The Medupi coal-fired power plant is the biggest thermal power plant ever ordered by South African utility, Eskom, and will be the first baseload power plant to be built in the country in 20 years. Eskom awarded the contract for the turbine island of the six supercritical units to Alstom, who will also build a repeat plant, known as Kusile.

Medupi is a 6 x 794 MW supercritical coal fired power plant located next to the Matimba power station 15 km west of Lephalale, in the Limpopo province of South Africa.

The turbine island scope for which Alstom is responsible includes the turnkey supply of the turbine island, comprising the steel structure and equipment inside, and the air-cooled condensers (ACCs), which provide cooling for the plant. In addition to delivering the turbine-generator and associated auxiliaries systems, Alstom will provide the turbine control and protection systems. Alstom is responsible for LP turbine bypass valves, the turbine hall cranes, valves, piping and local instrumentation, turbine hall ventilation and fire protection. Alstom also has electrical scope covering the busbars, generator circuit breaker, generator current transformers and generator transformer protection.

### MEDUPI STEAM POWER PLANT 6 x 794 MW
**The Giant of South Africa**

**Key**
- A: Boiler
- B: Turbine Hall
- C: Transformer
- D: Air-cooled condenser
- E: Chimmney

**Medupi Steam Power Plant**
- Power plant installed capacity: 6 x 794 MW
- Operating mode: Base load
- Minimum ambient temperature: -9°C

**Steam turbines**
- Type: STF100
- Number of modules: 6 (1HP + 1IP + 2 LP lateral exhaust)
- Steam pressure: 241 bars / 50.5 bars
- Steam temperature - Inlet / Reheat: 560°C / 570°C
- Speed: 3000 rpm

**Generators**
- Type: GIGATOP 2 poles
- Rating: 940 MVA
- Power factor: 0.9
- Frequency: 50 Hz
- Terminal voltage: 22 kV
- Excitation system: Static
- Cooling system: Water & Hydrogen

**Condensing plant**
- Condenser pressure: 141 mbar at 23.7°C air temperature
- Tubes material: Carbon steel

**Feedwater plant**
- Feedwater heaters: 6 (3 LP + deaerator +2x2 HP)
- Feedwater deaerating tank: Yes - Stork type
- Feedwater temperature: 267°C

**Main pumps**
- Condensate extraction pumps: 1x100% fixed speed + 1x100% variable speed motor
- Condensate pumps: 2 x 100% variable speed - Hydraulic coupling

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**Simplified Process Flow Diagram**

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**Eskom**

**Medupi Steam Power Plant**
- Power plant installed capacity: 6 x 794 MW
- Operating mode: Base load
- Maximum ambient temperature: 40°C

**STF100 Steam Turbine**
- GIGATOP Turbogenerator
- Feedwater tank
- LP heaters
- Bio ducts
- Air-cooled condenser
- Condensate tank
- Steam ducts
- LP high pressure
- 600 m³ condensate water reserve tank
- Condensate Polishing Plant

**Feedwater heating plant**
- Feedwater heaters: 6 (3 LP + deaerator +2x2 HP)
- Feedwater deaerating tank: Yes - Stork type
- Feedwater temperature: 267°C

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**ALSTOM**

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