Reciprocating Gas Compressor Units
Compressor packaging
Reciprocating compressors
ABB as a packager

- ABB is offering complete gas compressor packages
- ABB has extensive experience and dedicated team to perform design and execution of complex projects related to gas compression using reciprocating compressors
- Thanks to its global presence ABB is capable of delivering projects around the world
- Our strategic partnership with one of the leading compressor manufacturers and our own broad portfolio of products allows us to deliver high performance gas compression packages with optimal pricing
Reciprocating Compressors
Oil & Gas Applications

Upstream
- Gas gathering
- Gas boosting
- Gas lift
- Gas reinjection and recompression
- Enhanced oil recovery
- FPSOs

Midstream
- Gas boosting
- Underground gas storage
- Pipeline compressors
- Small and mid-size LNG

Downstream
- Refining
  - Hydrocracking
  - Hydrotreatment
  - Hydrodesulphurisation
  - Isomerization
  - Reforming
- Petrochemical
Reciprocating compressors
Construction of a typical skid

Gas treatment:
- dehydration
- desulphurization
- mercury removal

Filtration:
- solids removal
- fluid removal
- slug catchers

Compression:
- engine or motor driven
- water or air cooled
See next page
Reciprocating compressors
Construction of a typical skid

Foundation and skid frame
- Different types of structures
- Foundation and frame bolts
- Lateral vibration analysis

Compressor
- Reciprocating
- Axial
- Centrifugal
- Screw

Compressor systems
- Anti-surge system
- Anti-pulsation system

Drives
- Engine – gas or diesel (feeding gas system, exhaust system)
- Gas turbine
- Turboexpander
- Electric motor (Variable Speed Drive or Constant speed)
- Transmission (clutch, gearbox)

Filtration
- Filters
- Scrubbers
- Slug catchers

Gas cooling
- Water/glycol cooling
- Air cooling

Piping
- Pipes
- Tubing
- Valves

Auxiliary systems
- Power supply
- Lube system
- Engine cooling
- Control and safety system
- Electrical system

Soundproof housing
- Ventilation
- Gas and fire detection
- Firefighting system
- Lighting
Reciprocating compressors
Packaging process

<table>
<thead>
<tr>
<th>Process design</th>
<th>• Complete scope including: process calculations, process diagrams, basic piping diagrams, instrumentation and control system design and calculations etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>• Compressor and driver selection, mechanical design for all the systems, components and auxiliaries, design of foundations, GA drawings, I&amp;C drawings, HAZOP, C-Hazop, Lopa, SIL etc.</td>
</tr>
<tr>
<td>Project management</td>
<td>• Project preparation and management led by qualified and certified PM team, experienced during 15 years of market activity together with engineering team.</td>
</tr>
<tr>
<td>Supply chain management</td>
<td>• Managed by a qualified SCM team in cooperation with certified sub-suppliers and vendors from Polish and foreign markets.</td>
</tr>
<tr>
<td>Quality assurance</td>
<td>• ISO 9001, ISO 14001 and ISO 18001 certificate, local quality management team, constant quality control for the project.</td>
</tr>
<tr>
<td>Transportation and logistics</td>
<td>• Arranged by local team in cooperation with local and foreign subcontractors.</td>
</tr>
<tr>
<td>Assembly</td>
<td>• Three optional assembly workshops equipped with cranes, installations and storage.</td>
</tr>
<tr>
<td>Shipment</td>
<td>• Alternatively: road or sea transportation</td>
</tr>
<tr>
<td>Erection and commissioning</td>
<td>• Supervision on site and commissioning by qualified and certified team.</td>
</tr>
<tr>
<td>Project financial controlling</td>
<td>• Dedicated to individual project, including risk management.</td>
</tr>
<tr>
<td>Warranty and aftermarket service</td>
<td>• Certified and well experienced team providing professional warranty and aftermarket service.</td>
</tr>
</tbody>
</table>
Type of Projects
Gas Compressor Package

- Design, engineering and packaging of skid mounted compressor unit in compliance to Customer requirements and agreed documentation standards (DIN, GOST, ASME)
- Delivery; FCA factory, transportation to the site upon request
- Supervision of erection and commissioning on site
- Site assembly as an option
- Certification limited to the gas compressor package; CE marking acc. to PED and Machinery Directive.
- Warranty inspections as an option
- Aftermarket service as an option
Type of Projects
Small Gas Compressor Station

- **Extended Scope Project – Small Gas Compressor Station**
  - Design, engineering and construction of gas compressor station including compressing package and all auxiliary equipment. Full compliance with customer requirements.
  - Compressor Package delivery to the site.
  - Civil and construction works included.
  - Site assembly included.
  - Full certification including protocols for testing site procedure for entire scope provided.
  - Commissioning, start-up and testing included.
  - Warranty inspections included. Aftermarket service as an option.
# Key Partners

**Reciprocating Gas Compressor Unit**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor</td>
<td>Frame Agreement with Ariel Corporation – world leader in manufacturing of reciprocating compressors</td>
</tr>
<tr>
<td>Engines</td>
<td>Gas engines of European and American manufacturers; GE Waukesha, GE Jenbacher, Caterpillar, Wartsila, MAN Electric motors manufactured by ABB or others</td>
</tr>
<tr>
<td>VFDs</td>
<td>Manufactured by ABB</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>Transformers, switchgears, cabinets, low and medium voltage equipment - manufactured by ABB</td>
</tr>
<tr>
<td>I&amp;C Equipment</td>
<td>Instrumentation, control and safety system delivered by ABB or others HAZOP / LOPA certification, if required</td>
</tr>
<tr>
<td>Gas cooler</td>
<td>Proven suppliers: Bronswerk, GEA/Kelvion, Alfa Laval</td>
</tr>
</tbody>
</table>
Reciprocating compressors
Strategic partnership with Ariel Corporation

Ariel corporation

- Founded 1966, privately held
- World’s largest manufacturer of separable, reciprocating gas compressors
- Global market share in excess of 70%
- Compressor sizes from 50-10 000 bhp (7.5 MW)
- Over 50 000 units shipped
- Installations in over 120 countries
- ISO 9001-2008 Certified
Reference Projects
LMG Crude Oil and Natural Gas Plant

Purpose
- 7 electrical driven gas compressor packages for the newly erected biggest crude oil mine in Poland
- 3 compressors destined to compress hazardous sour gas
- 5000 kW of total power from ABB electric motors
- key to winning the contract was ABB’s ability to provide high production capacity (7 packages in only 3 years)
- proven solution for difficult parameters related to high H2S concentration

Description
- wide cooperation between different ABB divisions, not only in the terms of this particular order but also for other scope (electrical, drives, I&C, etc.)

Current status
- project completed successfully in 2013
- warranty service granted – looking forward to expand the contract

Benefits
- participation in a demanding project for the market’s key customer and good reference for the further offerings
- a great chance for a joint cooperation between numerous ABB businesses.
- a large share of ABB products in the overall scope: electrical engine, VSD, transformer, electrical equipment, automation products and control system
Reciprocating compressor packages

Contact us

We are looking forward to your contact and questions

ABB Sp. z o.o.
Krolewiecka 11 Str.
82-300 Elbląg, Poland

e-mail (gas compression dedicated): pl-paog@abb.com

ABB Poland Contact Center
phone: 22 22 37 777
e-mail: kontakt@pl.abb.com
www.abb.pl
Power and productivity for a better world™