Ultra-High-Speed ESP UHS ESP™

Meeting standards

American Petroleum Institute

Advantages

- 30–60% power saving due to higher overall efficiency
- Efficient operation with unstable inflow due to a wide operating range and speed adjustments between 1,000 and 12,000 rpm
- Compact design and fully assembled delivery
- Plug&Play design: quick and easy installation within 20-30 minutes
- Operation in highly deviated wells, optimal tubing depth setting, and reduced well workover cost due to a compact design
- Higher resistance to solids, free gas, high temperature, and corrosive fluids
- Runlife extended to 1,000-1,500 days in harsh conditions of operation

Applications

- Deviated wells having extra production potential
- Wells having extra production potential and the possibility of installing under the perforated interval, including gassy wells
- Wells with higher energy consumption and limited power supply
- Low-rates wells more than 50 bblpd (8 m³/day)
- Harsh conditions: highly deviated wells, unstable inflow, low production rate, wells with high free gas content and solids
- Remote fields with equipment delivery by helicopters
- Instable or varying inflow after drilling, hydraulic fracture treatment, or bottom-hole treatment of the well

Lex Ultra-High-Speed ESP (UHS ESP™), driven by a permanent magnet motor (PMM) and having an operating speed range from 1,000 to 12,000 rpm, is unrivaled worldwide. Due to its high nameplate operating speed of 10,000 rpm, the length of the UHS ESPTM is 2–3 times shorter than any conventional ESP. The efficiency of the Permanent Magnet Motor exceeds 91%, the use of hard-alloy materials gives our modular pump the abrasion resistance up to 2,000 ppm (2,000 mg/l).

Lex Ultra-High-Speed ESP **(UHS ESP™)** effectively increases well production, power-saving and provides reliable operation in harsh conditions. Before each installation, we analyze the relevant well-specific data and make calculation for a customized selection of equipment for every well.

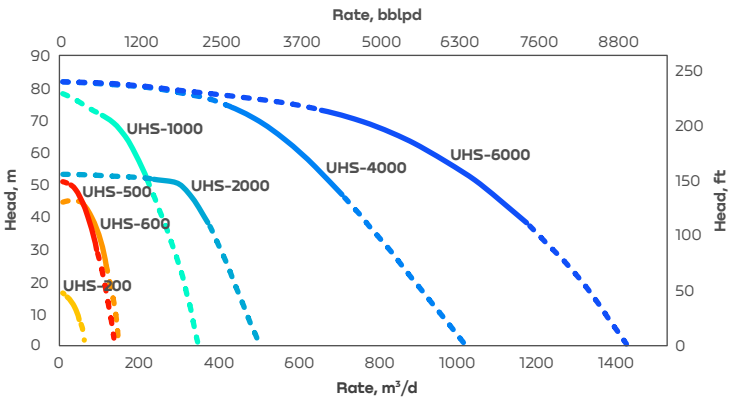
UHS ESP™ is the world's first ultra-high-speed ESP system having the broadest operating range of 1,000 through 12,000 rpm and flexibly adaptable to any unstable inflow. High operating frequencies result in 8-16 times more head per stage, 2-3 times shorter length than any conventional ESP and higher overall efficiency. The revolutionary modular design and hard alloys with ceramic friction pairs quadruple the resistance to solids to 2,000 ppm (2,000 mg/l) vs. standard equipment.

UHS ESP™ consists of the following components: a modular energy-saving pump, ultra-high-speed submersible Universal Permanent Magnet Motor (Universal PMM) by Lex, high-temperature 4-bag seal, gas separator, cooling system, shroud, and Hunter telemetry system.

We design any customized equipment package on a base of both third-party and proprietary software. Unlike any conventional equipment, **UHS ESP™** is tested at the manufacturing facility, fully assembled. After testing, it is delivered to the site ready for installation, consisting of unloading, MLE connection through the roller on the motor. Thus, installing the **UHS ESP™** is 3–4 times faster than installing a standard ESP, and the human factor and error are minimized.

Since 2016, we have installed more than 500 units at offshore and onshore projects worldwide.

Figure 1. Performance curves of UHS ESP™ stages



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