

**95,000 cbm LPG-FSO**  
**'Liberdade'**  
*for PHILLIPS PETROLEUM COMPANY (Bayu-Undan), USA*

**Project Data:**

**Shipyard:**

Samsung Heavy Industries, Korea

**Year of completion:** 2003

**Classification:** LRS

**TGE's scope:**

EPCS-contract, Complete gas handling system

**Vessel:**

95,000 m<sup>3</sup> LPG-FSO

Length o.a. 246.0 m

Beam: 54.0 m

Draught (LPG): 17.0 m



**Characteristics of gas plant:**

**Number of cargo tanks:**

6

**Material of cargo tanks:**

Low temperature carbon-manganese steel

**Cargoes:**

LPG (C-Propane, C-Butane)

**Design temperature / pressure:**

-50°C / 0.25 bar g acc. to IMO

**Maximum cargo density:**

610 kg/m<sup>3</sup>

**Number of segregations:**

2

**Cargo manifolds:**

2 liquid lines, 2 x 12" ANSI 300 lbs flanges  
 2 vapour lines, 2 x 12" ANSI 300 lbs flanges

**Loadingrate:**

1,940 mt/day propane + 1,830 mt/day butane

Deepwell pump

8 x 500 m<sup>3</sup>/h at 130 m LC  
 4 x 250 m<sup>3</sup>/h at 130 m LC

**Number of vaporizer:**

Direct sea-water heated

Capacity: 2 x 3,500 Nm<sup>3</sup>/h Propane each

**Reliquefaction system:**

direct cycle  
 4 x oil-free cargo compressor, type SULZER  
 Refrigerant capacity: abt. 260 kW each

**Refrigeration system:**

4 chiller units (one as a spare) Refr. capacity unit A: abt. 3.300 kW /  
 Refrigerant: Propane

**Cargo piping system:**

Stainless steel, AISI 316L

**Inertgas plant:**

Combustion generator

Capacity: 6,000 Nm<sup>3</sup>/h at max 1.0 % O<sub>2</sub>

**Nitrogen plant:**

Nitrogen membrane generator

Capacity: 2 x 100 Nm<sup>3</sup>/h at 97.0 % purity