

IAA 2015, Frankfurt

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paragon | Voltabox

An Explosion of World Premieres at IAA 2015

paragon AG and its subsidiary Voltabox Deutschland GmbH use the new Scalo and Karo models presented by independent vehicle manufacturer Artega at IAA 2015 to make it possible to experience innovation. paragon and Voltabox present many global novelties in both technology carriers, to be gradually transferred to the large series.

paragon has supplied all renowned car manufacturers with systems from the areas of sensors, acoustics, cockpit, and body kinematics for many years, under the motto of "Premium for the car". Under the "Voltabox" brand, paragon has already become internationally established as a supplier of lithium ion battery packs. It is now expanding its product range in the area of electromobility by highly efficient electric motors and high-performance electronics.

The earlier Artega GT already acted as a business card of paragon for presentation of new developments for operation and infotainment since 2007. The importance of Artega Scalo and Artega Karo as learning vehicles continues. The second generation of the Artega vehicles serves as a proof of competence of the clearly increased abilities of paragon and Voltabox.

In these two vehicles, paragon and Voltabox offer a number of new products that are unprecedented in this form. These innovations are first presented in the Artega Scalo and the Artega Karo, but focus on the later global use among premium manufacturers.

paragon

MirrorPilot | Touch Steering Wheel Operation

The new **MirrorPilot** combines different functions around integration of smartphones in the vehicle. MirrorPilot offers complete infotainment for the OEM market solely based on smartphone apps for navigation, telephony, music, news, and internet radio via Apple CarPlay; in smaller vehicle classes, it can replace the head unit. MirrorPilot is prepared for wireless data connection of smartphones. In combination with the latest generation of wireless charging of smartphones, enormous benefits appear as compared to wire-bound and mobile phone-specific devices. The universal charging dish is designed for any shape of mobile phones. The aerial signal is tapped by a universal coupler and transmitted to an external aerial to improve the radiation stress on the passengers and improve reception.

The **touch steering wheel operation** brings the visual finger navigation known from consumer electronics to the car. Touching, wiping, and pushing permits intuitive operation of the functions in the dash board and the MirrorPilot. A curved high-resolution touch-OLED central display with precise movement mechanics and concealed support compartments ensures a tidy interior.

Overview of further innovations:

- The first automotive-compatible fine-dust sensor in the world
- Scalable, bus-based 800W sound system
- Belt microphones for hands-free and speech recognition
- Synthetic motor sounds for electric vehicles
- Steering wheel switching paddles with adjustable switching point
- Electro-mechanically adjustable front flaps.

Voltabox

Electro Motors and Inverters | Battery Pack with SuperCaps

The Voltabox **electric motors and inverters** for the Artega Scalo were developed based on the latest technologies from aerospace with computer-based extreme value procedures. Results include perfect adjustment to the application and a particularly high efficiency.

The Artega Scalo is powered by two rear-mount electric motors optimised for application with a total output of 300 kW (peak output 390 kW) and a torque of 575 ft-lb. The motor mass is only 66 lbs each, which leads to an outstanding performance density of 2.3 kW/lb. The maximum motor speed is at 12,500 rpm, the maximum efficiency at 6,900 rpm is up to 95%. On request, a version with an outstanding efficiency of 98% is available. The Voltabox high-efficiency machines are supplied and controlled via two newly developed inverters with an efficiency of up to 93%. One version with special silicon carbide transistors can even achieve a maximum energy conversion of 98.8%, which is so far unique in the world.

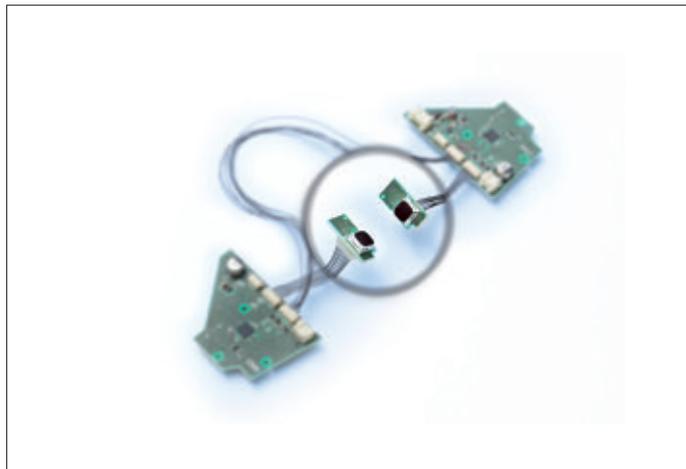
The **battery storage with additional SuperCaps** is another global novelty. For the first time, the Artega Scalo offers a hybrid system of state-of-the-art battery modules with actively thermally controlled lithium-ion cells on nickel-manganese-cobalt basis, combined with perfectly customized high-performance capacitors. When recuperating, the SuperCaps recharge again quickly at first; at subsequent acceleration, the capacitors are discharged first, so that range-reducing peak loads are kept away from the lithium-ion cells. This improves acceleration and extends the range.

Overview of further innovations:

- Thermal and battery management (functionally intrinsically safe according to DIN/ISO 26262)
- AC on-board charger.



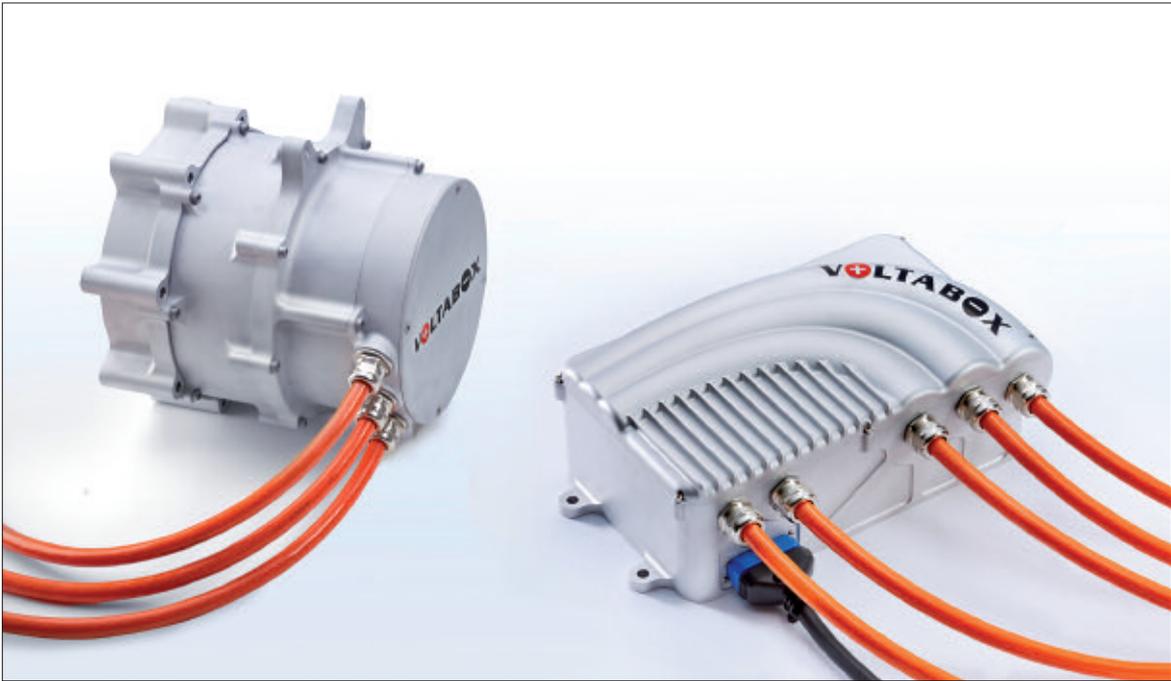
MirrorPilot



Touch Steering Wheel Operation



Movable Central Display



Electro Motors and Inverters



Battery Pack with SuperCaps