**Large-Ring Test Bench Sets New Standards in Sealing Technology**

**Freudenberg Sealing Technologies commissions advanced test bench for large-format shaft seals under real-world operating conditions.**

Weinheim, September 17, 2025. With its newly designed large-ring test bench for shaft seals, Freudenberg Sealing Technologies is strengthening its position as an innovation leader in the development and validation of high-performance seals for wind turbines, tunnel boring machines, and other heavy industry applications.

Seals in these sectors face extreme demands: harsh environmental conditions, high mechanical loads, and long service life. The wind energy industry, in particular, is evolving rapidly—with ever-larger turbines and increasingly complex challenges.  
“To maintain our leadership in main bearing seals for wind turbines, we need testing processes that can reliably replicate real operating conditions and accelerate validation,” explains Jens Kuhnert, Business Development Manager at Freudenberg Sealing Technologies in Hamburg. “Our new large-ring test bench delivers exactly that.”

**Technical Highlights and Capabilities**

The test bench weighs approximately 56 tons, measures about 9 x 7 x 4 meters, and accommodates seals with diameters ranging from 1,000 to 2,000 millimeters. For the first time, up to four large seals can be mounted simultaneously and supplied via two separate oil circuits. A specially developed module makes it possible to set a dynamic eccentricity of up to ±10 millimeters, simulating what happens when the axle is not exactly centered due to high loads. This is important, for example, when testing main bearing seals in wind turbines under realistic conditions.

The integrated climate chamber covers a temperature range from -30 to +120 °C. Pressure testing is possible up to 15 bar. Resistance tests against moisture, dust, and dirt particles are also part of the protocol. All parameters can be individually adjusted, either manually or automatically.

**Comprehensive Testing Strategy as a Key Driver**

Commissioning the large-ring test bench is a key element of a comprehensive testing strategy at the Hamburg site. This is complemented by external testing capacities and on-site testing at customer facilities.  
Digitalization plays a crucial role: it makes testing processes more efficient and transparent while channeling the data generated by each measurement. In the future, results will feed into simulation models and digital twins, for example, to analyze disturbances or aging effects. This enables faster iteration and validation of seal designs—accelerating agile development of high-quality seals and providing customers with a decisive advantage: maximum functional reliability when launching their high-performance systems.

**Customer Intimacy Through Co-Development**

Freudenberg Sealing Technologies aims to work closely with customers from the early stages of technology and system development. This ensures that materials and sealing concepts are precisely tailored to specific requirements.  
“With the new large-ring test bench, we are intensifying collaboration with our customers,” Kuhnert says. “We’re moving even closer together – for faster development cycles and sustainable solutions.“

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**Über Freudenberg Sealing Technologies**

Freudenberg Sealing Technologies ist langjähriger Technologieexperte und weltweiter Marktführer für anspruchsvolle und neuartige Anwendungen in der Dichtungstechnik und der Elektromobilität. Mit seiner einzigartigen Werkstoff- und Technologiekompetenz ist das Unternehmen bewährter Zulieferer von anspruchsvollen Produkten und Anwendungen sowie Entwicklungs- und Servicepartner für Kunden in der Automobilindustrie und der allgemeinen Industrie. Im Geschäftsjahr 2024 erzielte Freudenberg Sealing Technologies einen Umsatz von rund 2,5 Milliarden Euro und beschäftigte zirka 13.000 Mitarbeitenden. Weitere Informationen unter [www.fst.com](http://www.fst.com/).

Das Unternehmen gehört zur weltweit tätigen Freudenberg-Gruppe, die mit den Geschäftsfeldern Dichtungs- und Schwingungstechnik, Vliesstoffe und Filtration, Haushaltsprodukte sowie Spezialitäten im Geschäftsjahr 2024 einen Umsatz von knapp 12 Milliarden Euro erwirtschaftete und in etwa 60 Ländern zirka 52.000 Mitarbeiter beschäftigte. Weitere Informationen unter [www.freudenberg.com](http://www.freudenberg.com/).

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