



## **MEDIA RELEASE**

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### Swanbank E is Australian first for Ipswich

**The Queensland Premier, Peter Beattie opened CS Energy's new Swanbank E Power Station this morning, announcing a first for Australia in gas fired electricity generation.**

The centrepiece of Swanbank E is the 385 megawatt Alstom GT26 gas turbine, the first single shaft combined cycle gas turbine in Australia.

The new gas fired power station is located at Swanbank, near Ipswich in southeast Queensland, and is the largest and most advanced gas turbine in Australia.

CS Energy's Chairman Stephen Lonie said, "Swanbank is Australia's most strategic generation site because of its proximity to a major load centre. Swanbank E will help rejuvenate the Swanbank area and secure its future as an important part of the Queensland and Australian energy industry."

Mr Lonie said that the new power station's leading edge technology makes Swanbank E the most efficient and responsive gas fired power station in Australia with a 58 per cent efficiency rating and 50 per cent lower greenhouse gas emissions than conventional coal fired plant.

"Projects of this size and scale are very challenging, so it is a testament to the commitment of all those involved in the project that there has been only one lost time injury in more than 800,000 hours worked on site," Mr Lonie said.

"In addition to producing only half the greenhouse gas emissions of the best performing coal-fired power stations, the generating technology of the gas turbine is based on the simple concept of reusing heat, raising the net efficiency of the gas turbine," Mr Lonie added.

The \$300 million project is the first to be completed under the Queensland Government's Cleaner Energy Policy. Swanbank E is capable of producing 50 percent of the energy required to meet the State's target of 13% gas-fired generation by 2005.

**ENDS**

For further information contact:

John Harten  
Project Manager  
Swanbank E Power Project  
Ph: 07 3222 9577  
Mb: 0419 670 759

Phillippa Mowle  
Manager Marketing and Communications  
Ph: 07 3222 9380  
Mb: 0417 782 339

## **Information Brief**

### **Gas supply**

- Swanbank E will initially take up to 120 petajoules of gas from Santos' Scotia Gas Field.
- The Scotia gas field is a coal seam methane deposit, located near Wandoan.
- The gas will be piped to Swanbank via the Roma to Brisbane Pipeline. The existing Roma to Brisbane Pipeline, owned by Australian Pipeline Trust and managed by Agility, was upgraded to provide the gas demand for the new station.

### **Combined cycle GT 26 gas turbine**

- The centrepiece of Swanbank E is the 370 tonne Alstom GT26 sequential combustion gas turbine.
- The GT26 is the largest gas turbine, and the only single shaft combined cycle turbine in Australia.
- Sequential combustion is based on the simple concept of reusing heat, where the exhaust gases from the first turbine feed the combustor of the second. This raises the net efficiency of the gas turbine to 58% in combined cycle operation, compared to 44% efficiency achieved from the best coal fired technology.
- The turbine generates 260 megawatts by itself, but 385 megawatts in the combined cycle with the heat recovery steam generator and the steam turbine.
- The single-shaft combined cycle system consists of a gas turbine, a steam turbine and a heat recovery steam generator, with the gas and steam turbines coupled to a single generator. The key advantage of a single shaft arrangement is its operating simplicity and reliability.

### **The Heat Recovery Steam Generator and Steam Turbine**

- Three boiler drums make up the steam turbine's three individual steam circuits and a damper on the stack keeps the boiler hot when offline overnight. The HRSG is 40 metres high, and the structural steel work weighs 6785 tonne.
- The steam turbine has a self-synchronising clutch connected to the generator, and operates in three stages: high, intermediate and low pressures. The high pressure steam turbine weighs 42 tonne.

### **The cooling tower**

- A cooling system dissipates heat from the cooling water by convection and evaporation within the cooling towers. Achieving the coldest water temperature is an essential part of the efficiency of the process. The Swanbank E cooling water system is a Hamon design, using induced draft counter flow principles.
- Constructed of fibreglass and plastic, the 85.6 metre long tower has five individual cells. The cooling tower's evaporation rate is 75 litres/sec. The tower is 17.8 metres wide and stands 13.5 metres high.

### **The operations**

- Swanbank E is designed to be an intermediate load plant, operating during the intermediate and peak load periods 5-6 days a week. The station will be remotely operated from Swanbank B control room.
- The switchyard, adjacent to the station, is interconnected with the National Grid through the Swanbank to Mudgerabah high voltage transmission line. The switchyard is owned and operated by Powerlink.

## **Air emissions**

- Swanbank E achieves a significant reduction in greenhouse gas and air emissions, and the new gas fired station will achieve less than half the carbon intensity of coal-fired generation projects currently being developed in Queensland.
- The formation of nitrous oxides depends on the temperature, pressure and residence time inside the combustion area. Nitrous oxides emissions for the GT26 are below 25 vppm which is 10 times less than coal-fired generation technology.
- On line emission monitoring will also be used when Swanbank E is operational.

## **Water management**

- The cooling water system uses non-porous materials to ensure strict environmental standards are met, including fibreglass and plastic in the cooling tower, and titanium tubes in the condenser.

## **Noise controls**

- Swanbank E uses noise controls to achieve measures above and beyond the regulatory standards. The plant has been individually silenced, by using sound absorbing walls for the main plant and sound abatement enclosures for the gas turbine and generator.
- Additionally, there are noise abatement panels on each of the five cells in the cooling tower.

## **Additional technical information:**

### **Generator**

- 500MVA rated
- Hydrogen cooled
- 320 tonne

### **Step Up transformer**

- 21kV to 275 kV
- 490 MVA rated
- Made in Brisbane at Alstom Rocklea workshops
- Weighs 190 tonnes

### **Output**

- Combined output 385 megawatt
- Ratio of output Gas Turbine to Steam Turbine is 2:1
- Transmission – 275,000 volts
- Temperatures:
  - Turbine combustion 1280°C
  - Exhaust 650°C
  - Flue gas 100°C

### **Commodity Usages**

- Raw Water – 1765ML/yr
- Water supplied by Sun Water from the Wivenhoe Dam
- Demineralised water, piped from Swanbank B – 43ML/yr