

It's all in the mixture

Sealing for climate protection

**Freudenberg working with Karlsruhe Institute of Technology
to move forward renewable fuel usage**

Weinheim, March 7, 2019. High CO₂ emissions lead to global climate problems: So, Freudenberg is taking part in a research initiative of the Baden-Württemberg state government, the Karlsruhe Institute for Technology (KIT) and industrial partners to develop technological solutions for these challenges. The "reFuels - rethinking fuels" project is looking for alternatives to fossil fuels other than electric drives. Freudenberg Sealing Technologies (FST) is one of the project partners and is driving innovation in this area.

Germany will miss its climate protection goals In 2020, Germany will have only 32 percent fewer emissions than in the 1990 benchmark. The goal was a 40 percent reduction. Innovation is essential in this area. This includes renewable fuels with a neutral climate balance. After all, fossil fuel consumption in car and truck travel is responsible for 20 percent of all CO₂ emissions in Germany and thus makes a major contribution to climate change.

The challenge is that new fuels cannot have a negative impact on vehicles and their components. Freudenberg Group technicians and developers focus on the question of how vehicles react to these alternative fuels and how sealing materials react to these various media. Synthetic fuels are liquid or gaseous fuels that are not produced using crude oil but hydrocarbons generated with the help of solar and wind power. They can be mixed in with fuels, thus generating an immediate

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reduction in CO₂ emissions if the carbon used in them has previously been captured from the air or extracted from unavoidable industrial emissions.

In a series of experiments, FST has now examined sealing material reactions after exposure to oxymethylene ether (OME), one of the most often mentioned synthetic fuels. The experimental fuels were composed of standard diesel with an OME admixture equal to 10 to 30 percent of volume. Other experiments were carried out using pure OME and 100 percent fossil diesel as a benchmark.

The experimental series also illustrated that an OME mixture of up to 30 percent added to conventional diesel generated only minor additional swelling at a lower level in all fluorinated rubber materials tested. Meaning a reduction in fossil fuels is possible.

"We could replace a certain share of the fossil-based diesel with OME," says Boris Traber, head of global material development at FST. "And we have the right sealing materials for fuel systems." The Freudenberg Group is thus well prepared for the next generation of renewable fuels.

About the Freudenberg Group

Freudenberg is a global technology group that strengthens its customers and society long-term through forward-looking innovations. Together with its partners, customers and research institutions, the Freudenberg Group develops leading-edge technologies and excellent products and services for more than 30 markets and for thousands of applications: seals, vibration control components, nonwovens / technical textiles, filters, specialty chemicals, medical products, IT services and the most modern cleaning products.

Strength of innovation, strong customer orientation, diversity, and team spirit are the cornerstones of the Group. The 169-year-old company holds strong to its core values: a commitment to excellence, reliability and pro-active, responsible action.

In 2017, the Freudenberg Group employed approximately 48,000 people in some 60 countries worldwide and generated sales of more than €9.3 billion. For more information, please visit www.freudenberg.com.

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About Freudenberg Sealing Technologies

Freudenberg Sealing Technologies is a longstanding technology expert and market leader in sealing technology and electric mobility solutions worldwide. With its unique materials and technology expertise, the company is a proven supplier for demanding products and applications, as well as a development and service partner to customers in the automotive industries and in general industries. In 2017, Freudenberg Sealing Technologies generated sales of about €2.3 billion and employed approximately 15,000 people. For more information, please visit www.fst.com

The company is part of the global Freudenberg Group, which includes the business fields of sealing & vibration control technology, nonwovens and filtration, household products and more. In the 2017 financial year the Group had sales of 9.3 billion euros and had 48,000 employees in some 60 countries around the world. For more information, please visit www.freudenberg.com