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the boundaries of possible

LIFE SCIENCE CASE STUDY

PHARMACEUTICAL BIOREACTOR PROCESSING EQUIPMENT

SAINT-GOBAIN

OMNISEAL® ROTARY LIP SEALS

Pharmaceutical Bioreactor Processing Equipment

Clara Soueve October 2022

FRICTION & WEAR CONTROL EXCELLENCE CHEMICAL RESISTANCE HIGH PRESSURE SUPPORT

Environment

Bioreactors are vessels or tanks in which whole cells or cell-free enzymes transform raw materials into biochemical products and/or less undesirable byproducts. Regardless of scale, stirred tank bioreactors are the most commonly used systems in biotechnological production processes.

In systems with drive shafts, process hygiene requirements will affect seal selection. For sensitive processes with high temperature and high pressure hygienic requirements, magnetic-driven stirring systems have been the focus of much research in recent years. However, magnetic drives and mechanical face seals are expensive. Efficient and cost-effective replacements can be used, e.g., custom-engineered Omniseal® rotary lip seals.

Challenge

In order for a sealing solution to be successful in pharmaceutical applications, several sealing principles are applied to ensure performance capabilities: high temperature, high pressure, speed and sterility. Seals must also perform reliably in an oscillatory/rotary environment and in contact with water, cleaning agents and detergents. Omniseal Solutions™ offers a wide variety of FDA and Class VI certified materials for this required biocompatibility.

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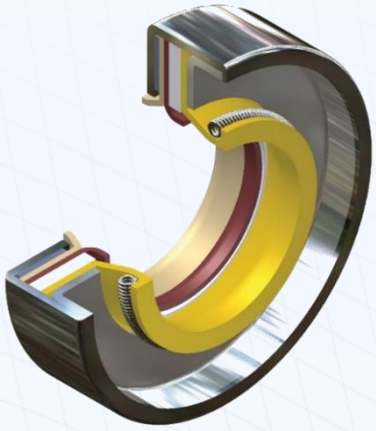

Solution

The extraordinary sealing functionality of Omniseal® rotary lip seals, combined with its low friction capabilities and extended seal life in dry or abrasive media, provides customers with unrivaled performance and value. Aside from polymer seals, our Rulon® bearings are used in bioreactor impeller shafts, providing lubricity and low wear against stainless steel materials and cleaning solutions. These critical machined components dramatically extend the service lives of bearings and oscillating/rotating shafts by maintaining optimal lubricant levels and mitigating exposure to contaminants.

Challenged with compatibility? Rotary lip seals match in precision & performance.

At our Kontich, Belgium, research and development center, life and wear testing studies are conducted using our customers' rotary lip seal performance and life cycle data. Such rigorous testing validates the longevity and quality of equipment performance.

Maintenance cycles can be reduced with the right formulated material based on our design and development experience in high pressure and solvent testing.

Benefits

- Tight sealing, even under high pressure in excess of 35 BAR
- Excellent chemical resistance, low friction and ability to address rotating equipment and vibration for longer life
- Withstands high speed in excess of 35 m/s
- Capable of handling wide temperature ranges (-65°F to 450°F)
- Elastomer coatings on the seal's outer diameter for easy installation without damaging mating hardware
- Custom designs with wide range of sizes and materials, compliant with FDA and USP Class VI requirements

Photo courtesy of U.S. Department of Agriculture

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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*.

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Let's go BEYOND the boundaries of possible

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