
RANGE EXTENDER

Dear Reader,

Recently, the German Aerospace Centre (DLR) invited the press to Stuttgart. The occasion was the presentation of a free-piston linear generator (Freikolbenlinear-generator; FKLG). As the name suggests, the innovation includes a free-piston engine that is connected to a linear generator. The boffins at the DLR aim to use the concept in future as a range extender for electric vehicles. It is not only its concept that differentiates the DLR system from other range extenders currently being developed. Its design also represents a completely new approach. Until now, range extenders – at least as long as they had no direct mechanical power transmission to the driving wheels – have usually been designed as low-cost and simple electric generators that are optimised to run in a narrow operating range.

The FKLG, on the other hand, is a high-tech product with direct injection and fully variable valve timing, in which the compression ratio, the piston speed and the cubic capacity can be flexibly adjusted. These versatile properties allow the range extender to be adapted to deliver the optimum operating strategy depending on the vehicle speed and driving characteristics. In other words, the operating point of the engine can be set to ensure that the vehicle can be driven as efficiently as possible and in the most environmentally friendly manner. The DLR is therefore also considering the use of a drive system with a relatively small battery that can provide an electric driving range of only 50 km. For longer distances, the range extender will take over. Due to the high efficiency of the internal combustion engine over broad operating ranges, the DLR is even

planning to circumvent the battery as a storage system and to supply the electric motor with energy directly from the FKLG. I see this as a bold approach. And it will be exciting to see which range extender concept will prevail in the future. If you would like to find out more about the FKLG from the DLR, I'm afraid you will have to wait until MTZ 10, where we will be presenting the system in detail in a technical article. But you can, of course, still find plenty of other interesting information in the current issue. Our cover story deals with the subject of mixture formation and combustion. There are good reasons why this remains the key to more efficient and cleaner gasoline and diesel engines – whether they have a crankshaft or free cylinders.

Best regards,



RICHARD BACKHAUS, Vice-Editor in Chief
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