



## **IAA 2015, Frankfurt**

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## Company

### The Artega Brand Revives

**The Artega brand opens a new chapter in its development at the IAA in Frankfurt/Main. The company, which launched spectacularly in 2007, has returned as a manufacturer under a new company name! This return includes two vehicles: The new German electric sports car Artega Scalo and the new German electric fun car Artega Karo.**

The German sports car Artega GT, first launched eight years ago, continues to bring positive responses among technical circles and car lovers. The touring sports car – the German interpretation of the "Grand Turismo" – combined driving fun with suitability for everyday use; 153 vehicles were produced by 2012. Its innovative light-weight construction concept is highly up to date, particularly under the aspect of protecting resources.

The new Artega GmbH & Co. KG, headquartered in Westphalian Delbrück, builds on this and thus has an outstanding basis for future success. The company has set itself the task of making the developed know-how available in the scope of a sustainable corporate concept for automotive manufacturers and their suppliers as well. As for its own vehicles, one goal is at the focus: intelligent mobility of the future.

In addition to light-weight construction and the on-board electrical system architecture, Artega mostly focuses on electromobility. Close cooperation with paragon AG (electronics, display and operating systems, body kinematics) and paragon subsidiary Voltabox Deutschland GmbH (lithium-ion battery systems, electrical motors, power electronics), the company has a wide range to offer as well as strong partners.

### Founder Klaus Dieter Frers back in control

Artega GmbH & Co KG has been owned by the family of initiator Klaus Dieter Frers again since autumn of 2012. The company's founder relies on a long tradition: Frers is the direct descendant of factory owner Folkert Christophers Becker (1805–1890) from Filsum in East Frisia, who is deemed the inventor of electromobility.

In 1835, the great-great-great-great-grandfather of Frers developed an "electro-magnetic vehicle" that is considered the first step on the way to the electric car in the world today. The successful entrepreneur produced analysis scales and instrumentals for surveying (e.g. sextants) in the Netherlands and the USA. His US company Becker & Sons was known for nautical and meteorological instruments. After the end of World War II, the company also produced millions of backpedalling brake hubs for bikes in the Netherlands ("Beckson").

## Artega Scalo

### The New German Electric Sports Cars

The time is ready for an Artega sports car with a purely electric drive. The new German electric sports car Artega Scalo entices as a direct successor of the Artega GT by visual refinement and many technical world novelties. It is built in a small series of twelve exclusive vehicles to order.

The idea of developing an Artega as an electric sports car is as old as the brand's history. Consistent light-weight construction and the modular construction of the chassis make the Artega platform perfect for electric drives. Three prototypes have been built by 2012, but not made it for serial production due to their design.

The purely electric Artega Scalo founds a new tradition. In future, the vehicles of the Artega brand will bear the names of famous racing stallions. Scalo is the first – he was a very special Westphalian stallion, Galloper of the Year in 2010 and trained very near the head office of Artega.

#### Technology from aerospace

The Artega Scalo has two Voltabox rear-mount high-performance electric motors with a total output of 300 kW (peak output 390 kW) and a 575 ft-lb. It thus outdoes the performance data of its predecessor. The Artega Scalo accelerates from 0 to 60 mph in 3.6 seconds and reaches an electronically limited maximum speed of 155 mph.

The two electric motors use the latest technologies right from aerospace and drive the rear axle via a single-stage central gear. Targeted torque vectoring ensures maximum longitudinal and cross-dynamics with the demand-oriented distribution across the drive wheels. 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%. A version with special silicon carbide transistors even achieves a maximum electrical energy conversion of 98.8%.

The energy storage also offers a global novelty. For the first time, the Artega Scalo offers a hybrid system of state-of-the-art battery modules with actively thermally controlled li-ion cells on nickel-manganese-cobalt basis, combined with perfectly customized high-performance

capacitors (SuperCaps). For recuperation, the SuperCaps recharge quickly at first; at acceleration, the capacitors will discharge first. This constellation increases acceleration and extends the range. The recuperations system can be adjusted four-fold by the driver by switching paddles at the steering wheel.

### **Strong range of up to 250 mls**

The li-ion models are distributed between two systems that are crash-protectedly integrated into the vehicle structure. The capacitors placed in the centre of gravity also ensure best weight distribution. The Voltabox thermal and battery management is fully integrated and functionally intrinsically safe according to DIN/ISO 26262.

The installed battery capacity is in excess of 37 kWh, the nominal voltage is at 411 Volt. For up to 10 seconds, as much as 385 kW electrical output can be demanded. The Artega Scalo has a range of up to 250 mls. At a charge status below 25%, the power output is limited to 125 mph at most for the sake of a better remaining range, however.

The battery set has its own cooling circuit. The power electronics and the two electric motors have a second shared cooler. This way, all system components work at their respective best working points.

With a 64 kW DC quick charge, it is possible to charge the battery completely in less than one hour. The maximum charge output of the Voltabox on-board charger at the three-phase current connection is 22 kW, which corresponds to a charging duration of approx. two hours. At the AC grid with a 16 A household socket, it takes approx. ten hours.

### **Large storage volume and beautifully shaped wheel rims**

The new German electric sports car has a storage volume of 8.8 cft that are distributed among the front trunk and the space behind the seats. The empty weight of this vehicle, including batteries is at 3,494 lbs.

The Artega Scalo has forged central closure rims in a dedicated design (8.5" x 20" front, 11" x 20" rear) and tyres sized 245/35 x 20 resp. 295/30 x 20. The rim mass in front is only 21.3 lbs and at the rear 24.4 lbs. The installed Brembo brake callipers (6 pistons front, 4 pistons rear with separate calliper for the hand brake) with two-part brake discs reflect the brand's experience in racing sports.

## Technical Data Artega Scalo

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<b>Propulsion</b>	<ul style="list-style-type: none"><li>• 2 synchronous high-performance motors each 150 kW continuous power (peak power 195 kW) up to 95% efficiency (at 6,900 rpm, 98% optional), water-cooled</li><li>• 575 lb-ft of torque</li><li>• Maximum rpm 12,500</li><li>• Single speed fixed gear, torque vectoring</li><li>• Acceleration from 0 to 60mph in 3.6 seconds</li><li>• Top speed 155mph, electronically limited (125 mph, if state of charge &lt; 25%)</li><li>• 2 high performance inverter for motor control with up to 93% efficiency (optional up to 98.8%), water-cooled</li></ul>
<b>Battery</b>	<ul style="list-style-type: none"><li>• Active thermally controlled 37 kWh Li-ion battery pack, Nickel-Mangan-Cobalt-based combined with high-power capacitors; crash protected; nominal voltage 411 volts</li><li>• 4-way adjustable recuperation</li><li>• Range up to 250mils</li><li>• Quick charge with up to 64 kW DC in about 60minutes possible (22 kW AC: approx. 2 hrs., household outlet 16A AC: approx. 10 hrs.)</li></ul>
<b>Exterior</b>	<ul style="list-style-type: none"><li>• Body made of polyurethane combined with carbon</li><li>• Specially developed 20" forged rims with central lock</li><li>• Automatically and electrically adjustable rear spoiler with gurney</li><li>• Extendible flaps</li><li>• LED headlights / tail lights</li></ul>
<b>Interior</b>	<ul style="list-style-type: none"><li>• Digital instrument panel</li><li>• Head unit MirrorPilot; moveable OLED touchscreen</li><li>• Wireless charging and antenna coupling of smartphone</li><li>• Multifunction steering wheel; gesture control</li><li>• Bus-based sound system with 13 speakers and 800W total power</li><li>• belt-mic; performance in hands free-set and voice recognition</li><li>• Ambient light</li></ul>
<b>Sound</b>	<ul style="list-style-type: none"><li>• Synthetic engine sound inside/outside</li></ul>
<b>Dimensions</b>	<ul style="list-style-type: none"><li>• Curb weight 3,494 lbs.</li><li>• Overall length 157.8 in., width 74 in., height 47 in., wheel base 97 in.</li><li>• Luggage compartment 8.8 cft.</li></ul>

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## Artega Karo

### The New German Electric Fun Mobile

**The Artega brand enters a new vehicle type with the Artega Karo. The road-and-free-time car has a purely electric drive and combines the benefits of ATVs, jet skis and motor scooters. The Artega Karo is a concept vehicle that is prepared for serial production.**

The racing-car-like chassis of the Artega Karo, in connection with the direct power of the electric motor, provides a driving experience that exceeds the proverbial "karting feel". At the same time, the vehicle offers a special feature: Beautifully shaped leg shields with integrated reinforcement of high-strength steel improve splash water protection and side impact protection. The Artega Karo can be charged easily. The charger and charging cable with a protective plug are on board – as if it was a vacuum cleaner.

At a length of 81.7 inches and a width of 51.2 inches, the Artega Karo is very compact. Including the battery pack, it weighs only 705 lbs. The load-bearing structure of the vehicle is made up for the front-axle module, the battery container, and the rear axle module. This modular build was specifically developed for efficient serial production and maintenance-friendliness. The double steel crosslinks are attached to the front and rear module each. The rear module additionally has the motor, gearbox, and differential integrated. The specifically formed aluminium profile of the middle module contains and secures the battery pack. The water-cooled synchronous motor has a rated speed of 4,340 rpm and an efficiency of up to 92%. Four effective disc brakes ensure the required deceleration.

Thanks to the highly efficient lithium ion battery on nickel-manganese-cobalt basis (nominal voltage 103 Volt), the Artega Karo has a range of up to 50 miles. The maximum energy stored is 5.3 kWh; the integrated 3 kW-charger needs no more than 2.5 hours to recharge at the household socket. The modern digital display of the paragon brand "Kienzle" provides information on everything.

The Artega Karo offers different motor outputs that are aligned with the drivers' license and insurance structure in Germany. The basic version has 4 kW and falls into the EG class L6e-A. It only requires a driver's license of the class AM, which can be acquired at the age of 16. The speed is then electronically limited to 28 mph at most.

With a driver's license of class B, drivers from 18 years onwards can drive the middle version of the Artega Karo according to EG-class L7e-A. The motor output here is limited to 15 kW. The maximum speed is 50 mph.

The top model with a motor output of 17 kW (peak output 38 kW) and a torque of 100 Nm accelerates from 0 to 50 mph in less than 5 seconds. The maximum speed is at 65 mph. This vehicle of the EC class M1/N1 (passenger car) also requires the driver's license of class B.

### **Mobile sound system for maximum fun**

The removable sound module is a special detail of the Artega Karo. Bluetooth can be used to play back the desired music from any device (mobile phone, tablet, MP3-player). The installed lithium-ion batteries are charged synchronously to the vehicle charge, or directly from the battery system of the vehicle. The also-integrated device for wireless charging permits adaptation and charging of external devices. The driving fun can thus be accompanied with music on request at any time. The smartphone can be used for navigation as well.

The mobile sound system is made up of a strong broadband speaker that ensures a strong basic tone playback as well as a clear treble. The speaker components are weather-proof. Together with the connected smartphone, the sound system can be disconnected from the vehicle, taken along anywhere and autonomously operated for up to four hours.

## Technical Data Artega Karo

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- Propulsion**
- Synchronous high-performance motor with optional 04/15/17 kW continuous power and 92% efficiency, water-cooled; peak power up to 38 kW (17 kW version)
  - Up to 74 lb-ft of torque (17 kW version)
  - Rated speed 4,340 rpm
  - 28/50/65 mph, electronically limited top speed depending on the version
  - Acceleration from 0 to 50mph in 4.5 seconds (17 kW version)
- Battery**
- 5.3 kWh Li-ion battery pack, Nickel-Mangan-Cobalt-based
  - Nominal voltage 103 volts
  - Charging via integrated cable drum (safety plug) with 3 kW onboard charger in about 2.5 hours
  - Range up to 50 mls
- Dimensions**
- Overall length 81.7 in., width 51.2 in., height 45.4 in., wheel base 56.9 in.
  - Curb weight 705 lbs
- Features**
- Body made by fiberglass reinforced plastic
  - Wireless charging of smartphones
  - Detachable sound system with integrated battery and Bluetooth module
  - Digital instrument panel with high resolution
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# Artega<sup>®</sup> Scalo



Artega\_Scalo\_1



Artega\_Scalo\_2



Artega\_Scalo\_3

# Artega® Karo



Artega\_Karo\_1



Artega\_Karo\_2