

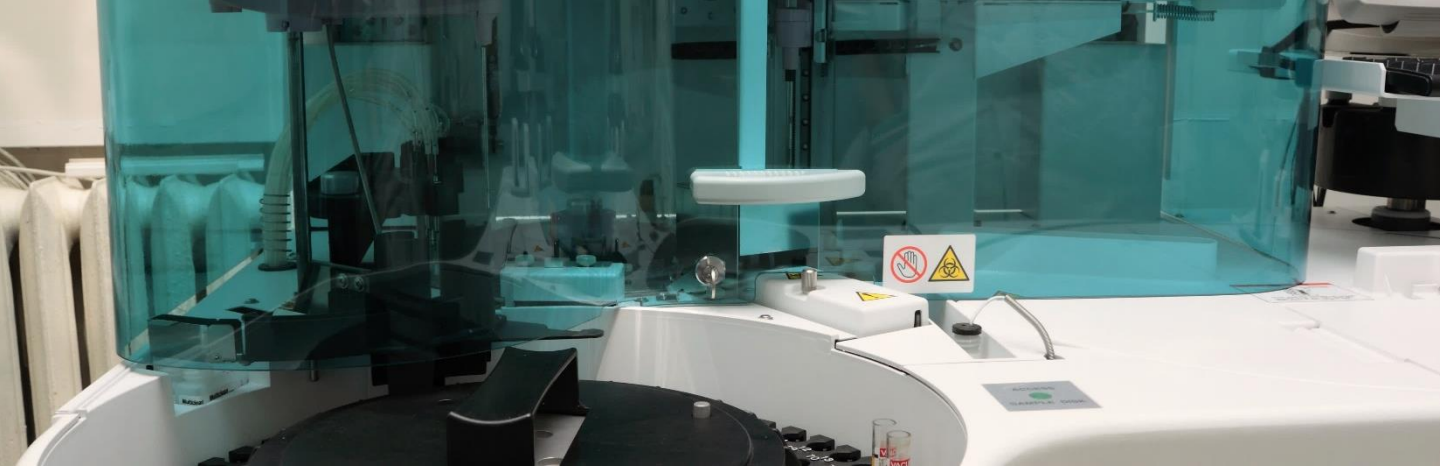


# LIFE SCIENCE CASE STUDY

## BLOOD & FLUID CLINICAL ANALYZER

### CAROUSEL BEARINGS





MELDIN® POLYIMIDES

## Blood & Fluid Clinical Analyzer Carousel Bearings

Miklos Lezsko February 2025

**FRICION & WEAR CONTROL** **MOTION PRECISION** **SEAL DESIGN**

### Environment

Diagnostic blood and fluid testing is vital in modern healthcare, offering critical insights for disease detection, treatment decisions, and patient care optimization. An excellent example are hematology or blood clinical analyzers, which are advanced laboratory instruments designed for rapid and precise measurement of various chemical and biological markers in samples. This medical equipment incorporates complex components, such as carousel and cassette loaders that streamline batch processing and maintain sample traceability. The loader moves seamlessly along a nickel-plated steel drive ring, powered by precision motors, while rotating bearings ensure smooth and reliable motion across the bearing surface.

### Challenge

Precise synchronization and timing of loaders and motors are essential for long-term reliability in diagnostic testing. Since blood analyzers operate in extreme environments, they have strict requirements and challenges, i.e., high purity; small spaces; and wear and friction. OEMs often rely on polymer bearings to deliver the precision control and durability, maintaining consistent performance over extended testing periods. Our Meldin® bearings are custom designed to reduce friction, vibration and noise; handle high-speed rotation; and withstand high temperatures, corrosive chemicals and liquids.



## Solution

Omniseal Solutions' Meldin® material solutions are known for their self-lubricating properties and low coefficient of friction, which allow life science equipment to run for an extended time frame and ensure accurate results.

Not only are they used in blood analyzers but can also be used in surgical robotics and dental equipment applications. By integrating our Meldin® high-performance bearings into your medical diagnostic systems, your laboratories can maximize uptime, enhance reliability, and improve overall efficiency – ultimately reducing the total cost of ownership.

Need Accurate Diagnostic Testing?  
Go Beyond With Polymer Bearings  
For Longer Lifetime & Reliable High Performance.

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## Technology Advantages

- Longer lifetime and extended service due to non-lubricated properties
- Low friction and wear resistance
- Compact custom bearing design operates efficiently, even in small operational areas
- Chemical resistant in various media, e.g., blood, bodily fluids and CO<sub>2</sub>
- Excellent in precision medical equipment and can handle automated, multiple bottles or vials



## 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 wear control solutions that protect critical applications in the most demanding environments and passionately driven to push *Beyond the Boundaries of Possible*.



### Contact Our Expert

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