Gas Handling Devices

Gas handlers for enhanced reliability, production improvement and less downtime in gassy applications

Applications

- High GLR Applications
- Gas lift – to – ESP conversion wells
- Unconventional wells with increasing GLR

Features and Benefits

High gas separation efficiency

- Increases production & extends ESP system application range

Abrasion-resistant tungsten-carbide bearings & high-strength INCONEL shafts

- High reliability in sandy & abrasive environments

Advanced gas-handling

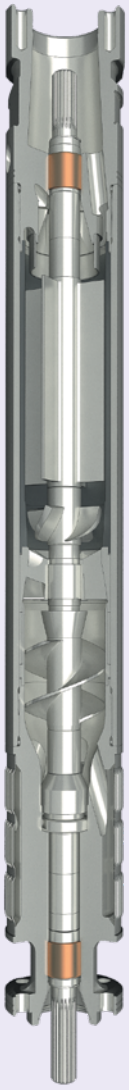
- Increases equipment run life by eliminating gas locking
- Improves ESP system performance by conditioning gas-liquid mixture

High percentages of free gas in well fluid can cause the gas locking, degraded bearing lubrication, decreased pump head, flow rate and efficiency, poor cooling of ESP system. In order to avoid these problems, operators use different gas handling devices which either separatefree gas, to reduce the quantity of gas that flows into the pump, or homogenize and compress the gas so it can be better processed by the pump.

Levare has a broad suite of gas handling devices to address wells with varying gas to liquid ratios:

- Rotary Gas Separators
- Vapro Gas Handlers
- Vortex Gas Separators

Devices may be used individually or in tandem depending on the application.



Operating conditions

Fluid specific gravity, s.g.	up to 1.4
Max. solids content	up to 1.0 g/l
Max. H_2S content	up to 1.25 g/l
Produced water	6.0...8.5 pH
Max. Mohs' hardness number	7
Water cut at pump intake	up to 99%
Max. kinematic viscosity of the single-phase fluid at which the pump operates without changing its head and performance, cS	1

Max free gas at pump intake

338 series: ESP 338 RGS 538 series: 538 Vapro	up to 90%
338 series: ESP tandem 338 RGS 400 series: 400 Vapro	up to 70%
400 series: ESP B 400 VGS 538 series: ESP B 538 VGS	up to 75%
400 series: ESP B 400 VGS + Vapro 538 series: ESP B 538 VGS + Vapro	up to 65%

RGS – Rotary gas separator

VGS – Vortex gas separator

Rotary Gas Separators

Rotary Gas Separators use an inducer designed to force feed well fluid in to a rotor section designed to separate the gas from the liquid. For higher separation efficiency, a tandem gas separator is available (with two separation chambers).

The rotary gas separator operation is based on the following principle: the fluid entering the gas separator and moving into its vanes is separated into liquid and gas. The separated gas is vented to the annulus and the degassed fluid is directed into the first stage of the pump.

RGS Specifications

Gas separator type	Max flow rate of the connected pump @ 60 Hz	Max free gas at pump intake
ESP 338 RGS	1,500 bpd	up to 65%

Vortex Gas Separators

The Vortex Gas Separator is a dynamic gas separation device that utilizes a natural vortex action created in a vortex chamber and providing a centrifugal gas separation. Unlike a rotary gas separator, rotors are not used.

This design feature improves abrasion resistance of the vortex gas separator sleeve and decreases the risk of pumping system failures due to gas separator housing damage.

VGS Specifications

Gas separator type	Max flow rate of the connected pump	Max free gas at pump intake
ESP B 272 VGS CW	1,250 bpd @ 100 Hz	up to 65%
ESP B 400 VGS CW 3000	3,000 bpd @ 60 Hz	up to 75%
ESP B 400 VGS CW 5800	5,800 bpd @ 60 Hz	
ESP B 538 VGS CW 9000	9,000 bpd @ 60 Hz	

Vapro Gas Handlers

The Levare Vapro gas handler efficiently handles higher percentages of free gas in gassy wells, allowing continuous operation of ESP systems in extreme gas conditions and reducing the tendency for underload shutdowns due to gas interference in the pump.

The Vapro multiphase pump incorporates an axial-flow impeller optimized to reduce gas bubble size and create a more homogenous flow regime at a higher GLR, in the pump. This mixture of gas and liquid behaves more like a single-phase fluid helping to stabilize the flow moving into the primary pump.

When the Vapro pump is run in combination with the Levare Vortex gas separator, ESP production with GVF up to 90% is achievable.

Vapro Specifications

Gas separator type	Flow rate of the connected pump @ 60 Hz	Max free gas at pump intake
400 Vapro 3500	832 – 3,782 bpd	up to 70%
538 Vapro 2600	400 – 2,300 bpd	up to 65%
538 Vapro 4400	1,600 – 4,400 bpd	
538 Vapro 12500	4,000 – 13,000 bpd	