CONFIND

GEC 160

Traditional reciprocating compressor produced by CONFIND

GENERAL PRESENTATION

GEC 160 is a motor driven reciprocating compressor package, 160kW rated power

Fully equipped

Automatically controlled & governed for autonomous operation

GENERAL PRESENTATION

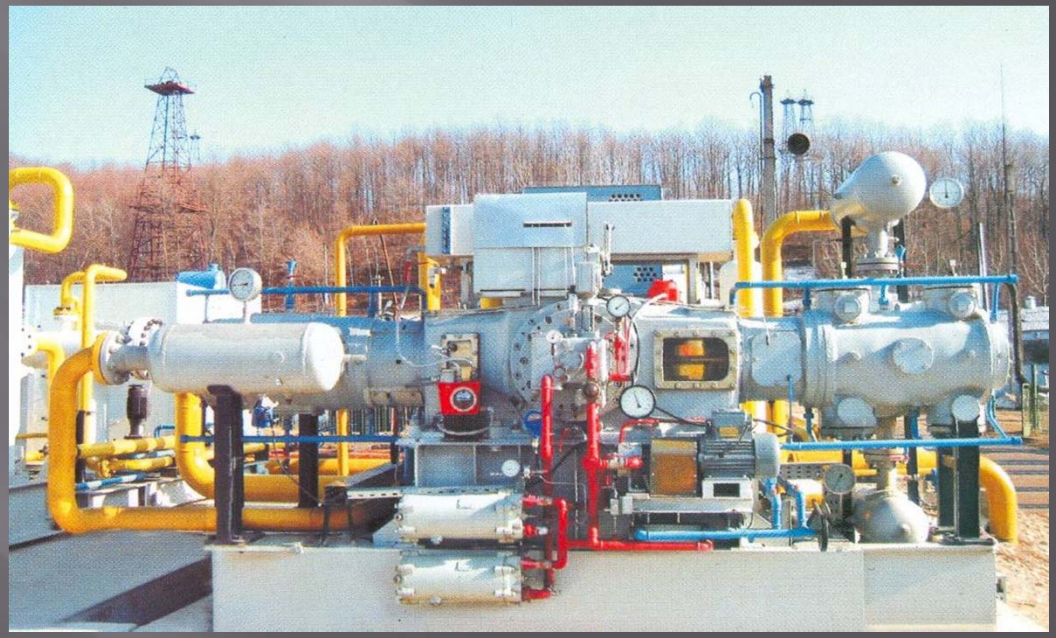
Two horizontal throws, double acting cylinders:

- 150mm stroke, 740rpm actual speed, 3.7m/s average piston speed
- Cylinders bore from 4" up to 18", pending on the required job

Up to now were realized two GEC160 package versions:

- two stages 7"+5" bore cylinders
- two stages 14"+9" bore cylinders

- Compressor direct driven by 160kW / 6kV or 500V AC motor, 750 rpm at synchronism



GEC160 7"x5"-6kV prototype in Barbuncesti station. 80,000 functioning hours for now

GENERAL PRESENTATION

Package Overall dimensions & Weight:

For transportation reasons, the compressor skid is made in two modules, easy to assemble on site

- Compressor & Motor module
  LxWxH: 3.8x3.0x2.2m – 13 tons
- Scrubbers & Gas cooling module
  LxWxH: 4.3x2.4x2.0m – 8 tons
- Overall dimensions after installation
  LxWxH: 7.3x3.8x2.2m

DESTINATION and TARGETED MARKET

- GEC 160 was conceived as a successor of the well known and still widely used, Ingersoll Rand at the origin, XOB compressor.
- GEC 160 is meant to pump natural gas for transport or re-injection in the oil & gas gathering process.

  The service in pumping more pure gas as free methane from depleted deposits is an easier job.

Obsolete XOB

GEC 160 at work

DESTINATION and TARGETED MARKET

Some characteristic features make it attractive for the targeted market, i.e. the operators in the oil and gas gathering industry:

- GEC 160 may be installed without shed, except for the Control Panel;
- Package type unit, easy to install and re-locate if needed;
- Just a 25cm thick, reinforced concrete platform to install the package;

DESTINATION and TARGETED MARKET

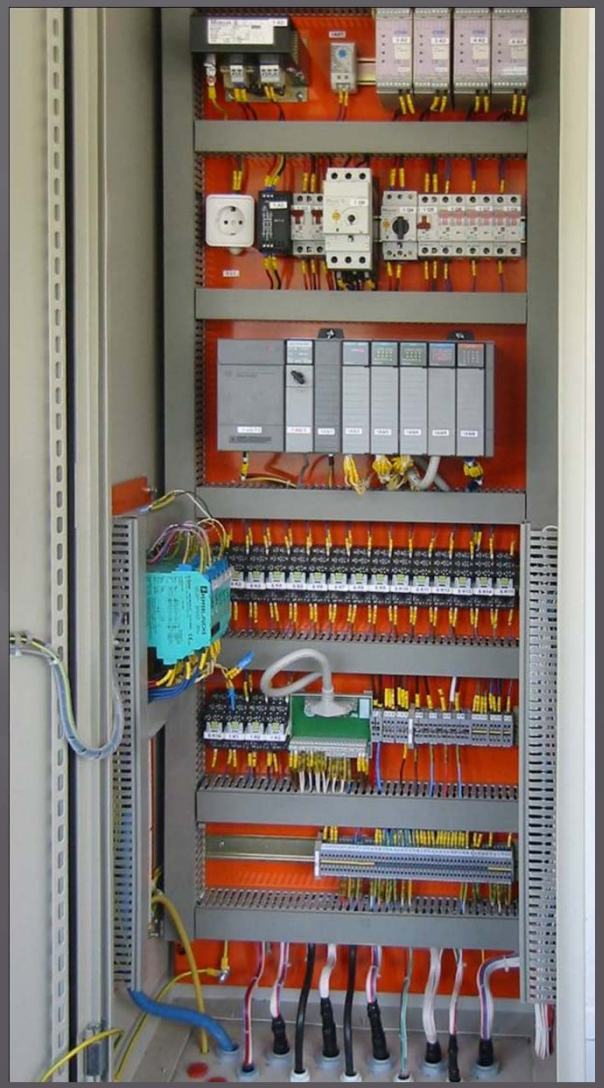
- Self contained air cooling for the interstage and discharge gas flow. That means no more site water towers, pipes and freezing menace;

- Self contained suction and interstage scrubbers, discharge filter & separator. Means much less process piping on site, less area needed. Just suction, discharge and flare gas manifolds, a manifold to collect the liquids and a coarse liquids & slugs separator upstream of the suction manifold are needed;

DESTINATION and TARGETED MARKET

- PLC based automation, easy to start and stop, auto alarms and shut-downs. That means much less operating attention needed.

  Example: in a compressor station a single operator surveys four GEC160 and two screw-type compressors;



DESTINATION and TARGETED MARKET

- Same cylinders as the XOB ones

  The GEC160 units commissioned for OMV-Petrom are equipped with re-used, XOB cylinders
- Same 160kW motor as for the XOB compressor

  Like for the cylinders, the motors are the same type as the XOB motors, well know and under current maintenance;

DESTINATION and TARGETED MARKET

- Confind is the manufacturer of the compressor frame and of the whole package. For the automation system there is already a traditional cooperation with Syscom18 as a sub-contractor.

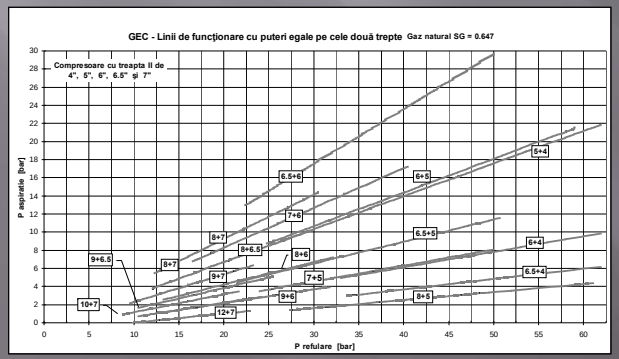
  That means a reliable local source of spare parts, technical assistance and maintenance works.

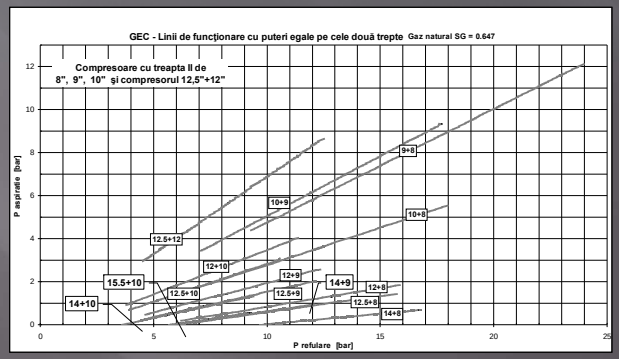
- SC Confind does have also the ability and experience to perform the EPCC (Engineering – Procurement – Construction – Commissioning) work in what concerns the whole new compressor station.

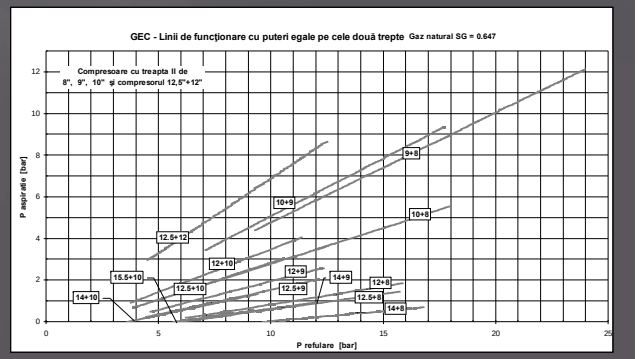
PERFORMANCES

- GEC160 may be used for the entire usual range of natural gas pressures in the oil & gas gathering process in Romania.
- The cylinders are selected to maximize the flow for the requested ranges of suction and discharge pressures. The on-skid process equipment is sized according to those ranges.
- For a requested pressure ratio up to 3-3.5, there will be a single stage compressor: same cylinders on both throws, no intercooler and inter-stage scrubber, highest flow.
- For higher pressure ratios, each throw is a compressing stage, the two cylinders are different and inter-stage equipment is needed.

Two stage GEC 160. Best functioning lines for all proper cylinders combinations.







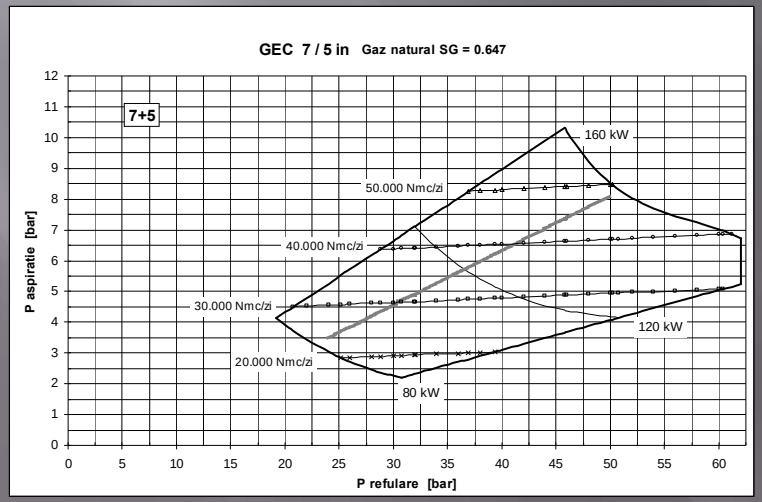
PERFORMANCES

- Suction pressure — minimum 0.3 bar
- Suction temperature — usual 5÷35^{0}C
- Pressure ratio — maximum 12
- Discharge pressure — maximum 60 bar
- Discharge temperature — usual 30÷50^{0}C

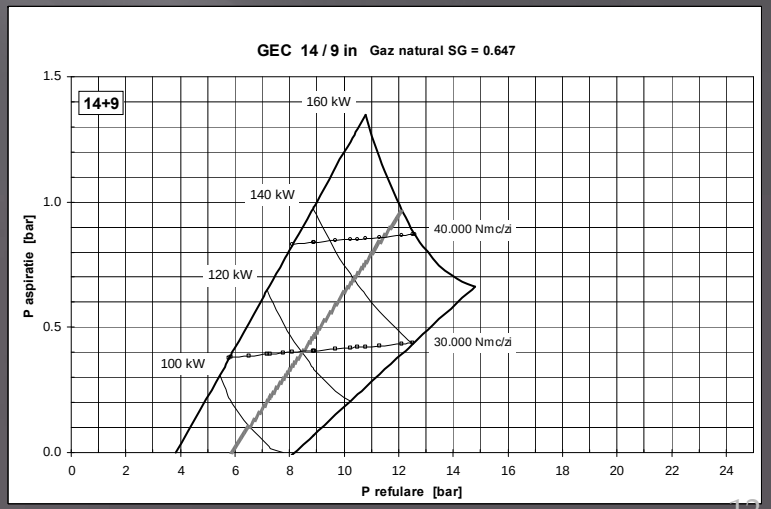
The flow value depends on different parameters. Cylinders selection is targeting the higher flow, in the 160kW power limit.
As an easy-to-remember figure, for usual applications, the two stage GEC160 is able to handle 40,000÷50,000 SCMD of natural gas.

Performance diagrams for the developed GEC 160 versions.

GEC 160 7"x5"



GEC160 14"x9"



COMPONENTS, OPTIONS

Standard components. Two stage GEC160 unit

- *Frame assembly: 200kW @ 740rpm rated, Confind made*
- *Cylinders (two): double action*
- *Cylinders, Heads, Distance pieces: cast iron. Re-used up to now.*
- *Pistons and packings, Confind made*
- *Valves, 4 or 8 upon the bore. Procured from Hoerbiger (plate type) or Dresser Rand (poppets type)*
- *Pressure vessels, i.e. Antipulsation bottles, Scrubbers, Final Filter&Separator: Confind made*
- *Motor: 160kW, 6kV or 500V upon the available power supply. Procured*
- *Coupling: flexible, two groups of flexible discs. Procured*
- *Gas and cooling liquid cooler (air fan cooling): tubes with fins, Confind made*
- *Baseplate: welded and machined structure, Confind made*
- *On-skid process gas system (pipes, automatic bypass included): Confind made, Syscom provides the on-skid automation equipment*
- *Lube oil system: closed, self-containing. Confind made, procured equipment*
- *Cylinders and oil cooling system: closed, self-contained. Confind made, procured equipment*
- *Automation system: Confind's sub-contractor Syscom made, procured equipment*

COMPONENTS, OPTIONS

Main options:

- *Automatically actuated constant suction pressure regulating valve*
- *Motor Control Center: to supply all on-skid power consumers, i.e. cooling liquid and aux. oil pumps, cooling fan and oil heater*
- *Main motor power supply cabinet: 5kV or 500V, motor protections included*
- *Flowmeter for the process gas*

INSTALLATION REQUIREMENTS

- *Foundation*

  A concrete 10 x 7 meters, 25 cm thick platform which includes the operation and maintenance areas. No classic foundation.
- *Process gas and liquids connections to:*
- Suction and discharge manifolds, with isolating valves and one discharge check valve
- Flare pipe
- Separated from gas liquid collecting pipe
- *Control room* – One for the compressor station

  Conditioned air, to be installed in a non hazardous area.
  Control Panel dimensions 560x400x1800 mm (for one compressor).
- *Main power supply cabinet*

  6kV or 500V AC / 160kW, with motor automatic protections
- *MCC* – 400V / 20kW, for the on-skid power consumers

COMMISSIONED UNITS

OMV-Petrom BARBUNCESTI compressor station

- Nine GEC160 7"x5"-6kV units commissioned in 2002-2003.

✓Average of 80,000 functioning hours per unit

COMMISSIONED UNITS

OMV-Petrom 14 TINTEA compressor station

- Four GEC160 14"x9"-500V units commissioned in 2005.
- ✓ Average of 40,000 functioning hours per unit

COMMISSIONED UNITS

LOTUS-Petrol FAURESTI oil & gas gathering plant

- Three GEC160 7"x5"-6kv units commissioned in 2006
- ✓ Average of 40,000 functioning hours per unit
- ✓ All the oil & gas gathering plant was EPCC realized by Confind

GEC 160 – MAIN ADVANTAGES

- *Able to handle process gas with high liquids and solids content, on-skid separation of such impurities included;*
- *Adaptable for very different suction and discharge pressures by changing the cylinders and, if necessary, the on-skid process equipment;*
- *Minimal installation requests means low investment cost and duration, also low cost re-location;*
- *PLC based automation means easy and safe operation;*
- *Low cost operation and maintenance;*
- *Confind constant availability for full range after-sale services.*