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KSPG AG

Range extender successfully undergoing tests

KSPG is currently successfully testing its electric-car range extender developed together with FEV GmbH. The ready-to-run test vehicle based on the FIAT 500 was recently officially handed over to KSPG AG where over the coming months it will undergo further testing. Customer response from trial operations at well-known automakers endorses the targets set in the development of the extender, with high priority given to barely perceptible noise and vibrations from the 2-cylinder V engine fitted with FEVcom vibration compensation.

Due to its special design with active vibration compensation and an advantageous power set mounting, this technology solution achieves optimal NVH (Noise Vibration Harshness) scores. This means that the low-noise environment of an electric vehicle is largely maintained when the range extender is on.

The advantages of the power unit lie in the fact that it reduces battery size and costs and lower additional related weight. With range extenders, normal ranges can be achieved even without long en route recharging periods. It alleviates “range anxiety,” a phenomenon not to be underestimated when introducing electric mobility.

Experts and legislators generally see range extenders as paving the way for widespread acceptance of electric vehicles and assume that an entirely new category of very small gasoline engines will arise to make them a reality. This presents attractive possibilities for suppliers, given that these devices are largely unsuited for production in currently available automobile manufacturer production lines and initial unit quantities will possibly not be very high. KSPG has both a diversified product portfolio and the necessary development competencies. The largely universally mountable module furthermore allows for economies of scale and limits development and application costs.

The new power unit consists of a two-cylinder, V-type gasoline engine with a vertically positioned crankshaft and two generators with gear wheel drive. Except for the fuel tank and the radiator, all components are mounted on a support frame. The vertical crank shaft requires only a short construction height, such that the module can be integrated beneath the floor of a small passenger vehicle and, for example, be placed comfortably within a spare wheel recess. This installation option offers the easiest and least expensive modification procedure relative to conventional vehicle construction and leaves room for interesting compact vehicle packaging and styling options.

The power unit is conceived in such a way that the vehicle interfaces are reduced to a minimum. Vehicle integration thus proves comparatively unproblematic and installation or disassembly can be performed easily and efficiently. This enables the range extender to be reduced to an additional accessory equipment option. The automobile can thus be delivered with or without a range extender and allows for a modular design concept.

Bridge technology reduces costs

The current market situation for electric vehicles looks as if many consumers are afraid that battery range will be insufficient (“range anxiety”). They also appear to shy away from high added costs. A bridge technology like that employed in range extenders could expedite market entry for a generation of battery-powered vehicles and support legislators in their efforts to reduce CO₂ emissions.



After the joint development of the KSPG Range extender FEV GmbH is handing out the test car to KSPG: (from right) Prof Dr. Eduard Köhler and Dr. Hans-Joachim Esch (both KSPG AG) and Dr. Eugen Schäfer and Frank Nysten of FEV GmbH.

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