HIGHLIGHTS
VOLUME 1

Airpack Netherlands BV is a family owned, Dutch manufacturer of customized turnkey packages for the oil and gas industry. Our installations are designed and built according to customer specifications. We work together with our clients to provide specialized, cost-effective, efficient solutions. We are specialized in extreme environments and offshore applications. All of our equipment is engineered, manufactured, and tested at our facilities in Zierikzee, the Netherlands. We are an ISO 9001 : 2008 certified company and follow international standards and customer guidelines.

Airpack is able to meet unique specifications such as:

- *Hazardous area precautions: ATEX compliant & earthquake area solutions*
- *Redundant and SIL PLC's*
- *Special enclosures for extreme ambient conditions (arctic, desert, FPSO environment)*
- *And more!*

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IN THE MIDDLE OF THE
PROCESS

OVERVIEW

At Airpack we specialize in providing solutions for challenging situations. Our packages are often used in extreme environments and have specific operating requirements. This brochure highlights the diversity of Airpack's capabilities. We present two packages located in different environments, both with complex specifications that illustrate our experience and product range.

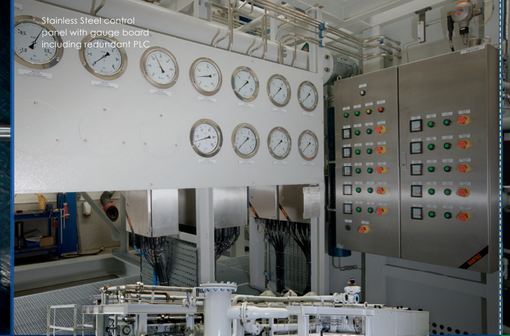
The Ogbainbiri & Toebidaba Flowstation Project required a gas compressor package capable of boosting wet natural gas containing CO_2. This project presented a number of challenges.

Compressing natural gas presents an explosion hazard. In addition, when CO_2 reacts with H_2O it forms acid. Both risks had to be addressed in the design of this project to provide a package that could perform in a harsh environment with high humidity.

The Bab Gas Compression Project required three units, each with six compressors and one dryer skid to provide utility and feed air to nitrogen generators on site. The challenge of this project was the volume of equipment needed as well as its location in an area exposed to extreme heat and sand.

Custom made **compressor, dryer** and **nitrogen generator** packages worldwide

6" Nitrogen membrane to fill the compressor seal with nitrogen



Stainless Steel control panel with gauge board including redundant PLC

Control panels suitable for extreme high ambient temperatures

Special Stainless Steel (316L) dual intake filters

OGBAINBIRI & TEBIDABA FLOWSTATION PROJECT, NIGERIA

The package consists of a single stage, oil free screw compressor which boosts the natural gas. Due to its location, the entire package is equipped for hazardous area operation. The package is also equipped with earthquake area precautions.
A large moisture separator was installed before the inlet valve of the compressor and prevents any water droplets from entering the compressor. For safety reasons, compressor seals are filled with nitrogen produced by a membrane installed on the package. API standards are adhered to for the gas compressors lubrication system and after cooler. The control system uses a remote control panel including redundant PLC.

PROJECT SUMMARY

- Single stage, oil free screw compressor
- Gas boost from 1.01 bar(a) to 3.9 bar(a)
- Capacity: 2004 Nm3/hr
- Hazardous area precautions
- Large moisture separator
- API 670 Bently Nevada vibration monitoring system
- Instrumentation Zone I and electrical components Zone II certified
- Remote control panel including redundant PLC
- Contractor: Daewoo Engineering & Construction, South Korea

BAB GAS COMPRESSION PROJECT, UNITED ARAB EMIRATES

Located in a region with high ambient temperatures, the packages are able to operate in an environment of 55 - 60ºC. Special sand filters are used to prevent sand particles from entering the package. The eighteen compressors are oil free, two-stage, air cooled, driven by an electric motor. The three dryer skids contain two heatless desiccant dryers and switch over automatically. All compressors and dryers are on a program that measures operation time. The PLC is able to decide which compressor or dryer will run based on operation times, consequently increasing efficiency and making maintenance management easier.

PROJECT SUMMARY

- Compressor capacity of 490 Nm3/hr at 9.5 bar(g) discharge pressure
- Heatless desiccant dryers with a dew point of -10ºC at 9 bar(g)
- Instrumentation Zone I certified
- Redundant control system with SIL III certified PLC's
- SS316L dual intake filters
- Eex'd certified main and fan motors
- SS316L control panels with IP66 protection, suitable for 60ºC temperatures
- Contractor: SK Engineering and Construction (SKEC), South Korea