



U-CUP DESIGN EXTENDS ROD SEAL LIFE

In mobile and stationary hydraulic applications, rod seals are exposed to high pressure and friction for extended periods. To achieve a long service life seals must be wear and extrusion-resistant, compatible to aggressive media, have a wide operating temperature range, and demonstrate low friction capabilities. In addition, seals need compact installation dimensions and should ease assembly.

A new sealing design from Trelleborg Sealing Solutions, the Zurcon U-Cup RU9, meets all these criteria, and has proven in tests to out-perform standard U-cups. This seal is able to give longer service life in rod seal applications. It was tested alongside standard U-cups against all their main operating criteria, including leakage, friction forces, and level of lubricating oil and extrusion, with the last three measured over a range of pressures. In all of these tests and all pressures, the Zurcon U-cup RU9 performed significantly better than standard U-cups.

Zurcon U-cup RU9's strong performance is partly due to one of its unique features. When the system pressure is higher, the contact surface between the seal and the piston rod becomes larger. The seal deforms to such an extent that its entire friction generating inside surface is in contact with the piston rod, improving the pressure distribution on the rod. The resulting tribological benefits (the effect of friction, lubrication, and wear of interacting surfaces) strengthen the friction characteristics of the seal.

Another contributing factor is the microstructure of the Zurcon U-cup RU9, where sliding surfaces in the seal are combined with back-pumping channels. On the forward stroke of the shaft an oil lubrication film is distributed under the seal. On the return stroke the oil is back-pumped into the system, preventing leakage. This extends seal life by reducing dynamic friction and breakaway force, even after prolonged periods of rest.

The Zurcon U-cup RU9 is manufactured from Trelleborg Sealing Solutions' proprietary polyurethane material specially engineered for production of sealing elements. This material offers high wear resistance, low compression set, has a wide operating temperature range, and almost universal media compatibility.

- Article courtesy of Trelleborg Sealing Solutions America

