

Innovative Pumping Solutions for High-Pressure Oil Transfer in the Expanding US Market

The United States oil and gas sector continues to be one of the most dynamic energy markets in the world. Advancements in drilling technology, the expansion of shale production and sustained global demand for hydrocarbons have reinforced the need for reliable infrastructure across the entire production chain. From wellhead operations to long-distance crude transfer pipelines, fluid handling equipment must perform reliably under challenging operating conditions.

For engineers, technicians and procurement specialists working in the oil and gas industry, pump selection plays a critical role in maintaining safe and efficient operations. High-pressure transfer applications require pumping systems capable of handling complex fluid compositions, fluctuating operating pressures and abrasive components while maintaining continuous flow and long service life.

Progressive cavity pumps have become an established solution for many of these demanding duties. Their conveying principle transports fluid in sealed cavities formed between the rotor and stator, resulting in smooth, non-pulsating flow that remains stable even under changing process conditions. This design allows operators to handle viscous fluids, multiphase mixtures and products containing solids while minimizing shear forces that could otherwise affect fluid properties.

For oil and gas production facilities, these characteristics offer clear operational advantages. Low internal velocities

reduce mechanical wear when handling sand or drilling residues. The controlled pumping action helps preserve oil droplet size in oil and water mixtures, which is essential for efficient downstream separation processes. At the same time, flow rates remain directly proportional to pump speed, allowing accurate control of transfer volumes and chemical dosing.

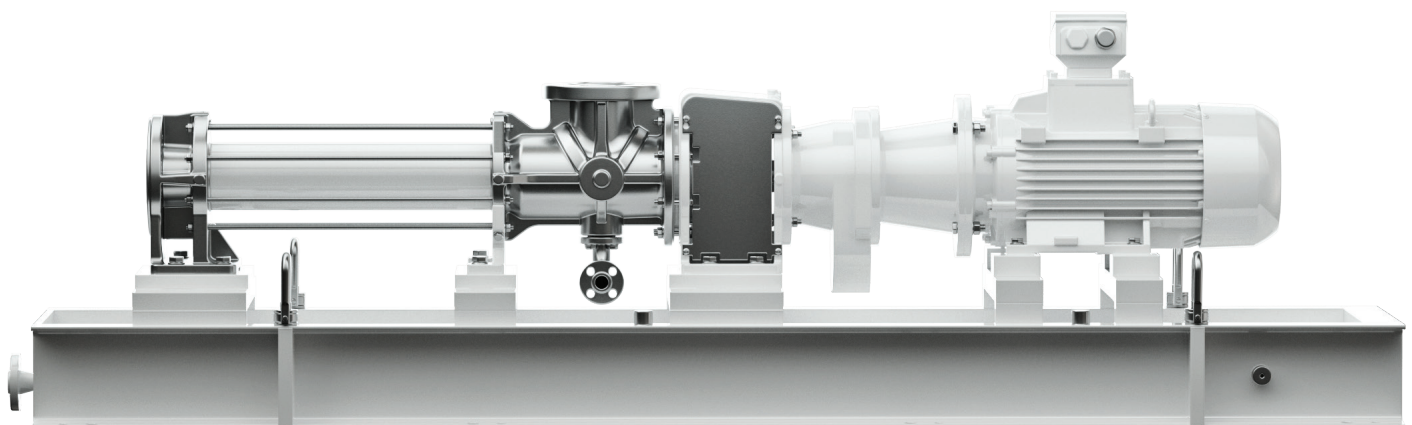
SEEPEx has been developing progressive cavity pump technology for more than five decades. Since the company built its first progressive cavity pump in 1972, it has continuously expanded its expertise in fluid handling solutions for complex industrial applications, including the demanding environments found throughout the oil and gas sector.

Today, SEEPEx supports operators worldwide through a network of engineering specialists who focus on designing pumping systems that meet the specific needs of each installation. By combining modular pump design with application-focused engineering,

the company delivers customized solutions that help reduce energy consumption, lower maintenance costs and increase overall operational reliability.

In high-pressure oil transfer applications, these design principles become particularly important. Many transfer operations across US oil fields involve moving crude oil through pipelines or processing equipment at pressures that place significant mechanical stress on pumping components. Under such conditions, durability and mechanical stability are essential to ensure continuous operation and predictable maintenance intervals.

Historically, operators have often faced challenges with pump components experiencing accelerated wear when exposed to sustained high pressures. This can lead to frequent maintenance interventions, unplanned downtime and increased operating costs. In high-volume transfer systems, even short interruptions can disrupt production schedules and create costly operational



The rotor-stator principle enables continuous, low-pulsation flow across a wide range of operating conditions.



delays.

Modern pump engineering approaches focus on addressing these challenges through improved component design, material selection and optimized mechanical configurations. SEEPEX has applied extensive field experience to develop pumping solutions capable of delivering stable performance even in demanding high-pressure environments. By carefully balancing mechanical strength with efficient fluid handling, these pumps help operators extend service intervals and maintain reliable production.

Across numerous installations in the United States, SEEPEX progressive cavity pump technology has demonstrated its ability to improve operational efficiency in high-pressure crude transfer systems. Operators benefit from stable flow characteristics, minimal pulsation and reliable handling of multiphase fluids containing gas, solids and varying viscosities. These characteristics contribute to smoother pipeline operation and improved overall system stability.

In addition to crude transfer, progressive cavity pumps play an important role in several other upstream and downstream oil and gas processes. Applications range from drilling mud circulation and cuttings transfer to produced water treatment and chemical dosing systems. Their ability to handle fluids with

varying viscosities and entrained solids makes them particularly valuable in complex processing environments where multiple fluid streams must be managed simultaneously.

For example, in produced water treatment facilities the gentle pumping action helps prevent excessive emulsification of oil and water mixtures, which can complicate separation processes. In hydraulic fracturing operations, progressive cavity pumps enable accurate blending and transfer of fracturing fluids containing proppants and chemical additives. Meanwhile, in custody transfer systems, the steady, low-pulsation flow ensures accurate metering of crude volumes entering pipeline networks.

As the US energy industry continues to evolve, equipment reliability and operational efficiency remain top priorities for producers and infrastructure operators. The ongoing expansion of shale production and the development of new pipeline networks will continue to place significant demands on pumping technology capable of supporting high-pressure transfer operations.

At the same time, operators are increasingly focused on reducing maintenance requirements and optimizing long-term operating costs. Equipment that can operate reliably under variable process conditions

while maintaining predictable service intervals provides clear value for both engineering teams and procurement departments.

SEEPEX continues to invest in the development of advanced pumping solutions designed to meet these evolving requirements. New engineering approaches are demonstrating strong potential for further improving durability and operational reliability in high-pressure oil transfer applications.

For engineers and operators across the oil and gas sector, the goal remains clear: maintaining safe, efficient and uninterrupted production in an environment defined by demanding operating conditions. Through decades of experience in progressive cavity pump technology and a commitment to continuous innovation, SEEPEX supports the industry with pumping solutions designed to deliver dependable performance where it matters most.

If you would like to learn more about the topics discussed in this article, contact SEEPEX directly using the information below:

SEEPEX GmbH

T +49 2041 996-0

E: info@seepex.com

W: www.seepex.com