



PBG PORTFOLIO: OIL&GAS SECTOR

GORZYCA CRUDE OIL AND NATURAL GAS PLANT



Project info

Project name : Gorzyca Crude Oil and Natural Gas Plant

Completion : 2004

Role : Consortium Leader

Location : Gorzyca, Poland

Design Data : Inlet fluids pressure: 389 ÷ 393 barg

Inlet fluids temperature: 30 ÷ 39 °C

Hydrogen sulfide [H₂S] content in crude oil: 248 mg/dm³

Hydrogen sulfide [H₂S] content in gas: 140.8 mg/m³

Crude oil production: 80 ton/day @ 30 mg H₂S/dm³

Produced water production: 10 ton/day @ 50 mg H₂S/dm³

Natural gas production: 288 000 Nm³/day @ 140 mg H₂S/m³

Client : Polskie Górnictwo Naftowe i Gazownictwo S.A.

Scope of Works:

- Engineering
- Procurement
- Construction

of:

- Three (3) wellsites + one (1) well
- Interconnecting underground pipelines
- Inlet manifold
- Two (2) double in-direct line heater units
- 3-phase production separator unit
- 3-phase test separator unit
- Crude oil stabilization unit
- Produced water treatment unit
- Three (3) crude oil storage bullets (100m³ each)
- One (1) produced water storage bullet (50m³)
- Crude oil and produced water loading station
- Flare System (K.O. Drum and Stack)
- Methanol injection system (seven pumps)
- Chemical injection system (five pumps)
- Fire-fighting water pond (300 m³)
- Heat medium system
- Control system
- Electrical
- Civil works



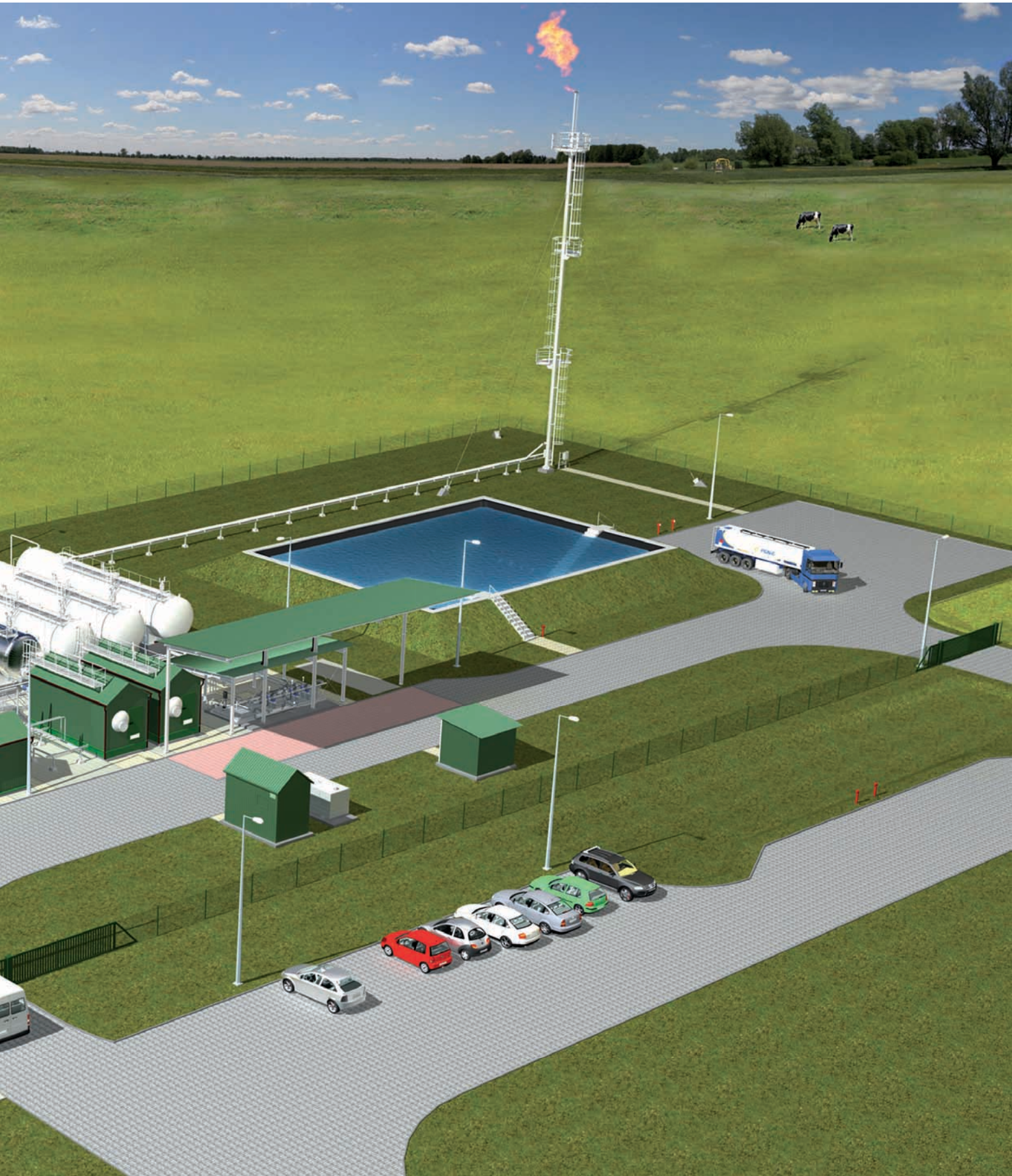
1 In-Direct Line Heaters, Gorzyca, Poland

2 Piperack, Gorzyca, Poland

3 Gorzyca-8 Wellsite, Gorzyca, Poland

4 Stabilization Feed Drum, Gorzyca, Poland







Inlet Gas Composition:

- Methane [CH_4]: 22.97÷26.56 %mol
- Ethane [C_2H_6]: 4.11÷5.63 %mol
- Propane [C_3H_8]: 2.21÷2.79 %mol
- Butane+ [C_4+]: 1.14÷2.29 %mol
- Carbon Dioxide [CO_2]: 0.15÷0.68 %mol
- Hydrogen Sulfide [H_2S]: 0.33÷0.84 %mol
- Nitrogen [N_2]: 64.43÷66.71 %mol
- Hydrogen [H]: 0.02÷0.03 %mol
- Helium [He]: 0.02÷0.03 %mol

Inlet Crude Oil Data:

- Density: 0.725 g/cm³
- Viscosity @ 0°C: 0.7724 cP
- Viscosity @ 20°C: 0.6122 cP
- Hydrogen Sulfide [H_2S] in Oil content: 248 mg/dm³

Inlet Produced Water Data:

- Hydrogen Sulfide [H_2S] in H_2O content: 140.8 mg/dm³



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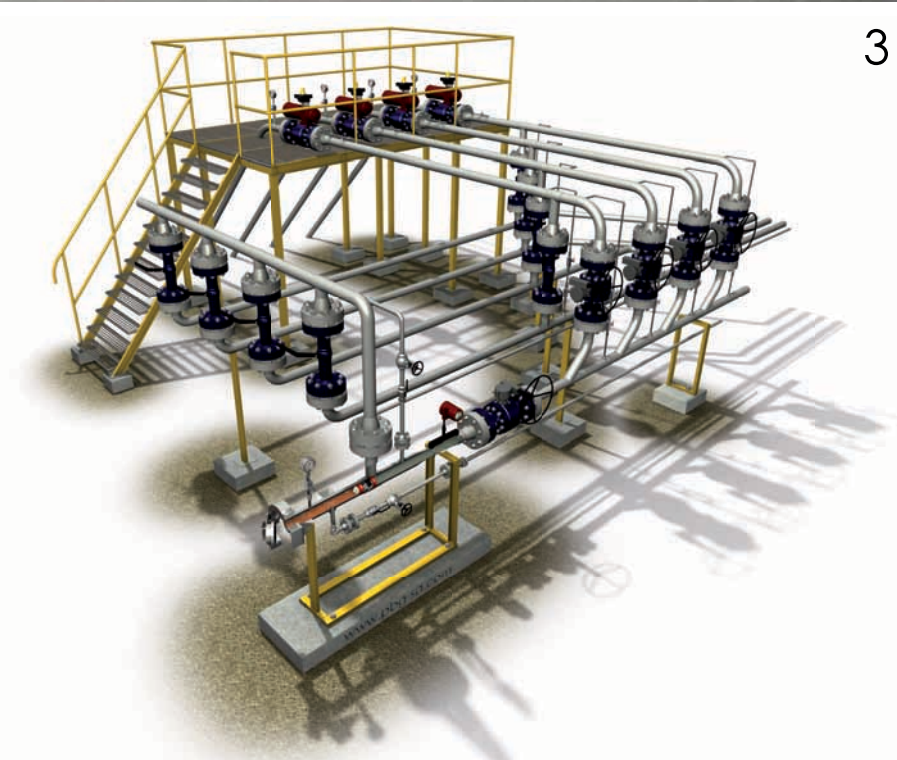
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Main Equipment Data:

Design Data: 98bar @ -29/+60 °C; C.A.: 3.2mm

- In-Direct Line Heaters Unit
Shell Size: 1,600mm OD x 6,070mm F/F
Expansion Tank Size: 355.6mm OD x 2,440mm F/F
Duty: 440 kW
- Production Separator Unit
Shell Size: 1,219mm OD x 4,880mm S/S
Boot Size: 323.9mm OD x 457.2mm LG
- Test Separator Unit
Shell Size: 914.4mm OD x 3,050mm S/S
Boot Size: 323.9mm OD x 457.2mm LG
- Crude Oil Stabilization Unit
- Stabilizer Feed Drum
Shell Size: 1,219mm OD x 3,050mm S/S
Boot Size: 323.9mm OD x 508.2mm LG
- Crude Oil/Crude Oil Heat Exchanger
Type: TEMA NEN Class R
Size: 219mm OD x 6,100mm TS/TS
Duty: 125 kW + 10%
- Crude Oil/Produced Water Heat Exchanger
Type: TEMA NEN Class R
Size: 219mm OD x 3,660mm TS/TS
Duty: 19 kW + 10%
- Crude Oil Stabilizer Tower
Size: 610mm OD x 3660mm LG
Size: 323.9mm OD x 10,000mm S/S
Packing: Nottor Rings 1"/4,880mm H
- Crude Oil Cooler
Type: Aerial Cooler/Forced Draft
Duty: 122 kW + 20%
Motor: 2.3 kW
- Crude Oil Stabilizer Reboiler
Shell Size: 1.067mm OD x 5.490mm F/F
Expansion Tank Size: 323.9mm OD x 1,530mm F/F
Duty: 264 kW
- Produced Water Treatment Unit
- Produced Water Flash Tank
Size: 610mm OD x 2140mm S/S
- Produced Water Stripper Tower
Size: 168.3/355.6mm OD x 4,420mm S/F
Packing: Intalox Ceramic Saddles 1/2"/1,860mm H
- Produced Water Storage Bullet
Size: 2,512mm OD x 10,815mm S/S
- Crude Oil Storage Bullets
Size: 2,920mm OD x 15,925mm S/S

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1 Crude Oil and Natural Gas Plant, Gorzyca, Poland

2 Separator Unit, Gorzyca, Poland

3 Inlet manifold, Gorzyca, Poland

