the design coverage that developers, operators and ultimately manufacturers are able to use. The London Engineering Group (LEG), an informal association of engineering underwriters, has established a template of three design covers. LEG 1 covers all risks excluding loss or damage for defective design or workmanship. LEG 2 covers all risks excluding the cost of rectifying or replacing faulty parts or problems caused by defective design or workmanship. LEG 3 covers all physical damage including replacing faulty parts, but excluding the cost of improving on the original design or workmanship. LEG 2 is by far the most common type of cover and, in general, it falls upon the supplier of any defective work or equipment to replace it. "For gas turbines, usually LEG 2 is acceptable to the developer, the engineers and to the lenders," says Rastall.

"Occasionally the developer might insist on LEG 3, and this can put an additional 10–15 per cent loading onto the cost of the policy, if cover is available," he continues. LEG 3 cover would also include a significant increase in the deductible. Deductibles on a multi-million dollar gas turbine construction project can be in the region of \$1 million even for proven technology. "For unproven technology, the figure will be well north of this – if insurance is available at all," concludes Rastall. **RS**

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How can the insurance market ensure it is comfortable with the risks involved in gas turbine technology, and price that risk effectively?

"We don't take anything at face value," points out Tony Rastall, a Partner at Jardine Lloyd Thompson. "There can be lots of misperceptions and rumours about the technology." Rastall says it is important

to understand exactly what the changes are to the latest versions of manufacturers' gas turbines.

Having a team of staff concentrating solely on power generation construction is a big help, but sometimes it is necessary to commission an independent gas turbine engineer – someone who can fully comprehend the issues and is credible to

the insurers – to carry out an independent report.

Turbine manufacturers may also hold technology seminars, to which they invite both engineers and members of the insurance community. For some early models of new turbine designs, they often also offer greater warranties than usual, which can then be dovetailed with an insurance policy.