

The Benefits of Smart Conveying Technology (SCT) for Progressive Cavity Pump (PCP) High Pressure Applications

A PCP is a rotary positive displacement pump that employs a single helix metal rotor turning inside a double helix rubber stator to create sealed cavities that progress from the pump suction to the discharge. Wide ranges of viscosity, temperature, and solids content can be conveyed with low shear rates.

Conventional PCPs have a one-piece rotor connected to the power train by means of a universal joint. To remove or replace the rotor, the universal joint needs to be dismantled. SCT PCPs on the other hand incorporate a smart rotor design. The rotor is manufactured in two pieces: the rotor head and the rotor geometry. This allows the rotor geometry, the portion of the part that wears, to be replaced without disrupting the universal joint, reducing replacement time and cost.

Conventional PCPs also have rubber stators that are chemically bonded inside a metal tube that creates a fixed compression between the rotor and stator. Typically, this requires the pump to be removed for maintenance. Discharge piping must be removed to replace the stator, and if removing the rotor and stator, additional manpower or rigging is required.

SCT pumps do not need to be removed for maintenance (Figure 1). Nor does the suction or discharge piping need removing. In both one and two-stage SCT pumps, the compression between the rotor and the stator can be adjusted to achieve required pressure, thereby reducing torque and current requirements and operating costs.

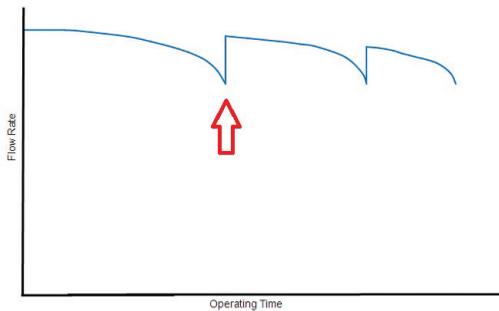


Figure 1: When the SCT stator becomes worn, the adjustment of the segment mechanisms reproduce original flow rates. At the point indicated, a conventional stator tube would need to be removed. With the correct adjustment, the life of both the rotor and stator can be doubled.

The stator is manufactured in two pieces covered by four metal segments (Figure 2). These segments are held in place by adjusting mechanisms that can be easily removed to replace the stator halves. Additionally, these segments can be tightened and readjusted to boost flow as a pump wears and volumetric efficiency decreases.



Figure 2: The Smart rotor is manufactured in two pieces

SEEPEx, maker of Progressive Cavity Pumps with internationally patented SCT, introduced the one-stage SCT in 2008 (Figure 3). Since then, thousands of pumps have been supplied and successfully used in a variety of applications in environmental, pulp and paper, shipping, mining, chemical, pharmaceutical, renewable energy, and food and beverage applications.

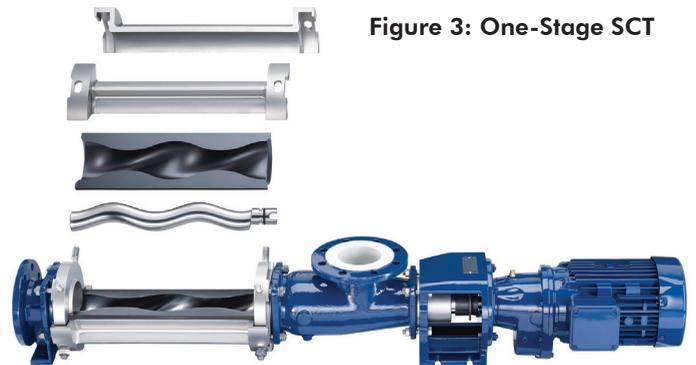


Figure 3: One-Stage SCT

SEEPEx revealed the new two-stage SCT design during the ACHEMA show in Frankfurt, Germany on June 15, 2015 (Figure 4).



Figure 4. SEEPEx unveils the two stage SCT design at the ACHEMA in 2015.

This continued innovation of progressive cavity pump (PCP) Smart Conveying Technology (SCT) means capabilities for applications with even higher pressure requirements. Due to stator and rotor innovations, PCPs with the SCT design allow for reduced maintenance costs, prolonged stator life, reduced energy consumption. Lifecycle costs are the lowest of any PCP.

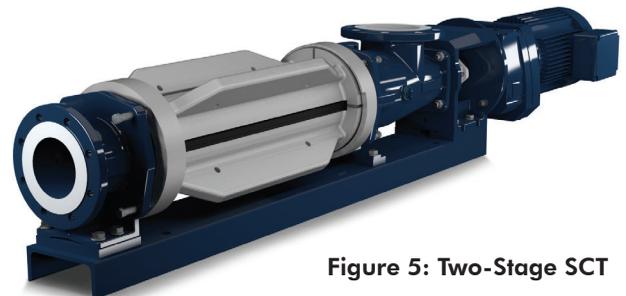


Figure 5: Two-Stage SCT

Two-stage SCT pumps (Figure 5) handle the same applications and offer all the same benefits as one-stage SCT pumps (up to 60 psi), but have higher pressure capabilities (up to 120 psi). They utilize an improved adjustment mechanism to reach the higher pressures. **§**

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