

# PETRONAS CARIGALI, MALAYSIA

From a pilot project to a successful solution



The leader of the Malaysian oil and gas industry launched a pilot project by installing the Multiphase Pump Technology at one of their fields.

The system was set up and successfully commissioned at Tembugo-B, an unmanned offshore satellite platform in Sabah Waters in August 2007.



The Tembugo oil field consists of an integrated production and processing platform, the Tembugo-A and Tembugo-B. The unprocessed mixture of gas and crude from Tembugo-B is routed by a 6 inches trunk line departing to Tembugo-B.

In order to guarantee the customer the highest degree of security Bornemann installed an **on skid control system**.

#### TECHNICAL DATA:

Size of equipment:	1 MPC 208
Uptime:	99 %
GVF:	up to 100 %
Volume of mix:	140 m <sup>3</sup> /h
Δ pressure:	21 bar
Installed power:	240 kW

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# CNPC AKTOBEMUNAIGAS, KAZAKHSTAN

Extreme conditions require secure solutions

At the end of 2007 Bornemann supplied its first Multiphase Boosting Systems to Kazakhstan. As localisation is of major importance for customised solutions Bornemann had to consider various local terms which are typical for Central Asian countries.



Due to widely varying climate conditions from -40 to +40 degrees all materials purchased and manufactured, as e.g. ball valves, had to be resistant against these extreme changes in weather.

Another challenge was the appearance of hydrogen sulfide (H<sub>2</sub>S) in the fluid, a highly poisonous chemical compound. As to ensure the highest possible level of safety Bornemann purchased the complete material in accordance to NACE requirements and installed **H<sub>2</sub>S-detectors**.

The control system was delivered to Kazakhstan completely assembled.

#### TECHNICAL DATA:

Size of equipment:	2 MW 9
Uptime:	98 %
GVF:	up to 100 %
Volume of mix:	390 m <sup>3</sup> /h
Δ pressure:	33 bar
Installed power:	2 x 670 kW



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BORNEMANN TWIN SCREW PUMP  
OIL & GAS APPLICATIONS IN  
ASIA

TURNING CHALLENGES INTO CHANCES



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## GENERAL INFORMATION ASIA



Asia is the biggest and most populous continent. Its largest economies are China, Japan, India and South Korea. Other countries like Malaysia, Thailand and Indonesia are forecasted to experience a long-term growth.

Find our Multiphase Pumps in the following countries:

- China
- India
- Indonesia
- Kazakhstan
- Malaysia
- Thailand

### Localisation – Adjusted solutions in Asia

As specialisation on the customer's requirements is Bornemann's highest priority our customised **Twin Screw Pump Oil & Gas Applications** are perfect solutions for operations in Asia. The continent's vast size brings about totally different environments and local terms that require fitted technology and expertise. From Kazakhstan to Indonesia – with experience and flexibility Bornemann can provide the customer with an effective solution.

## CAIRN ENERGY, INDIA

### A turn-key solution

In December 2007 two Multiphase Pumps were started successfully at an Oil Terminal on the east coast of India.



In order to overcome the high backpressure of the pipeline which constraints productivity of the well at offshore, the Multiphase Pumps were installed at the onshore terminal.

The skids consist of all necessary control and safety equipment suitable to handle the well fluid with appropriate operational flexibility and supervisory.

The installed Multiphase Pumps boost varying fluid regimes, as the pipeline is handling multiphase (oil, gas, water) flow and slug flow (gas).

### TECHNICAL DATA:

Size of equipment:	2 MPC 400
Uptime:	99 %
GVF:	up to 100 %
Volume of mix:	2,420 m <sup>3</sup> /h
Δ pressure:	15 bar
Installed power:	2 x 1,300 kW

## CHEVRON, THAILAND

### A tropical climate solution

At the end of 2007 Bornemann equipped an unmanned well head platform in the Gulf of Thailand with a Multiphase Pump System.

The Bornemann Multiphase Technology was the perfect solution for the Surat-A platform because in comparison to conventional technology Multiphase Pumps require less of the restricted space.

The MPP-System is a **gas engine driven unit** and it contains special features to meet local requirements. An hydraulic system driven by the gas engine as well provide power to all auxiliaries as there is no external power available on such unmanned platforms.

Thailand's tropical climate posed further challenges for the engine and the MPP-System as well which were solved successfully by Bornemann. The on-skid control system is suitable for installation in hazardous zone and all components are installed to allow easy relocation to other platforms after depletion of wells.



### TECHNICAL DATA:

Size of equipment:	1 MPC 268
Uptime:	95 %
GVF:	up to 100 %
Volume of mix:	500 m <sup>3</sup> /h
Δ pressure:	30 bar
Installed power:	600 kW