

**SCOPE OF SUPPLY
(GAS TURBINE DRIVEN
CENTRIFUGAL COMPRESSOR
PACKAGE)**

**BRIEF SCOPE OF SUPPLY
FOR
GAS TURBINE DRIVEN CENTRIFUGAL COMPRESSOR PACKAGE**

SECTION-A: ROTATING EQUIPMENT

- A.1** Centrifugal Compressor (Flange to flange) as per API 617 (Chapter-1 & 2) & Gas turbine (Flange to flange) as per API 616.
- A.2** GTC package auxiliary systems i.e.
Lube-Oil, Seal gas, Fuel-Gas, air intake system, exhaust system/stack/chimney, fuel conditioning system, all necessary systems for GT starting, acoustic hood with ventilation system, fire suppression system etc.
- A.3** Interconnecting piping between various skids and main equipment.
- A.4** All utility piping upto skid B/L.
- A.5** Drive system i.e. Gear-unit (as applicable), Couplings (LS/HS).
- A.6** Common base-plate.
- A.7** Unit Control panel.
- A.8** Necessary instrumentation and controls.
- A.9** Loose supply items (i.e. Suction Strainer, Anti-surge valve, Field mounted instruments within package B/L etc.).
- A.10** Vibration/temperature monitoring system.
- A.11** Inspection and Testing as below:
- (i). Mechanical Run Test for Compressor with Main Rotor at Compressor manufacturer's works.
 - (ii). Mechanical Run Test for Compressor with Spare Rotor at Compressor manufacturer's works.
 - (iii). Performance Test for Compressor (with main rotor) at Compressor Manufacturer's works.
 - (iv). Mechanical run test for the Gas Turbine with main rotor (Industrial type GT) / Gas generator (Aero-derivative type GT) at Gas Turbine Manufacturer's works.
 - (v). Mechanical run test for the Gas Turbine with spare rotor (Industrial type GT) / Gas generator (Aero-derivative type GT) at Gas Turbine Manufacturer's works.
 - (vi). Performance Test for Gas Turbine main rotor (Industrial type GT) / Gas generator (Aero-derivative type GT) at Gas Turbine Manufacturer's works.
 - (vii). Mechanical run test of Gear unit at Gear unit manufacturer's works.
 - (viii). Field trial run test of GTC package at site.
- A.12** Supervision of erection and commissioning (60 mandays basis).
- A.13** Customer training (15 persons x 2 weeks).
- A.14** Participation in HAZOP (3 mandays basis).

SECTION-B: ELECTRICAL

1. 415V GTMCC switchboards for the package
2. All MV motors, LCS, Electric heaters and VFD for motors if any.

3. Cabling for skid mounted equipment (within skid) and special cables if any.
4. Earthing system with in the package and connection to main earth grid.
5. Lighting with in the skid
6. Cable trays
7. Battery and battery charger

SECTION-C: INSTRUMENTATION

- C.1 Design and detailed engineering including residual engineering of instrumentation & controls of Centrifugal Compressor based on P&ID's and other technical requirements described in various other documents.
- C.2 All type of field instruments identified and marked as "*" on P&ID's such as pressure, Flow(DP), temperature, differential pressure, temperature transmitters, pressure & temperature gauges, temperature elements and thermowells, all types of control valves & shutdown valves with accessories, pressure relief valves, anti surge control valves, suction flow elements etc. and any other instruments including skid mounted instruments, local gauge board mounted instruments, control panel mounted Instruments required to complete the job in all respect.
- C.3 Unit control panel with Programmable Logic Controller based control system to be located in existing control room, for entire Centrifugal Compressor and associated auxiliaries.
- C.4 All controls for entire Centrifugal Compressor package and instruments to be executed in Centrifugal Compressor's PLC based control system.
- C.5 Integration of Compressor control systems with existing DCS/PLC systems.
- C.6 Local gauge boards with all instruments and accessories, duly mounted on them, if any.
- C.7 Antisurge controllers, Performance/Master controller and load sharing controller (If required)
- C.8 One no Lap top computer with all necessary hardware and software and anti virus software for programming configuration of vendor supplied control system.
- C.9 Supply of AC and DC power supply distribution cabinets as required for Centrifugal Compressor control systems, PLC, vibration monitoring system etc. in the control room and field instruments in the field.
- C.10 Any other skid mounted or panel mounted instruments required to complete the job in all respect for satisfactory operation of Centrifugal Compressor.
- C.11 **Vibration, Temperature & Displacement Monitoring system including monitors.**
- C.12 Vibration, axial displacement, key phaser and temperature probes etc.
- C.13 Panel/ cabinet for monitors/ rack in control room including terminals, barriers, I/O cards, and dual redundant power supplies etc., duly mounted on panel / cabinet.
- C.14 Fuel Gas conditioning skid with metering system.
- C.15 Supply of Fire and Gas detection system including Detectors & Transmitters for Centrifugal Compressor. Fire and gas detection system shall be configured in the Centrifugal Compressor system PLC.
- C.16 Supply of Alarms, signals & power Junction boxes.
- C.17 Supply of all Cables (signal, alarm, thermocouple extension, RTD, power supply, serial communication), Multi pair cables, system cables, any special type of cable , all Interconnection cables etc.
- C.18 Supply of all Installation & Erection Materials.
- C.19 Insulation and painting of instruments and impulse lines, as applicable, in line with insulation and painting specifications.
- C.20 Supply of Start-up and Commissioning spares, Mandatory spares.
- C.21 Supply of drawings and documents as listed in Vendor Data Requirement.
- C.22 Any special tools or tackles for instrumentation.
- C.23 Any additional instrument required in the opinion of vendor for meeting functional requirements, safe and efficient operation, which are not listed specifically in this document.
- C.24 One heavy-duty dot matrix type printer as per PLC data sheets as alarm cum log printer shall be supplied. And one no. laser jet colour printer A3 size shall be supplied.
- C.25 Inspection, Factory testing & calibration.

- C.26 Installation, field calibration/ testing and commissioning.
- C.27 Supervision of installation, hookup, testing and commissioning of PLC based centrifugal compressor system, various instruments, local gauge board, antisurge controllers, performance controller, vibration and temperature monitoring system etc. supplied by Vendor.
- C.28 Instrument air distribution for all vendor supplied instruments on skids.

SECTION-D: PIPING

- D.1 Interconnecting & auxillary piping between various skids and main equipment.
- D.2 Vent Piping from main equipment & various Skids upto Battery Limit with Flare header.
- D.3 All Utility Piping from Battery Limits upto main equipment & Skids.
- D.4 Piping in D1, D2 & D3 above includes all Valves, Pipes, Flanges, Fittings, Nuts, Bolts & Gaskets.
- D.5 All companion Flanges (including Nuts, Bolts & gaskets) at Inlet/Outlet of GTC and Fuel Gas Skid at Battery Limits.
- D.6 All Pipe Supports & Supporting materials for piping in D1, D2 & D3 above.
- D.7 All types of Valves as indicated in P&IDs in Contractor Scope.
- D.8 Strainers in Compressor Suction Line & Fuel Gas Inlet Line.