

PRESS RELEASE

ElringKlinger's fuel cell exceeds expectations in EU-funded "GiantLeap" project

- **Successful completion of multi-year, EU-sponsored project to develop and test fuel-cell-powered range extender for electric buses under real conditions**
- **Excellent laboratory results of the fuel cells fully confirmed in a bus of Dutch bus manufacturer VDL Bus & Coach**
- **No impairment to performance and operating stability of the stacks even under adverse conditions until the end of the project**

Dettingen/Erms (Germany), February 5, 2020 +++ Fuel cell stacks developed by ElringKlinger AG have achieved excellent results as part of the EU-sponsored "GiantLeap" project. The stacks were fitted to a full-electric bus of the Dutch bus manufacturer VDL Bus & Coach, tested under real traffic conditions, and, in the course of that, subjected to adverse conditions. The overall performance of the stacks was safeguarded in when they were exposed to detrimental operating conditions such as fuel starvation, elevated temperatures and over-pressure, emergency shutdowns of the system during the development period, and human error. The final report of the multi-year project states: "The overall performance of the system exceeded expectations. [...] ElringKlinger stacks used in GiantLeap displayed an excellent performance throughout the project. [...] Still, right to the end of the project, the stacks were in their specified power range."

Armin Diez, Head of the Fuel Cell Technology business unit at ElringKlinger, says: "We greatly appreciate the successful completion of the project. It again confirms the excellent testing results of our fuel cell stacks in a real application environment. The basis for the implementation of the stack technology used in this project are patented design features and high-precision manufacturing processes, which have been developed from existing products that have already been manufactured in series for decades. This know-how makes our fuel cells a high-performance, efficient, and sustainable solution for our customers on their way to zero-emission mobility."

As part of the "GiantLeap" project, a total of six corporations and institutions developed and established a fuel-cell-powered range extender for full-electric buses as partners. The range extender includes a system with two stacks. The fuel cells were used in a separate trailer for the bus and tested in real traffic. The project was sponsored by the EU via the Fuel Cell and Hydrogen Joint Undertaking (FCH JU). The objective of the FCH JU is to promote research, technological development, and demonstration of fuel cells and hydrogen technology in Europe.



ElringKlinger has been active in the research and development of fuel cells for around 20 years and operates in the market as a system and component supplier. The stacks are based on PEM technology and convert chemical energy into electrical energy and water using hydrogen and oxygen. They are particularly suitable for mobile applications with long-range operation. Applications include buses and cars, but also industrial applications, such as commercial vehicles and industrial trucks.

Stacks from ElringKlinger for integration into customer systems are available with an electrical output of 2 to 150 kW. These reduce the complexity as well as the costs of the full system through the takeover of system functionalities by integrated peripheral components.

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About ElringKlinger AG

As an independent and globally positioned supplier, ElringKlinger is a powerful and reliable partner to the automotive industry. Be it passenger car or commercial vehicle, equipped with an optimized combustion engine, with hybrid technology, or with an all-electric motor – we offer innovative solutions for all types of drive system. In doing so, we are making a committed contribution to sustainable mobility. Our lightweighting concepts help to reduce the overall weight of vehicles. As a result, vehicles powered by combustion engines consume less fuel and emit less CO₂, while those equipped with alternative propulsion systems benefit from an extended range. Developing cutting-edge battery and fuel cell technology as well as electric drive units, we were among the frontrunners when it came to positioning ourselves as a specialist in the field of e-mobility. At the same time, we are committed to evolving our sealing technology for a wide range of applications. Our shielding systems are designed to ensure high-end temperature and acoustics management throughout the vehicle. Dynamic precision parts developed by ElringKlinger can be used in all types of drive system. Additionally, the Group's portfolio includes engineering services, tooling technology, and products made of high-performance plastics, which are also marketed to industries beyond the automotive sector. These efforts are supported by a dedicated workforce of more than 10,000 people at 45 ElringKlinger Group locations around the globe.

About the FCH JU

The Fuel Cells and Hydrogen Joint Undertaking (FCH JU) is a unique public private partnership supporting research, technological development and demonstration (RTD) activities in fuel cell and hydrogen energy technologies in Europe. Its aim is to accelerate the market introduction of these technologies, realising their potential as an instrument in achieving a carbon-lean energy system. The three members of the FCH JU are the European Commission, fuel cell and hydrogen industries represented by Hydrogen Europe and the research community represented by the research grouping Hydrogen Europe Research.