

**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:**

<b>Number of cargo tanks:</b>	6
<b>Material of cargo tanks:</b>	Low temperature carbon-manganese steel
<b>Cargoes:</b>	LPG (C-Propane, C-Butane)
<b>Design temperature / pressure:</b>	-50°C / 0.25 bar g acc. to IMO
<b>Maximum cargo density:</b>	610 kg/m <sup>3</sup>
<b>Number of segregations:</b>	2
<b>Cargo manifolds:</b>	2 liquid lines, 2 x 12” ANSI 300 lbs flanges 2 vapour lines, 2 x 12” ANSI 300 lbs flanges
<b>Loadingrate:</b>	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
<b>Number of vaporizer:</b>	
Direct sea-water heated	Capacity: 2 x 3,500 Nm <sup>3</sup> /h Propane each
<b><u>Reliquefaction system:</u></b>	direct cycle 4 x oil-free cargo compressor, type SULZER Refrigerant capacity: abt. 260 kW each
<b><u>Refriegeration system:</u></b>	4 chiller units (one as a spare) Refr. capacity unit A: abt. 3.300 kW / Refrigerant: Propane
<b><u>Cargo piping system:</u></b>	Stainless steel, AISI 316L
<b><u>Inertgas plant:</u></b>	
Combustion generator	Capacity: 6,000 Nm <sup>3</sup> /h at max 1.0 % O <sub>2</sub>
<b><u>Nitrogen plan:</u></b>	
Nitrogen membrane generator	Capacity: 2 x 100 Nm <sup>3</sup> /h at 97.0 % purity