**Fuel Cells for Long-Distance Bus Transport**

**FlixBus and Freudenberg Sealing Technologies join forces to power up sustainable transportation solutions**

**Weinheim (Germany), September 2, 2019. FlixBus and Freudenberg Sealing Technologies are collaborating on a future-oriented project for sustainable, CO2-free mobility. Together, Europe's largest operator of long-distance bus travel, the FlixBus brand, and global technology specialist Freudenberg Sealing Technologies are working to put fuel cell-powered coaches on the road. The two companies will further extend their partnership in the near future through participation from a bus vehicle manufacturer. FlixBus and Freudenberg are holding talks to finalize project parameters.**

During the past few years, the bright green FlixBus buses have grown to become an indispensable part of Europe’s long-distance transportation network. They connect destinations across Europe and carry passengers to roughly 30 countries. Green is not only the color of their buses and trains. The modern long-distance buses of the FlixBus fleet are one of the most environmentally friendly means of transport. The same applies to FlixTrains, which operates on 100 percent green electricity.

Collaboration between FlixBus and Freudenberg will take these even further, said Fabian Stenger, Managing Director of FlixBus DACH.

"We want to help shape the future of mobility,” Stenger noted. “The modern FlixBus and FlixTrain fleet is already extremely environmentally friendly. Nevertheless, we are constantly asking ourselves how we can make travel even more sustainable and further reduce CO2 emissions per capita. Following the successful launch of three electric long-distance buses, we now want to develop the first long-distance bus with fuel cell drive together with Freudenberg and set another milestone in the history of mobility."

Against the background of ever-stricter CO2 limits, Freudenberg Sealing Technologies has been helping car and commercial vehicle manufacturers address fuel consumption and emissions requirements with innovative sealing solutions for decades. At the same time, the Freudenberg Group began researching alternative drive concepts as early as the mid-1990s, developing technically sophisticated components for fuel cells and batteries.

**Strategic acquisitions**

In early 2018, Freudenberg Sealing Technologies further strengthened its fuel cell expertise by acquiring a fuel cell manufacturer. During the same period, the company also expanded its technological expertise in battery technology by acquiring a minority interest in US battery manufacturer, XALT Energy. Freudenberg Sealing Technologies now holds a majority stake in the company.

These strategic acquisitions have solidified Freudenberg Sealing Technologies’ position as an excellent provider of fuel cell and electric battery powertrain solutions. The company is pursuing integrated battery-fuel cell systems that will address power, base load and unique operating cycles in a range of heavy-duty applications that include truck, bus, commercial marine and rail transportation. Through unique vertical integration, Freudenberg Sealing Technologies will become a single source supplier of complete battery, fuel cell and hybrid energy systems that include all of the components, modules and subsystems necessary for their operation.

This gives Freudenberg Sealing Technologies an industrywide, unique in-house depth of value added in both batteries and fuel cells. This ranges from the separator to the cell to the complete battery system or from the gas diffusion layers (GDL) to the membrane electrode assembly (MEA) and the stack to the finished fuel cell. The modular systems can be customized to accommodate different performance requirements that offer customers better efficiency, value and total cost of ownership opportunities for their unique circumstances.

**Clear requirements**

"The technical requirements for performance and long-term reliability are particularly high in heavy-duty businesses. This is in line with our technological and innovation expertise," says Claus Möhlenkamp, CEO of Freudenberg Sealing Technologies. "We see the fuel cell in combination with electric batteries as an integral part of the mobility of the future. With FlixBus, we have found a partner for this zero-emission application and are looking forward to working together on this groundbreaking project.”

FlixBus has clearly defined the requirement profile for its vehicles. Performance characteristics such as acceleration should correspond to those of today's diesel-powered, long-distance buses that are compliant to the Euro IV standard. These fuel cell vehicles should cover at least 500 kilometers of continuous use without refueling. Hydrogen refueling, itself, should be possible in 20 minutes or less – a time similar to what is required to refill a diesel fuel tank.

The hybrid system, which intelligently combines battery and fuel cells, can be used in long-distance bus transportation and heavy commercial vehicle applications. Initially, a representative bus fleet of 30 vehicles will be equipped with a hybrid powertrain to validate system performance. The two companies are also aiming for public funding within the framework of the German "National Innovation Program Hydrogen and Fuel Cell Technology" (NIP). The aim is to ensure that this technology quickly reaches market maturity and thus makes a significant contribution to reducing CO2 emissions in the atmosphere.

"The electrification of drive technology is making huge strides. We are therefore pleased that with FlixBus we have another well-known customer that relies on our innovative strength and quality," Möhlenkamp concluded.

What is being set in motion with Freudenberg and FlixBus in Europe could well travel to new continents and eventually encompass clean rail transportation as well.

***Images & Captions:***

*FST\_ClausMoehlenkamp2019.jpg: Claus Moehlenkamp, CEO of Freudenberg Sealing Technologies*

*Managing DirectorFixbusDACH\_Fabian\_Stenger.jpg: Fabian Stenger, Managing Director FlixBus DACH*

*FST\_FreudenbergFlixbus\_Bus.jpg: Freudenberg Sealing Technologies and FlixBus want to put fuel cell-powered coaches on the road.*

*FST\_FuelCell\_Bus\_illustration\_EN.jpg: Freudenberg's product portfolio (shown in blue) for a fuel cell bus. (schematic representation)*

*FST\_FreudenbergFlixbus\_FuelCellSystem.jpg: Schematic representation of a fuel cell unit.*

*FST\_FreudenbergFlixbus\_FuelCellSystem\_EN.jpg: Schematic representation of a fuel cell aggregate with labeling.*

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**About Freudenberg Sealing Technologies**

Freudenberg Sealing Technologies is a longstanding technology expert and market leader for sophisticated and novel applications 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 2018, Freudenberg Sealing Technologies generated sales of about €2.3 billion and employed approximately 15,000 people. More information at [www.fst.com](http://www.fst.com)

The company is part to the global Freudenberg Group which has four business areas: Seals and Vibration Control Technology, Nonwovens and Filtration, Household Products as well as Specialties and Others. In 2018, the Group generated sales of approximately €9.4 billion and employed more than 49,000 associates in around 60 countries. More information is available at [www.freudenberg.com](http://www.freudenberg.com).

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**About FlixMobility**

FlixMobility is a young mobility provider and offers a new alternative under the brands FlixBus and FlixTrain to travel comfortably, cheaply and environmentally friendly. Thanks to a unique business model and innovative technology, the start-up has quickly established Europe's largest long-distance bus network and integrated the first green long-distance trains in 2018. Since its launch in 2013, FlixMobility has changed the way millions of people travel in Europe and created thousands of new jobs in the industry.

From locations in Europe, the FlixMobility team is responsible for technology development, network planning, operations control, marketing & sales, quality management and continuous product development. Bus partners from the regional medium-sized businesses are responsible for the daily line operations and the green FlixBus fleet. In cooperation with private train operators, the mobility provider has also been operating on rail with FlixTrain since 2018. Innovation, entrepreneurial spirit and a strong international brand meet experience and quality from tradition. The unique combination of technology start-up, e-commerce platform and classic transport company has been able to assert itself against major international corporations and has changed the European mobility landscape in the long term.

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