PBG S.A.

PBG PORTFOLIO: OIL&GAS SECTOR

GRODZISK NITROGEN REJECTION LNG LIQUEFACTION & HELIUM PRODUCTION PLANT

Revision: December 03, 2010

Project info

Project name	:	Grodzisk Nitrogen Rejection Plant
		LNG Liquefaction & Helium Production Plant
Completion	:	2006-2008
Role	:	Consortium Leader
Location	:	Grodzisk, Poland
Design Data	:	Inlet gas pressure: 45 ÷ 63 barg
		Inlet gas temperature: 4 ÷ 25 °C
		Inlet gas gross calorific value: 18.07 ÷ 26.4 MJ/m^3
		Gas flow rate: 840,000 ÷ 1,920,000 Nm^3/day
		Water dew point in sales gas: -5 °C @ 55 barg
		Sales gas gross calorific value: 39.5 MJ/m^3
		LNG production: 40 ton/day
		Helium production: 1.5 ton/day @ 75% purity min
Client	:	Polskie Gonictwo Naftowe i Gazownictwo S.A.

Scope of Works:

- Engineering
- Procurement
- Construction

of:

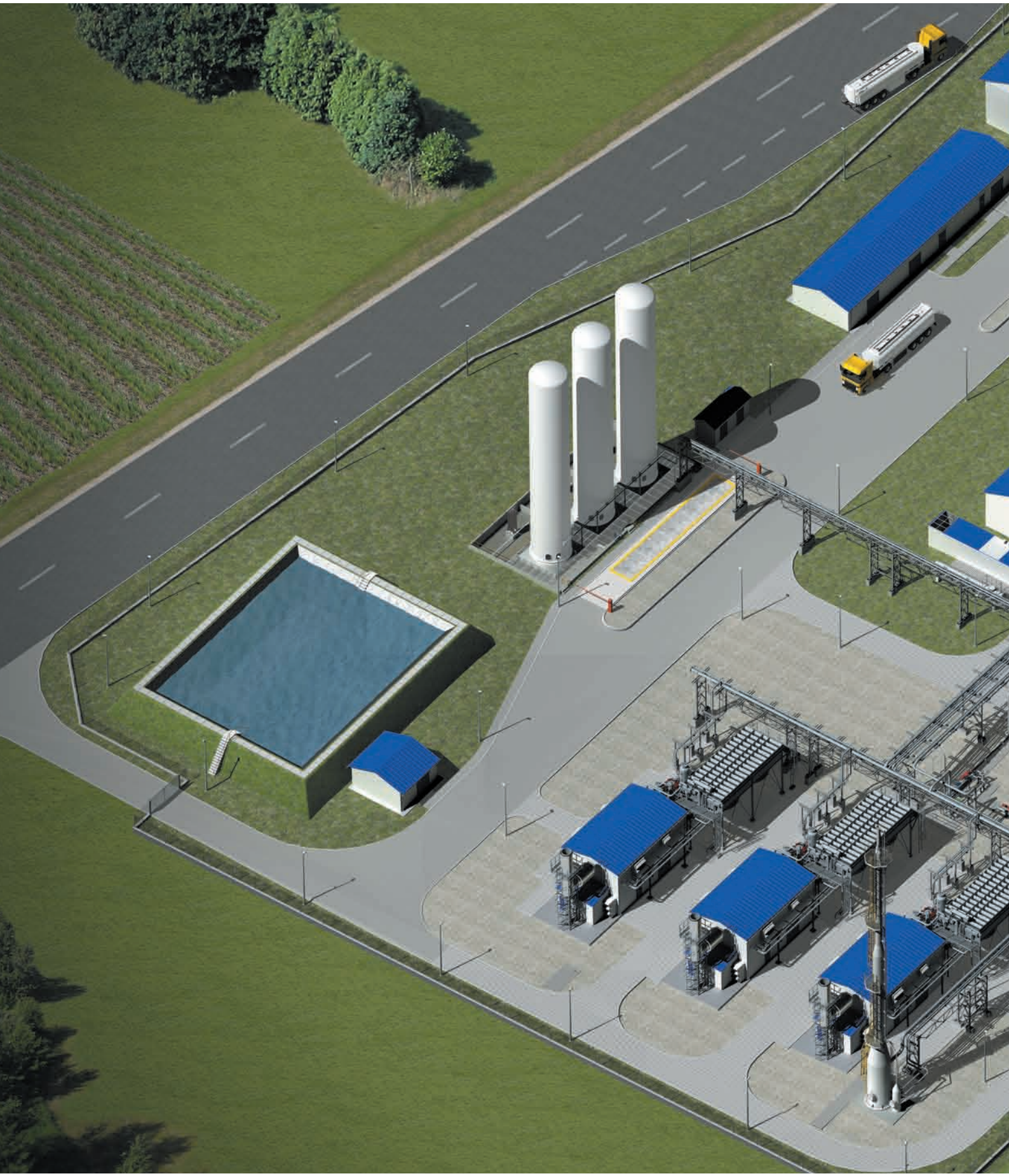
- Feed gas coalescing filter
- Amine CO_2 removal unit
- Mole sieve dehydration unit
- Mercury removal unit (adsorption)
- Nitrogen removal unit (cryogenic)
- Dust filter unit
- LNG production train
- Three (3) LNG storage bullets (257m³ each)
- Helium production train
- Two (2) Helium storage bullets (150m³ each)
- Propane refrigeration unit
- Three (3) sales gas compression units
- Heat medium system
- HP & LP flare system
- Nitrogen purge system
- Instrument air system
- Demi water station
- Fuel gas station
- Fire-fighting system (water pond 800m³)

1 Nitrogen Rejection Plant, Grodzisk, Poland

2 Sales Gas Compression Unit, Grodzisk, Poland

3 Amine CO_2 Removal Unit, Grodzisk, Poland

4 LNG Storage Bullets, Grodzisk, Poland



NRU Inlet Gas Composition:

- Nitrogen [N_2]: 26.0 ÷ 52.0 %vol
- Methane [CH_4]: 46.50 ÷ 72.0 %vol
- Ethane [C_2H_6]: ≤4.50 %vol
- Propane [C_3H_8]: ≤1.90 %vol
- Butane+ [C_4+]: 0.50 %mol
- Carbon Dioxide [CO_2]: 0.70 %mol
- Hydrogen [H]: 0.06 %mol
- Helium [He]: 0.18 %mol
- Mercury [Hg]: 0.03mg/Nm^3

Cold Box Inlet Gas Conditions:

- Carbon Dioxide [CO_2]: 10ppmv max
- Water [H_2O]: 0.1ppmv max
- Mercury [Hg]: 0.01µg/Nm^3 max

Equipment Data:
Design Data: 70barg @ -29/+50 °C

- Feed Gas/Water Coalescing Filter
  Size: 700mm I.D. x 2900mm H

- Amine Gas Sweetening Unit
- Amine Contactor
  Size: 1800mm I.D. x 18700mm S/S
  Packing: 22+3 Trays Suzer BDH type
- Gas/Amine Outlet Separator
  Size: 1400mm I.D. x 2450mm H
- Rich Amine Flash Tank
  Shell Size: 1200mm I.D. x 4500mm S/S
  Dome Size: 323.9 O.D. x 390mm S/F
- Amine Regenerator
  Size: 900mm I.D. x 16000mm TS/S
  Packing: 20 Trays Suzer BDH type
- Amine Reboiler (BKU type)
  Size: 610/900mm I.D. x 6700mm TS/S
  Duty: 1670 kW + 20%
- Lean Amine Storage Tank
  Size: 2200mm O.D. x 3000mm H (10m^3)
- Lean Amine Circulation Pump
  Capacity: 5 ÷ 16.5m^3/h @ 65barg
  Motor: 75 kW
- Lean Amine Air Cooler
  Duty: 353 kW + 20%

- Mole Sieve Dehydration Unit
- Mole Sieve Towers
  Size: 2200mm O.D. x 6300mm S/S
  Packing: Silicagel E1/NK10/NK10 types
- Regeneration Gas Heater (Cabin Type)
  Size: 2210mm W x 6000mm L x 4520mm H
  Duty: 1970 kW + 15%
- Regeneration Gas Compressor
  Model: Sundyne BMC+341P
  Motor: 280 kW
- Regeneration Gas Air Cooler
  Duty: 2125 kW + 15%

- Mercury Adsorber Towers
  Size: 1800mm OD x 4000mm S/S
  Bed: Active Carbon (11.8m^3)

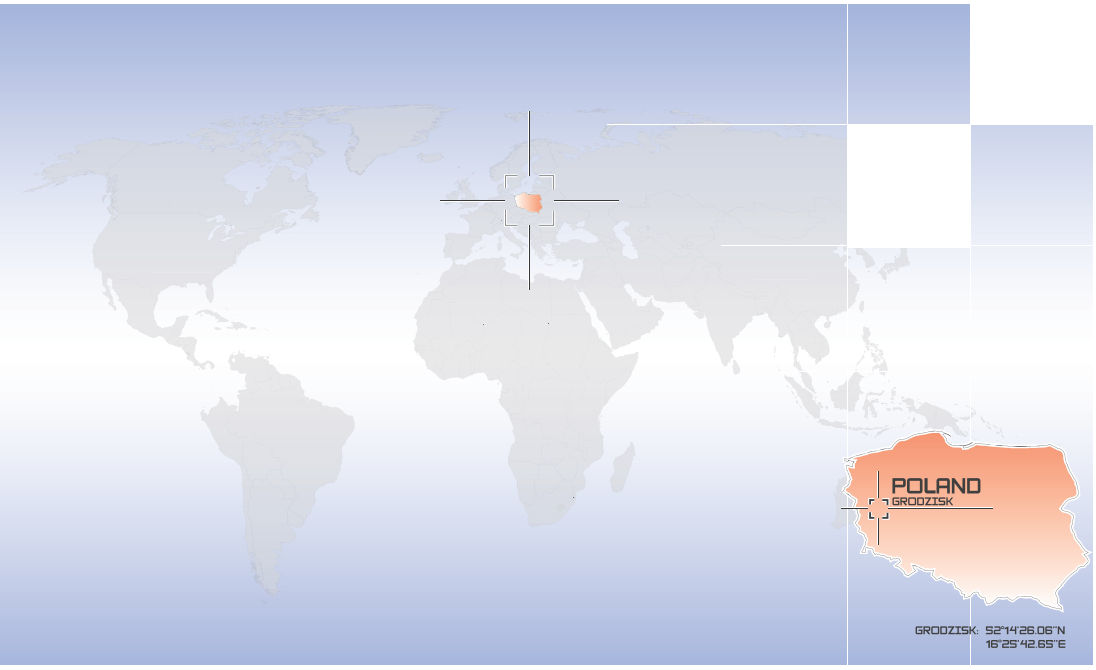
1 Nitrogen Rejection Plant, Grodzisk, Poland

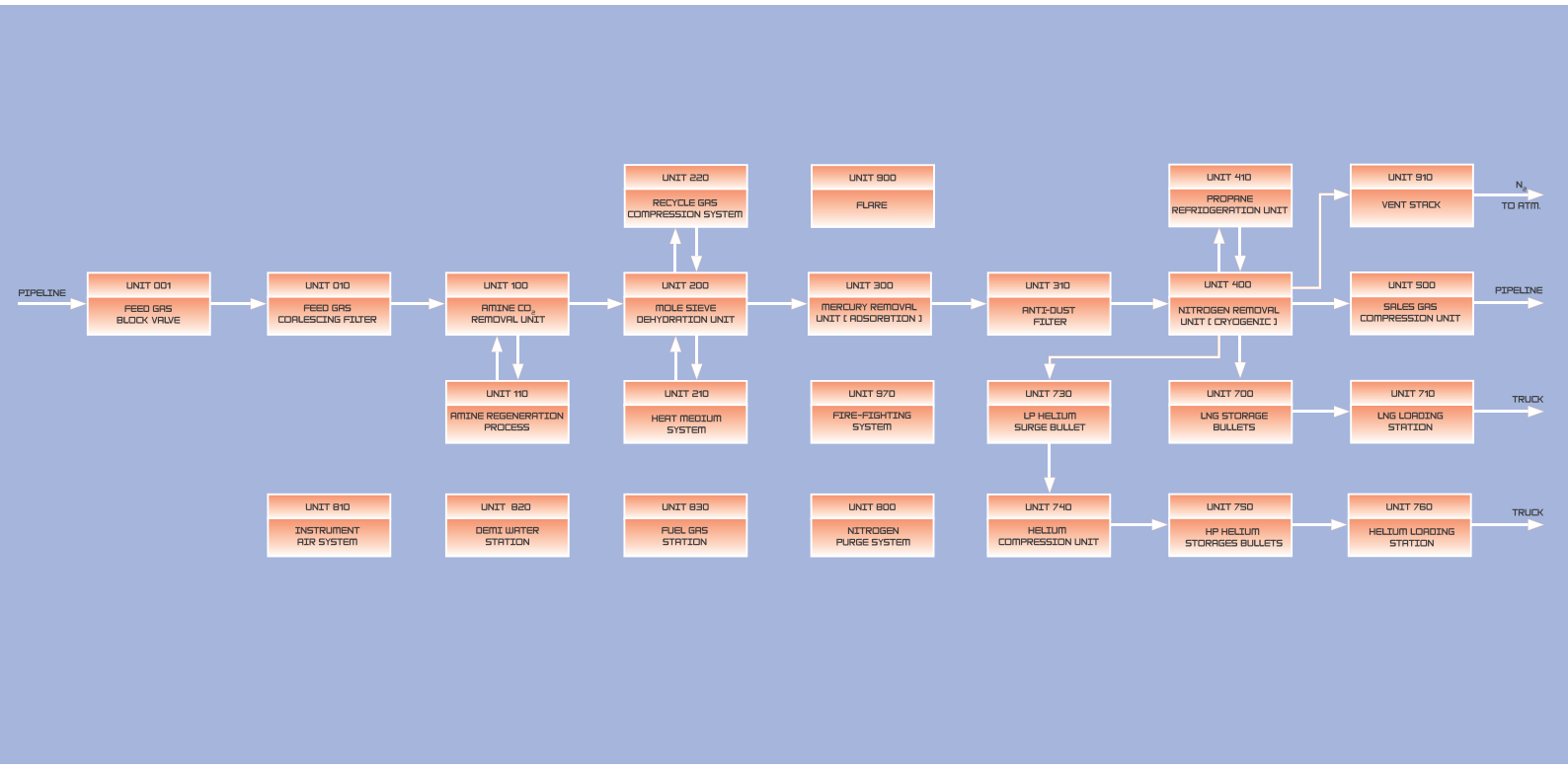
2 Propane Refrigeration Unit, Grodzisk, Poland

3 Nitrogen Rejection Plant, Grodzisk, Poland

COVER PAGE 1 Mole Sieve Towers, Grodzisk, Poland
2 Mercury Adsorber Towers, Grodzisk, Poland
3 Nitrogen Rejection Plant, Grodzisk, Poland

CURRENT PAGE 1 Project location, World Map
2 Amine Contactor, Grodzisk, Poland
3 Block Diagram, Grodzisk, Poland





PBG S.A.
ul. Skorzewska 35
Wysogotowo, Poznan
62-081 Przezmierowo
Poland

phone: +48 61 66 51 700
fax: +48 61 66 51 701
www.pbgsa.com
email: polska@pbg-sa.pl