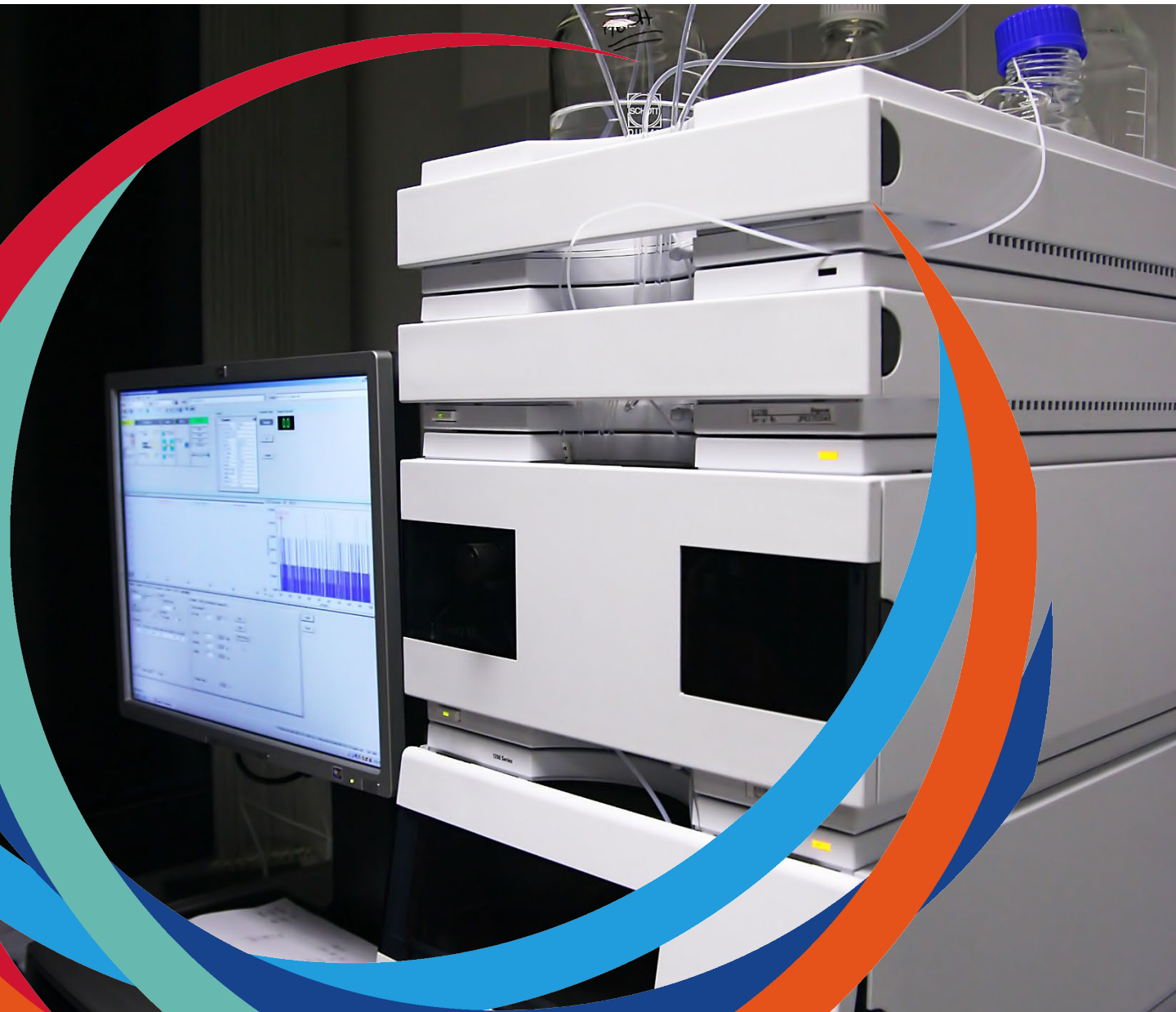




LIFE SCIENCE CASE STUDY

LIQUID CHROMATOGRAPHY RECIPROCATING PISTON PUMP





OMNISEAL® SPRING-ENERGIZED SEALS

○ Liquid Chromatography Reciprocating Piston Pump

Ronelle Decker July 2021

LIFE SCIENCE WEAR & FRICTION HIGH PRESSURE

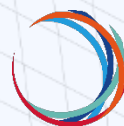
Environment

Liquid chromatography equipment is an analytical tool used to separate, identify and quantify components in a liquid mixture for purity and content. The equipment utilizes reciprocating pumps to pass pressurized liquid solvents with sample mixtures through a column filled with a solid absorbent material. Positive displacement pumps use Omniseal® spring-energized seals to optimize performance and equipment longevity.

Challenge

Since each customer's reciprocating pumps are unique, they need seals that are custom designed to accommodate specific pressure ranges and dimensional specifications. Seals must also be able to handle various liquid solvents and environments. Customers want improved cycle times up to two million cycles. They are looking for higher pressures and smaller seals with improved performance.

Ultra High Performance Liquid Chromatography (UHPLC) equipment utilize high operational pressure up to 20,000 psi (1400 bar) and above. Due to the high pressures utilized, critical sealing is necessary in the plunger pumps to ensure analysis accuracy. Seals are important for challenges such as chemical resistance, friction and wear control.



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Solution

The right material for the equipment application and pressure range is key to the wear and overall equipment performance. Omniseal Solutions™ provides custom seals for precision fit and has compounded and designed several specialized materials to withstand harsh solvents and improve wear.

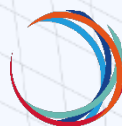
Worried about high pressure? No pressure for these polymer seals!

At the Kontich, Belgium, research and development center, critical life and wear testing studies are performed in customers' reciprocating pumps, which ensure equipment performance for longevity and quality. Maintenance cycles can be reduced with the right material that is formulated based on our design and development experience in high pressure and solvent testing.



Benefits

- Chemical resistance and compatibility with saline solutions and a wide range of media and solvents
- Low friction and wear for long life
- Continuous performance under high pressures and flow rates
- Cost-effective solutions
- Smaller seal designs withstand higher pressure ranges



Omniseal Solutions
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Design Expertise & Tailor-made Solutions for Your Critical Applications

Omniseal Solutions™ is a global engineering leader with over 65 years of historical legacy, relentlessly dedicated to the design and manufacture of precision sealing and material solutions that protect critical applications in the most demanding environments and passionately driven to push *Beyond the Boundaries of Possible*.



○ About the Author

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