



e.GO REX

TOP
Fuel Cell
SOLUTION PROVIDERS
IN EUROPE 2020



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*The annual listing of 10 companies that are at the forefront
of providing Fuel Cell Technology solutions and transforming businesses*

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REVOLUTIONISING LONG RANGE E-MOBILITY

Today, CO₂ emissions from transport make up approximately one-quarter of all energy-related greenhouse gas emissions globally, and this number is expected to increase three-folds in the next few years. In order to shift toward a cleaner and emission-free trajectory as per the 2016 Paris Climate Agreement, a major global clean transport disruption is required. This is where alternative fuel technologies such as electric mobility, which drastically reduce the amount of greenhouse gases contributing to global warming, act as optimal solutions to emissions-free transport. Despite this huge advantage, there are three major barriers with battery-operated electric vehicles (EVs), especially in the commercial vehicle sector: range limitation (not suitable for heavier vehicles and longer ranges), long charging times (even at ‘supercharger’ stations these vehicles require up to 60 minutes to top up their batteries), and a loss of payload due to low gravimetric energy density.

Fuel cells with their high gravimetric energy density and short refuelling times (similar to conventional combustions engines), thus, emerge as the alternate solution especially for long ranges. But due to their excessive costs, fuel cells are yet to achieve significant market penetration. Today, however, a dynamic, fast-growing high-tech startup based in Aachen, Germany is changing this scenario. e.GO REX, a young firm specialising in fuel cell systems—has developed a cost-effective powertrain technology for future mobility: a fuel cell range extender (REX). Dr. Jan-Philipp Prote, co-founder and CEO of e.GO REX, says, “Our mission is to enable the breakthrough of long-range e-mobility with our low-cost range extender. We achieve a substantial reduction in costs through the fast, agile and integrated industrialisation of a scalable fuel cell system as a range extender.” The firm’s radical cost-focused range extender approach fosters complementary strengths of the battery as a pure energy provider on the one hand, and fuel cells as an energy converter on the other. The modular design of the fuel cell, which is based on “Standard Stack Modules,” allows for power scaling while using economies of scale by combining multiple modules. “We follow a multi-stack configuration technique, where we “stack” several smaller fuel cell stacks into a big stack that provides the battery with a constant,

moderate energy flow while the battery powers the electric engine and covers the dynamics. In combination with our agile and integrated product and process development, we are able to drive down costs by 70 percent while not compromising the system performance,” adds Dr. Prote. Moreover, the development processes proved to be more than two times faster than stack design benchmark.



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A factor that truly sets e.GO REX’s solution apart is the range extender system’s easy integration with existing e-mobility platforms by deploying homologated modules with standardised interfaces. It thereby leverages its usage across various segments and boosts the value of existing e-powertrains with only little changes to a vehicle. e.GO REX introduced the first prototype of its fuel cell extender during the Hannover Messe 2019. As a first use case, e.GO REX equipped e.GO Mobile AG’s electric minibus, e. GO Mover, with its fuel cell range extender. The intelligent combination of the vehicle’s medium-sized battery and e.GO REX’s range extender not only increased the range of the e.GO Mover up to 300 km but also provided uninterrupted operation for up to 10 hours. Currently, e.GO REX’s passionate team is working together with its strong network of partners to further develop and test its fuel cell range extender while building up the production at full industrial scale. “The series version of the scalable fuel cell range extender will be ready for sale starting in 2022. Opportunities for joint application projects start this summer,” informs Dr. Prote.

Interest in alternative-fuel vehicles is rising. The possibilities presented by the powertrain technology such as e.GO REX’s fuel cell range extender will open the door to strategic advantages and innovation for commercial vehicle designers in the future.^{EC}

Dr. Jan-Philipp Prote

