



SOUGHT AFTER PUMP TECHNOLOGY

Case study of screw pumps and systems being utilised in Russia

A recent project has just been completed in the Russian oilfield in north Oshkotyn. The Russian oil company was supplied with two multiphase units by Leistriz.

Alexander Greb, director sales CIS at Leistriz, explains: 'Both units are being used in a permafrost region.'

'It was not just the very high temperature variations ranging from -40 C to +50 C, which present a big challenge for these pumps; it was also the delivery to this location itself, which proved a remarkable logistical achievement.'

'The oilfields are situated in an area, which is only accessible in the winter months from October until March. During the summer months it changes to an invidious swamp. Thus, the only solution was a delivery by air.'

The pumps were flown to the operation site by the biggest type of helicopter in the world.

MULTIPHASE PUMPS

The multiphase pumps extract crude oil and raw gas with a gas concentration (GVF) of 97% from the bore holes and collecting pipes to centralised treatment plants. They are used for handling the untreated mixture of gas and liquid



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01 Alexander Greb and the Leistriz Booster pumps

02 Leistriz multiphase pump SKID

03 P&ID Conventional vs Multiphase concept



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with a capacity of up to 5,000m³/h and a differential pressure of up to 100bar.

The conventional approach is to separate the gas from the fluid (hydrocarbon with water) and extract both phases in separate pipelines to a collecting point for the first separation process prior to feeding them into long distance pipelines.

Greb says: 'This is very costly, you need separators, compressors, fluid pumps, heaters or individual pipes.'

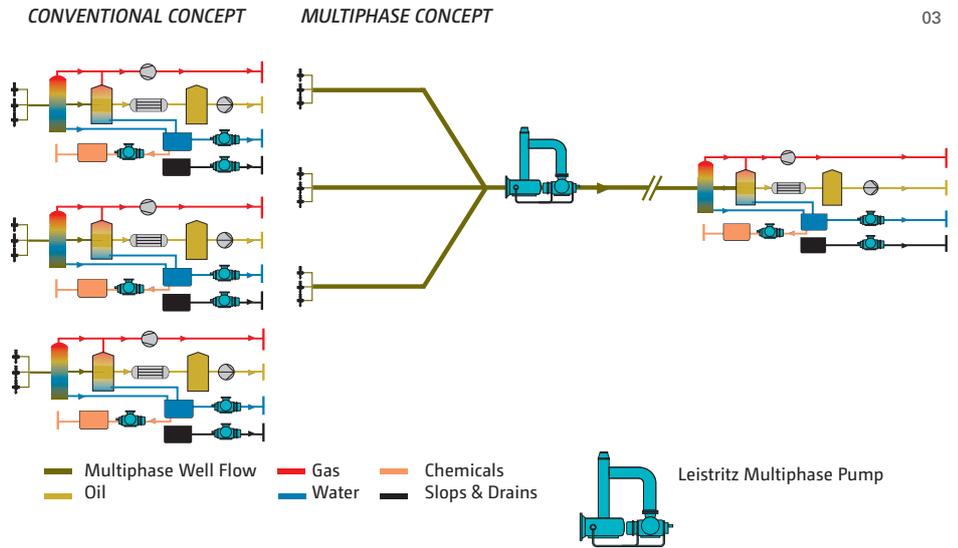
'This can, however, be avoided by using the economical multiphase pump. Another bonus is, that it can accelerate the transport of the multiphase mixture to a central treatment plant via just one pipeline.'

SOPHISTICATED TECHNOLOGY

From a technological point of view the multiphase pumps are based on twin screw

double volute pumps. These self-priming pumps consist of a double flow casing and thus are axial hydraulically balanced. The option of an RPM regulator via a frequency converter drive covers a broad spectrum of possible operations.

The pump and all other equipment, including the required controls and electric motors, are assembled on a base frame in a skid-construction. The liquid management system of Leistritz ensures operation up to 100% GVF. One very important aspect has to be noted, by using multiphase pumps the flaring of gas can be avoided to large extent. By transporting the entire gas and liquid mixture in one pump it not only reduces the damage to the environment but also provides a more efficient use of energy resources.



THE L4 BOOSTER PUMP

Another current example can be found further south in the republic of Komi in the Yarega oilfield in the sparsely populated Taiga and Tundra region.

Since May 2015, three booster pumps of the type L4 are in use.

‘Their task is the pressure increase in the pipeline. They extract the prepared oil from the site in Yarega to the main pipeline network’, says Greb.

The twin screw, double volute pumps utilised here are suited for matter with a viscosity range of up to 150,000cSt. They can handle flow rates of up to 2,000m and can be utilised for a differential pressure of maximum 150bar.

big potential’ despite the fact that the country is currently experiencing tough conditions. Leistritz has been operating in the country for several years.

A PROMISING MARKET

Greb is confident that ‘Russia is a market with

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