

# Electric Submersible Pumps

Maximize ESP system run life and enhance production

## Applications

Conventional and unconventional oil wells  
Wells having technically demanding challenges such as:

- Higher viscosity oil
- High GOR
- Scale and solids
- High temperature

Conventional and unconventional oil wells

## Benefits

- Increased production even in challenging environments
- Longer ESP run life improves ROI
- Wider pump operating range helps reduce intervention costs

## Features

**Floater and compression pumps**

**Packet pumps including:**

- Robust tungsten carbide (T) bearing design
- Large shaft diameter (higher load capacity)

**Radial, mixed-flow**

**Wide range of stage materials: Ni-Resist Type 1, Ni-Resist Type 4, and other special alloys**

**Complete range of ESPs:**

- Flow rates: 151 bpd to 80,000 bpd (24 m<sup>3</sup>/d to 12,712 m<sup>3</sup>/d) @ 60 Hz
- Well depth: up to 13,000 ft (4,000 m)

Levare ESP systems are available for both standard (3,600 rpm) and high-speed (6,000 rpm) applications. In addition to typical applications in oil, water, and brine production, Levare ESPs are used for geothermal service, water injection and disposal, mine dewatering and salt dome leaching.

Pump stage types available include radial flow designs for maximum efficiency at flow rates less than 1,000 bpd and mixed flow stages for greater efficiency at higher flow rates.

All Levare pumps are manufactured at facilities certified to API Spec Q1 and ISO 9001:2015.

## ESP Types and Constructions

**Levare compression pumps** cover a wide range of flow rates and are very tolerant to higher thrust loads and abundant solids in the produced fluids.

Unlike floater pumps, compression pumps are better able to manage varying thrust loads in rapidly changing flow conditions as is often experienced with gas slugging.

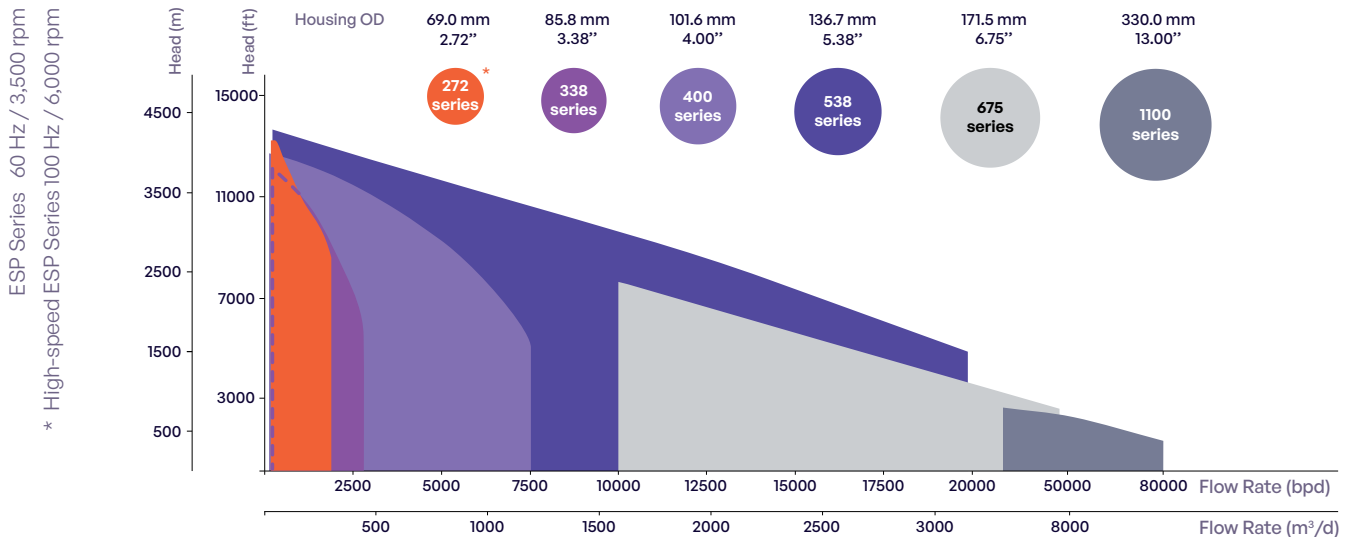
When a compression pump begins to operate in down thrust, the force is transferred and managed at the thrust bearing in the motor seal. Absorbing this down thrust force in the clean oil environment of the seal section helps extend pump run life.

**Levare Packet pump** is better able to withstand prolonged down thrust and abrasive production typically experienced by ESPs in unconventional well applications.

The Packet pump is constructed such that as mechanical wear progresses, stage impellers will lock together in groups (configurable packets) so as to limit the axial movement of the packet along the shaft. Down thrust is then dynamically managed through a tungsten carbide (T) bearing in the diffuser at the base of each packet.



## ESP Product Line



Levare ESP systems overcome harsh environment challenges through the combination of product engineering, material selection, application design, and operational methods to optimize performance under Standard, Harsh, and Extreme duty conditions.

**Standard Duty (SD)** ESP systems are recommended when:

- Produced gas volumes are low
- Produced solids are negligible or in low concentration (smooth sand with low quartz content) and have only mild impact on equipment wear
- Corrosive fluids or gases (CO<sub>2</sub> and H<sub>2</sub>S) are either absent or in very low concentrations
- Bottomhole and operating temperatures are low

**and include:**

- Standard constructions are floater and compression pumps

**Harsh Duty (HD)** ESP systems are recommended when:

- Produced gas volumes are mid-range to high
- Produced solids and sand are noticeable, include particles of different shape and size with significant quartz content, and expected to have moderate impact on equipment wear
- Moderate levels of CO<sub>2</sub> and high levels of H<sub>2</sub>S are present
- Bottomhole and operating temperatures are low to moderately higher

**and include:**

- Floater and compression pumps fitted with TC bearings at 1.1 ft (0.35 m) interval
- The option to use Packet pumps fitted with TC bearings at 1.1 ft (0.35 m) interval spacing

Use of gas separators is recommended when free gas will not exceed 72% by volume.

**Extreme Duty (XD)** ESP systems are recommended when:

- Produced gas volumes are high
- Produced solids and sharp sand particles with high quartz content are very abundant and have aggressive impact on equipment wear
- High levels of CO<sub>2</sub> and moderate levels of H<sub>2</sub>S are present
- Bottomhole and operating temperatures are low

**and include:**

- Compression pumps fitted with TC bearings in every diffuser
- The option to use Packet pumps fitted with TC bearings every third stage and using the same component materials

Use of the Vapro multiphase gas handler in combination with vortex gas separators is recommended when free gas is present up to 90% by volume.