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SGT-600, SGT-700

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Enclosure

General

Acoustic enclosure is an integrated part of gas turbine unit and covers the gas turbine, auxiliaries and gearbox. Noise reduction walls around electrical generator can also be included depending on the noise requirement. Refer to scope of supply for included equipment.

Enclosure serves the following main purposes:

- Noise suppression
- Heat insulation
- Weather protection
- Containment of fire extinguishing media.
- Support for equipment installed inside and outside of enclosure.

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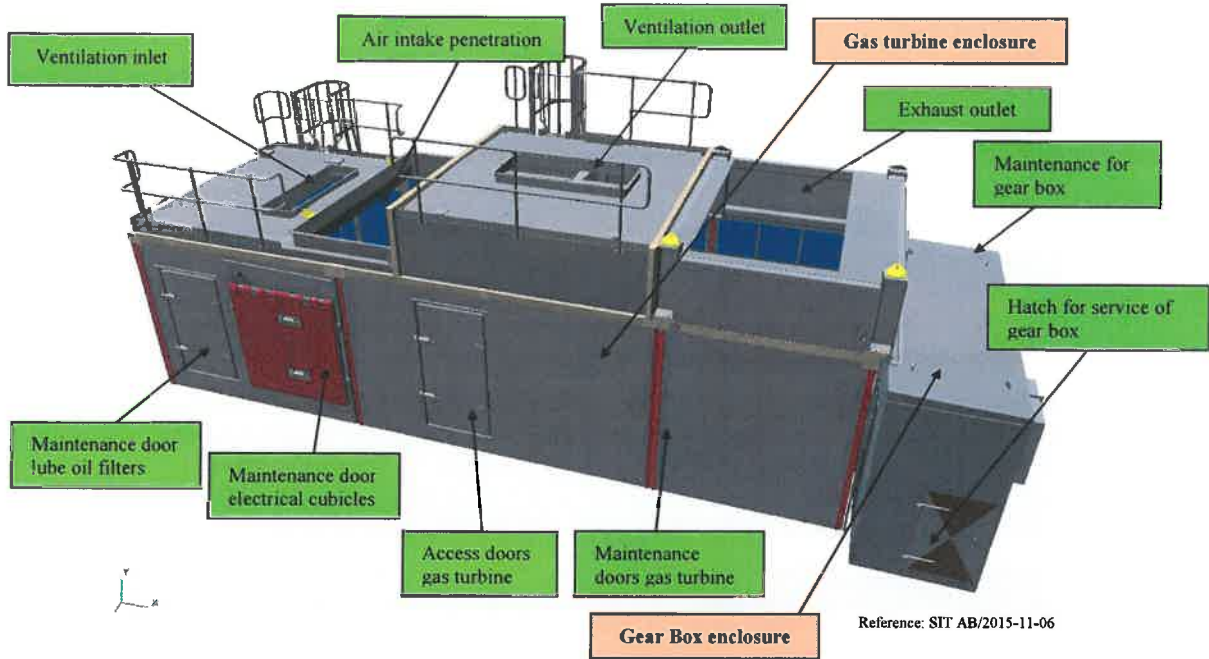


Figure 1. Typical gas turbine enclosure, left side

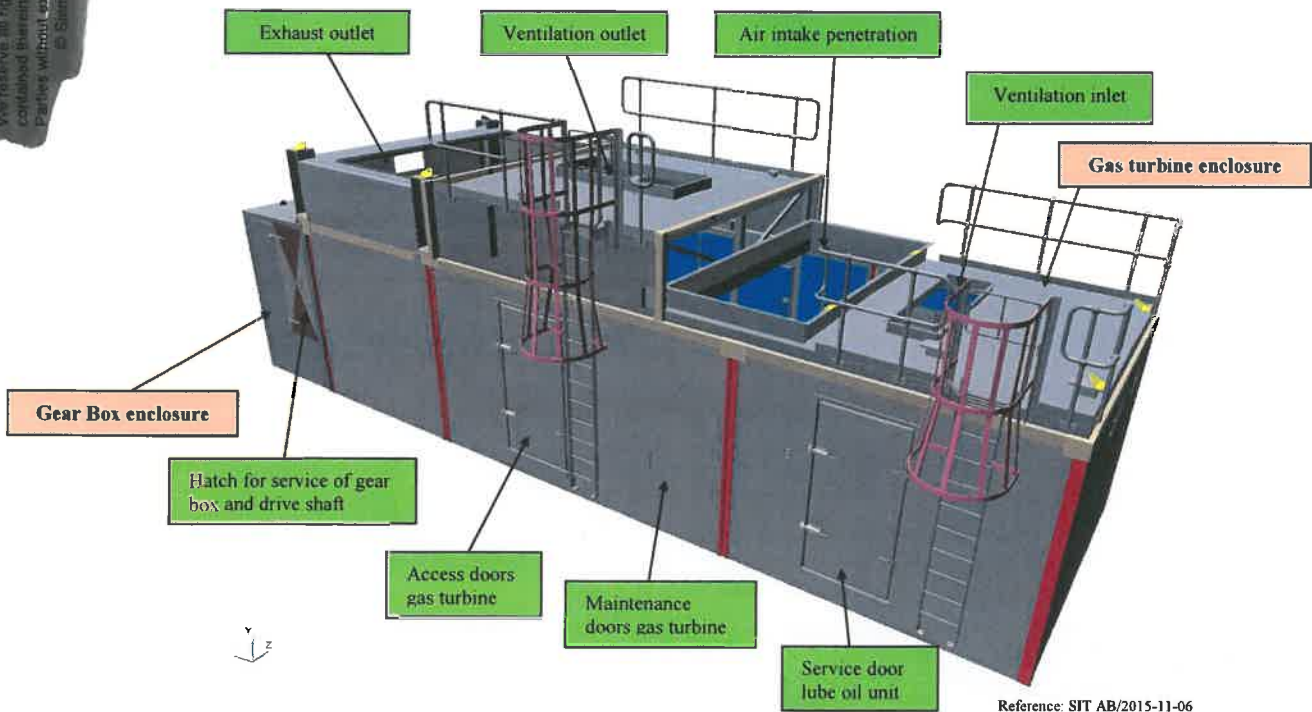


Figure 2. Typical gas turbine enclosure, right side

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Gas turbine enclosure design

Ambient temperature range for outdoor installation is from -30 °C to +55 °C/-22°F-131°F. A typical enclosure will withstand a snow and ice load on the roof of 100 kg/m² (20.5 lb/ft²) and point load of 150 kg (330 lb) for maintenance. It is also designed to withstand wind loads of up to 60 m/s (135 mph).

Inside enclosure non-hazardous area is maintained by dilution ventilation, see separate ventilation system description.

Ventilation provides temperature not more than 60°C (140°F) in walk-around inspection area near gas turbine. The enclosure is designed for a maximum inside temperature of 150°C (302°F).

Heat emission of equipment inside enclosure is approximately 190 kW. Outside surface temperature of enclosure walls is no more than 20°C (68°F) above ambient temperature.

Typically the enclosure is designed for a maximum overpressure inside the unit of 15 mbar (0.22 psi). During gas turbine operation overpressure is maintained between 0.5 mbar (0.007 psi) and 3.5 mbar (0.051 psi).

Enclosure walls have 3 mm (0.12") painted carbon steel sheet outer skin. Roof is 5 mm (0.20") painted carbon steel sheet. The walls have infill of mineral wool 50 mm (1.97") clad with perforated galvanized sheets 1 mm (0.039") on the inside. Enclosure has a sloping roof. The enclosure walls and roofs are attached towards the structure of base frame, made of painted carbon steel, assembled with galvanized ISO bolts. Inside enclosure there are removable floor grating panels. Enclosure roof is furnished with handrails in areas used by maintenance personnel and protected ladder.

The enclosure is fitted with access doors and maintenance panel as specified in figure 1 and 2. Maintenance access for gas turbine removal is from left or right side.

Access doors are equipped with emergency opening handles to ensure that it is always possible to exit the enclosure. Access doors have opening retarders due to overpressure inside the enclosure, the doors also have hold-open devices. All access doors have windows.

Access to machinery located inside enclosure and on top of it is arranged per ISO 14122.

Exhaust to either left or right side or vertical possible.

Flexible sealing is installed between the enclosure and exhaust duct.

The inside of the enclosure is equipped with permanent lighting. The lighting is made up of six lights, fed from UPS for emergency reasons.

Gearbox enclosure design

Sound pressure levels, surface temperature, wind loads, snow loads are same as for gas turbine enclosure.

Personal access only for maintenance when gas turbine is stopped.

No forced ventilation, pressure inside gearbox enclosure is atmospheric.

Enclosure is made by self-supporting parts and bolted to skid. The walls and roof have 3 mm (0.12") painted carbon steel sheet outer skin. The walls have, depending of noise demands, infill of mineral wool 50 mm (1.97") clad with perforated galvanized sheets 0.9 mm (0.035") on the inside. Roof is made with slope to prevent water collection. The enclosure is assembled with galvanized ISO bolts.

Gearbox enclosure roof panel is removable for gear maintenance.

Gearbox enclosure has one hinged entrance hatch on right side, one inspection hatch on left and removable maintenance access panels towards the gas turbine.

Built-in maintenance equipment

The enclosure is equipped with three lifting beams and with roll-out rails:

- One on top of the enclosure for maintenance of power turbine (PT):
2000 kg/ 4409 lb capacity.
- One for maintenance of the start motor:
1100 kg/ 2425 lb capacity.
- One for maintenance of the lube oil system:
400 kg/ 882 lb capacity.
- Roll-out rails inside gas turbine enclosure for gas generator and PT roll-out:
12000 kg/ 26455 lb capacity.

Surface treatment

Enclosure exterior surface is painted to fulfil C3 according to ISO 12944-2:1998, painted in pebble grey RAL 7032 top coat color.

Enclosure interior surface is painted or galvanized to fulfil C2 according to ISO 12944-2:1998.

Handrails, ladder and grating is galvanized according to ISO 1461:2009.