HALLIBURTON

Electric submersible pump systems for municipal water applications

Reliable, efficient, and environmentally friendly

Electric submersible pump systems for municipal water applications

Pumping systems are the heart of municipal water service. These systems must be reliable, efficient, and environmentally friendly to facilitate the public's supply of clean drinking water.

Summit ESP® — A Halliburton Service, has the expertise and leading technology to meet that challenge. We provide NSF®-certified electric submersible pump (ESP) systems to help maintain water quality and meet regulatory compliance faced by growing urban areas. National Sanitation Foundation (NSF) certification indicates that a product has been tested and meets specific public health and safety standards.

Reliable, efficient, and environmentally friendly

Designed and tested in our state-of-the-art Research and Technology Center, our ESP systems directly address key problems with other pumping systems like line-shaft turbine pumps.

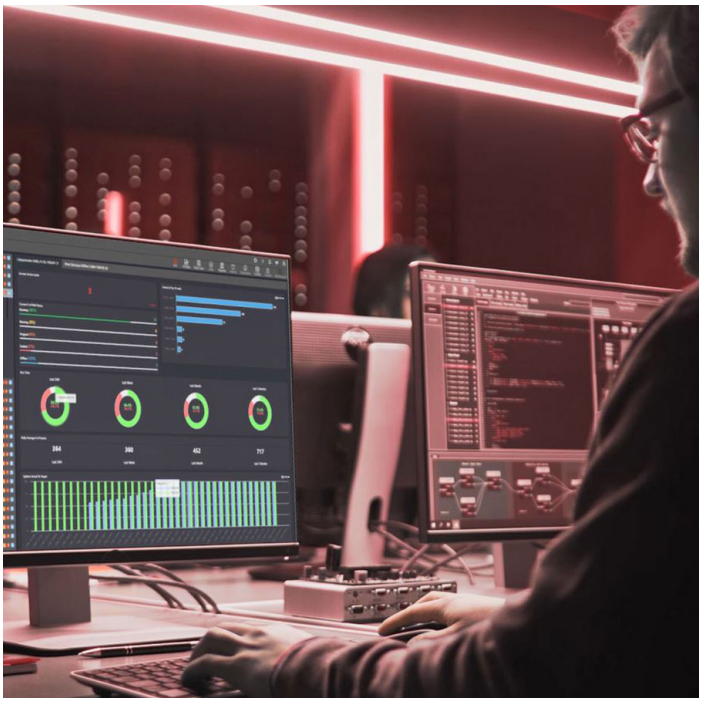
- Our simpler design eliminates the need for expensive and failure-prone components, including check valves and bubbler tubes
- Erosion Buster® technology and innovative bearings protect our internal pump components from harmful wear resulting from sandstone, solids, and other abrasives
- Electric submersible pump systems increase thrust capacity, pumping efficiency, and run time
- Operating components are downhole, minimizing excessive surface noise issues
- System design significantly reduces potential oil leaks into the water supply

Reduced footprint, improved power costs and high power factor

As cities grow, environmental impact becomes a pressing issue for pumping systems. Our ESPs minimize surface footprint and noise by moving the pumping system underground. The only surface component is the quiet surface variable speed drive. Our Summit ESP ACS®-15 active front end variable speed drives achieve near power factor unity, protecting neighboring communities from electric interference and harmonics that may impact the electrical system.

OUR ESPS ARE NSF-CERTIFIED, DESIGNED TO MEETTHE NEEDS OF MODERN MUNICIPALITIES

Our electric submersible pump systems are backed by Summit ESP® application engineering expertise and leading technology, helping municipal systems deliver clean water supply, while meeting regulatory compliance.



Research and development

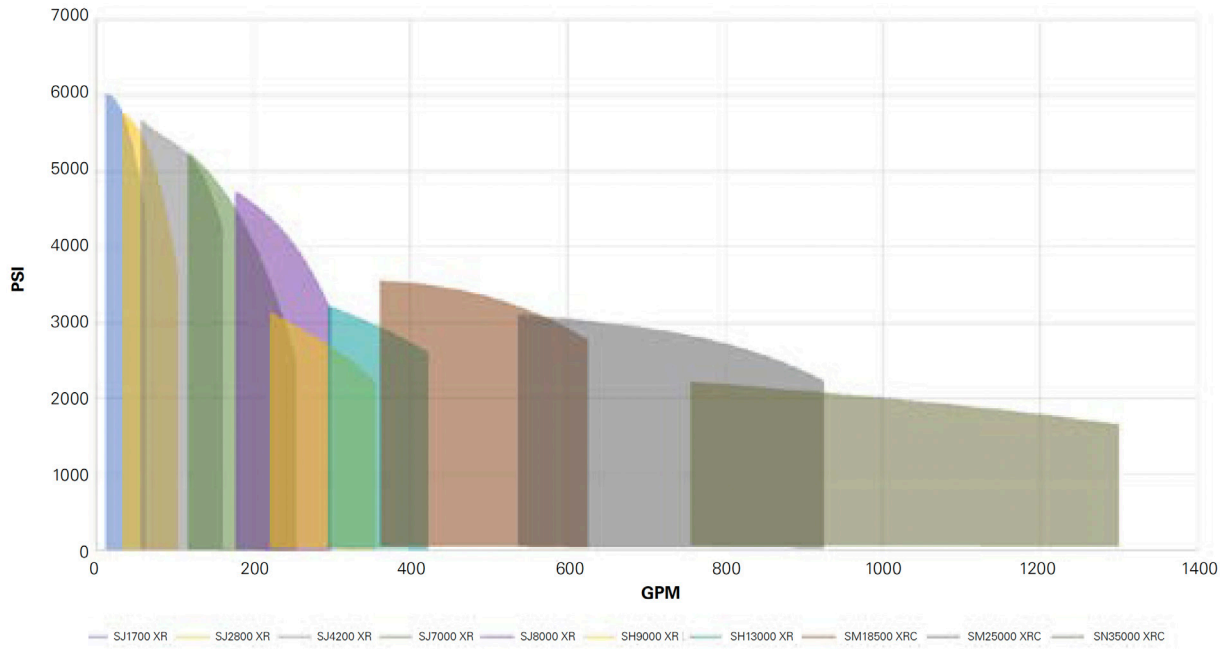
The Summit ESP® Research and Technology Center brings together product engineers, R&D engineers, manufacturing, reliability, and quality teams focused on innovation and reliability. Our state-of-the-art facility is fundamental to continuous performance improvement. In addition, our test loops and wells allow system stress testing and optimization.

Intelevate™ digital platform well monitoring and remote control service

Every variable speed drive includes state-of-the-art well monitoring and control software from Summit ESP. Operating data, including downhole pressure, operating hertz, vibration, motor temperature, and other parameters recorded by the variable speed drive, are transferred to our secure, redundant, geographically separated servers via a fiber optic, cellular, or satellite network.

Our Intelevate digital platform application engineers have access to a complete 360° view of operational information for every installed pumping system. This allows our applications engineers to analyze and understand each well's operational condition and to identify when there is an issue in real-time.

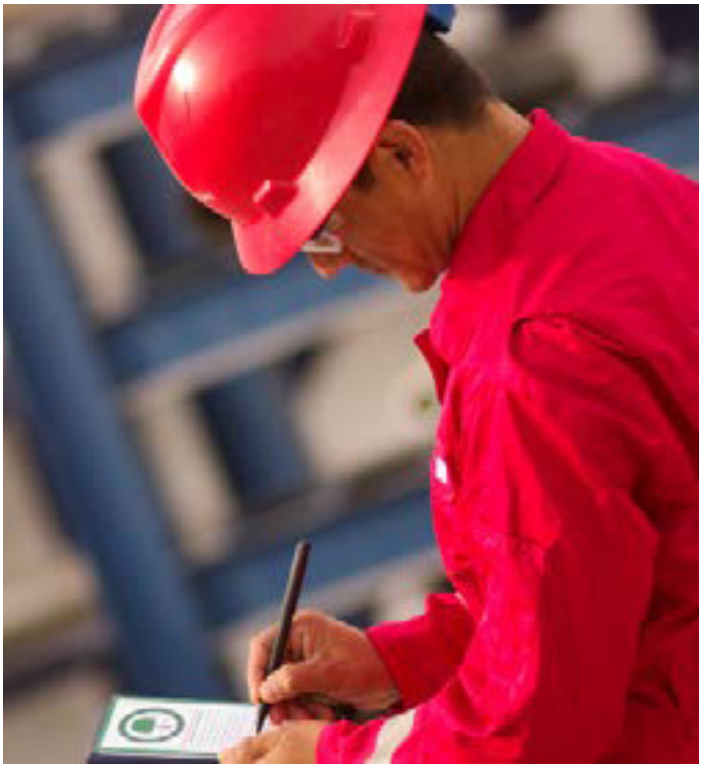
Pump series – flow rates from 5 to 1,500 GPM



Not all pump series are listed.

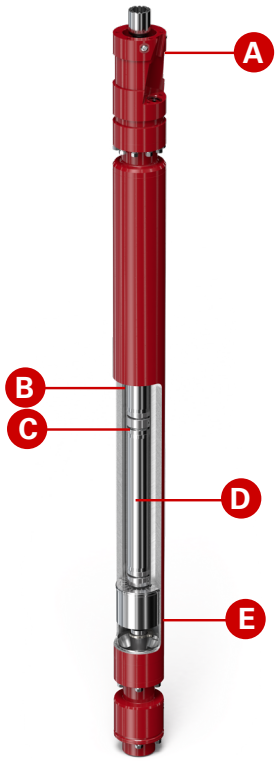
Unparalleled service

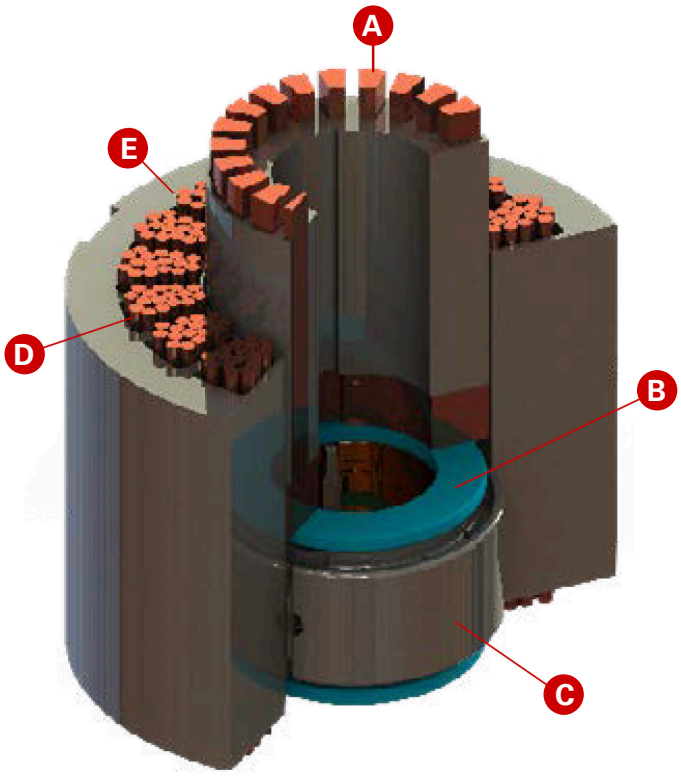
Top performance requires great technology plus an unwavering commitment to customer service. We combine best-in-class product performance and service excellence to deliver a level of service that sets Halliburton apart. While many pump providers focus on product line management, we have a different approach. We focus on customers and their needs, first and foremost, and hold ourselves to a higher standard, especially regarding customer service in today's municipality industry.



Electric submersible pump technology

Corsair™ motor





A. High-temperature tape-in pothead » for maximum reliability and performance

B. Compliant mount, tungsten carbide radial supports in the head and base » help reduce vibration

C. Mechanical bearing retainers incorporated into Big Foot™ bearings » allow movement of rotor stack within stator during thermal cycling

D. Non-recessed rotors » reduce bearing temperature, leading to significant increase in reliability and efficiency

E. High-temperature insulation system » allows successful operation in high-temperature wells

A. Shaped rotor bar design » resulting in less current waste and a more efficient motor

B. Flat-top rotors » incorporate thermally insulated washers and eliminate the need for inserting motor bearings into recessed areas – thus reducing friction and heat while improving reliability and performance

C. Self-aligning, wide-profile, Big Foot bearings » reduce internal motor temperature through increased heat transfer and reduce fretting damage in stator laminations by distributing side loads over larger areas

D. Standard double-wrapped polyimide insulated windings » add protection, improving reliability

E. Precision hand-wound stators » reduce potential wire damage during winding and allow more room in the slot for additional copper wire, increasing reliability, efficiency and performance

Defender® seal

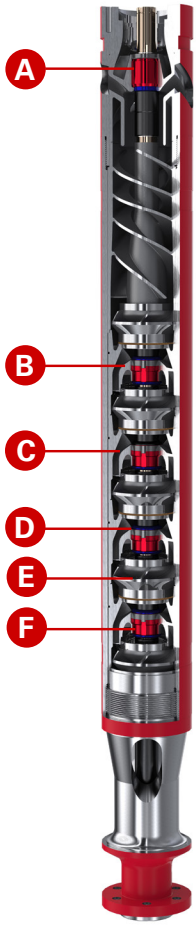
A. Super sand head » substantially eliminates scale deposition

B. Tungsten carbide radial bearings » provide longevity

C. Extended expansion capacity » to cope with thermal cycling

D. Extreme load thrust bearing » helps prevent overload during system upset

Tiger Shark® pump



A. Tungsten carbide material » enhanced throughout pump

B. Grooved bushings » help prevent scale deposition

C. Stage coatings » help prevent $CaCO_3$ scale and NORM scale sticking

D. Erosion Buster® design in every diffuser » prevents abrasive recirculation within the pump

E. Special retaining ring » provides secondary press-fit bushing retention to prevent bushing from spinning due to scale deposition or thermal cycling

F. Double-sleeve system » provides more support to critical shaft end

DuraHard® 3 – slick, non-stick coating

DuraHard® 7 – nickel coating

DuraHard® 15 – molecular bond coating

Our pumps stages include DuraHard® coatings to help prevent $CaCO_3$ scale and NORM scale sticking to ensure the longest life span possible.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.

halliburton.com

HALLIBURTON