

TECHNICAL SPECIFICATION FOR RFI

ANWIL S.A. (referred as Anwil) hereby request interested parties to provide information (referred as information) regarding the selection of the new turbine or electric motor to drive synthesis gas compressor.

Project Definition

Anwil is seeking solutions for the replacement of the depleted turbine used to drive the synthesis gas compressor.

At this stage we are looking for new ready-to-use steam turbine or electric motors that can drive synthesis gas compressor which is currently in operation

Currently compressor is driven by the steam turbine (11,7MPa), extraction condensing turbine with uncontrolled extraction. Double case, axial and impulse construction. Case HP and IP- 5 impulse stages. Case LP- butterfly arrangement 2x4 impulse stages.

1. Manufacturer	SFAC- Schneider
2. Turbine Type	EMM16 2 C 2F
3. Year of manufacture	1969
4. Power output nom	14010 kW
5. Power output max	15140 kW
6. Rotational speed nom	10500 rpm
7. Critical speed	11200 rpm
8. Inlet steam pressure	105 bar
9. Inlet steam temperature	475 °C
10. Outlet steam pressure	37 bar
11. Outlet steam temperature	360 °C
12. Overall dimensions HP-IP	2800x3000x2500
13. Overall dimensions LP turbine.	2200x2000x1000
14. Overall dimensions rotor HP-IP	Ø490x2700 mass 1050 kg
15. Overall dimensions rotor IP.	Ø620x1840 mass 600 kg
16. Inlet flow rate	146.3 t/h
17. Outlet steam flow rate	126.1-138.9 t/h
18. Diameter of journal bearings	125 mm

General specifications of the current synthesis gas compressor:

The C-1501/1502 compressor consists of three casings. The individual parts are connected by high-parameter flexible couplings of the Metastream H-FE type, dynamically balanced with low coupling torque typical for mechanical drive applications (turbines, pumps, compressors). In addition, they are designed to sustain the drive until a safe shutdown in the event of damage to the flexible components. The low-pressure (LP), medium-pressure (IP) and high-pressure (HP) sections have a radial design. The LP section has eight compression parts, the IP section has seven compression parts, while the HP section has four compression parts. A single-stage C-1502 syngas recirculation compressor is mounted in the HP casing on a common shaft. Each compressor casing has a compensating piston in the last compression stage, the purpose of which is to reduce axial forces on the thrust bearing to a minimum (prevents axial displacement of the rotor). The front of this piston located at the contact of the rotor wheel of the last stage is undergoing discharge pressure. The opposite face of the piston is under the suction pressure of the corresponding compressor by using an external pipeline.

The rotor wheels are made entirely of forged alloy steel and can withstand an overspeed test of 115% of the maximum continuous speed after dynamic balancing.

The rotor wheel is secured by a shrink fit, wedged onto the rotor shaft. The rotor shaft is supported at each end in a bearing with self-aligning skids (5-ball bearings). Rotor friction is absorbed by a thrust bearing mounted from the suction of each stage. These bearings are located in 2 rows (active and passive) equipped with bearing alloy skids, which are capable of transferring loads in two directions.

All three compressor casings are mounted on a common shaft. The inter-stage seals of the compressors are of the abradable (self-adjusting) type, the end seals are gas-dynamic seals fed by the process gas. Interstage coolers are mounted between the compressor stages.

	LP Section	IP Section	HP Section/Circulation
Compressor type	C1501NP-NT 03-01-00	C1501SP-NT 03-01-00	C1501WP-NT 03-01-00
Number of parts	8	7	4+1
Suction pressure	2600 kPa ABS	6870 kPa ABS	116000 kPa ABS/ 137000 kPa ABS
Suction Temperature	6 °C	33 °C	33/36,9°C

Discharge pressure	6920 kPa ABS	11720 kPa ABS	14000 kPa ABS/ 14600 kPa ABS
Discharge Temperature	136 °C	109 °C	60/44 °C

Currently, the designed total on-shaft power is 10074kW and the maximum power at 110% load of the plant is 11158 kW.

Torque from the turbine to the compressor is transmitted by means of a susceptible coupling.

1. Expected extent of the information

We expect the information to include:

1. general description of the solution
2. preliminary consumption of utilities
3. a list of key equipment
4. cost-budgeted price in the EPC formula
5. expected time of project implementation

2. Standards

2.1 The project and equipment must be constructed in accordance with the regulations in force in the European Union

2.2 All equipment must be CE labeled