Whisper-quiet & agile



New approaches are needed for future mobility. OBRIST is working on a prototype with innovative Hybrid technology. Exclusive driving report.

The problem: electric cars suffer from short range and long charging times. What's more, they also require a large, heavy battery. Conventional plug-in hybrids work with a combination of an electric motor and a combustion engine, and are therefore more practical in everyday life: Journeys are carefree, since both systems (in parallel) provide the drive. However, this does mean that you are carrying two full heavy and expensive drive systems with you all the time. Obrist Powertrain has a clever idea: The development company from Lustenau on Lake Constance is relying on a standard hybrid drive. The basis here is a mid-range electric car. Obrist removed

all the elements of energy storage such as the battery and power electronics and instead, installed its so-called HyperHybrid technology. Only the Tesla electric motor remained on board. We were given the exclusive right to drive the current prototype called Mark

Managing Director Frank Wolf explains the technology: "The energy is stored in a much smaller lithium-ion battery (17.3kWh instead of 100kWh), which can be plugged into a socket. However, by far the greater part of the energy is drawn from a single unit during the journey, consisting of an optimized two-cylinder one-litre petrol engine with 54HP and two generators."



During the test drive, the silent drive is proof of this: Speed variations are hardly audible, but visible on the display.



Wolf reveals what makes this car so special: "When it is charging, the motor runs only in the optimum speed range and in such a way that all fuel molecules always react completely with atmospheric oxygen. This means that there is always a complete combustion in which no pollutants are produced." Exhaust after treatment is not necessary. Thanks to its excellent efficiency.

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the small, lightweight engine is only said to consume 2.0 litres per 100km in real operation. Range: 1000km. The Mark II is therefore head and shoulders above other hvbrids. The highlight: you can hardly hear the HyperHybrid while driving because the power unit is optimized for smooth running.

Thanks to counter-rotating crankshafts, a large part of the vibrations are eliminated as soon as they occur. One balancer shaft per cylinder of the generator driven by chains at double speed absorbs the residual vibrations. The HyperHybrid thus even surpasses the smoothness of a twelve-cylinder engine. Company founder Frank Obrist proves this with a striking experiment: He places coins on their edges on top of the twin cylinder and revs up the engine. What happens? The engine runs, yet the coins remain motionless - even over the entire engine speed range right down to a standstill. During our test drive, Obrist accompanies us in the passenger seat. The Mark II starts as a purely electric car with the energy from the battery. When

you step on the pedal, it spurs off with punchy electric power, while remaining as quiet as a whisper. After city rides and several accelerations. the combustion engine switches on too. This happens almost imperceptibly.

The on-board display shows ho the speed of the two-cylinder petrol engine varies according to load demand - all of this happens silently. In addition to its other strengths, this too is a great advantage - the interest of the automotive industry in the system has already been aroused. Holger Ippen

Conclusion:

The Obrist Mark II is an impressive concept that not only appeals to technology enthusiasts. According to the developers' assessment, a compact car with HyperHybrid drive would be feasible for between EUR 12.000 and EUR 17.000 - a range that covers many markets.

76

The Technology





Compact Zero Vibration Generator in the engine compartment (top).

Smooth running test: The engine revs up, but the coins standing upright on top of your cylinder head are in no way affected - they neither roll away nor do they tip over.



1 1.0-Litre two cylinder (2-valves). 2 Generators for power generation and vibration compensation. 3 Compact, air-cooled Li-Ion high voltage battery (17.3 kWh). 4 Power electronics. 5 Electric drive motor 6 Counter-rotating crankshafts of the two-cylinder with chain drive.

