

# Case Study | Electrifying Municipal Vehicles

Webasto and Green-G Bring the Fully Electric Light Truck ecarry to the Road

Green-G, a manufacturer of electric vehicles and systems, wants to ensure less pollution in urban areas with the emission-free ecarry. Webasto, one of the world's 100 biggest automotive suppliers, is supporting the Italian company with its battery and air-conditioning technology.

## Key Facts - Green-G Project

- Range up to 250 km
- Maximum speed: 80 kmh
- Homologation: N1
- Battery: 35 kWh or 70 kWh



Green-G was founded in 2019 and belongs to the Italian company Goriziane Holding S.p.A. For more than seventy years now, it has been developing technical systems for the sectors of defense, oil and gas, marine, rail and offshore wind power. In times of climate change and sustainability, its subsidiary Green-G has been focusing on the development of electric vehicles and systems.

## With ecarry into the future

The first product Green-G is launching on the market - with support from Webasto - is a fully electric light truck. In developing this commercial vehicle, Green-G focused on the needs of service companies such as gardening businesses, municipalities, and transport companies.

To this end, in cooperation with the University of Brescia, the company analyzed which routes are driven through Italian cities, and how many kilometers local vehicles cover on average. Ultimately, it was determined what energy models make sense for which fields of use. Green-G is thus able to tell its customers exactly what battery equipment they need.



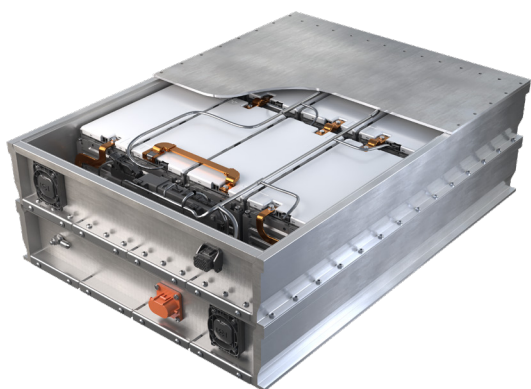
The analysis also showed: The routes around urban spaces and historic attractions, in particular, are usually very busy. The use of a fully electric, emission-free vehicle such as the ecarry results in lower pollution and less noise in these areas.

## Compact vehicle with plenty of power

The ecarry has been specially developed for service companies and municipalities active in the urban environment. Suitable areas of deployment include, for example, waste disposal services, urban logistics and last-mile deliveries. At just 1.80 meters wide, 5.20 meters long and 1.95 meters high, the vehicle has approximately the dimensions of a conventional van.

The ecarry is not only comfortable to drive but also easy to maneuver. This light truck has an N1 vehicle type approval, weighs a maximum of 3.5 tons and reaches speeds of up to 80 kilometers per hour. Currently, Green-G is doing a series of test drive in Italy which allows their existing and perspective clients to experience the fully electric commercial vehicle. In the future, the company intends to sell approx. 200 ecarry a year.

## Batteries and air conditioning equipment from Webasto



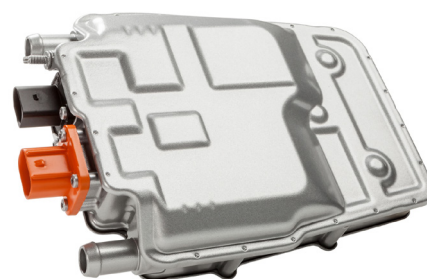
In order to develop the ecarry, Green-G was in search of a partner in the area of batteries and thermal management. After first meeting at Agritechnica in Hanover, the two companies-initiated talks. Green-G decided to collaborate with Webasto at the end of 2019 due to the high quality of its products and services.

“The standard version of the ecarry is equipped with a battery boasting 35 kilowatt hours. The premium ecarry runs on two batteries with a total power of 70 kilowatt hours,” explains Alessandro Della Torre, Project Leader at Green-G.

“We want to install state-of-the-art equipment, so we rely on lithium nickel manganese cobalt oxide batteries. We hope there will be even lighter batteries with higher densities in the future,” he adds. Depending on whether one or two Webasto batteries are installed, the ecarry can cover over 250 kilometers without the need for recharging. Green-G offers a series of accessories for the charging process, so that the vehicle can be charged anywhere there is an electrical power supply. In addition, Green-G offers electric power take-offs (ePTOs). The Webasto battery provides the electricity required.

Green-G also relies on Webasto technology for the ecarry's interior air conditioning. “We opted for the HVAC products (heating, ventilation, air conditioning) from Webasto because they are a perfect fit for the ecarry's cabin size,” explains Della Torre.

The HVH70 electric high-voltage heater from Webasto is used to heat the inside of the car. It converts direct current into heat with almost no loss. A climate system integrated in the vehicle provides the necessary cooling inside the ecarry.



The compact device delivers nine kilowatts of cooling power and also has a heating function. Since all functions associated with thermal management (heating or cooling) generally consume a lot of energy, Webasto has developed a special control strategy for the ecarry to save more energy - also depending on the weather conditions.

“Thanks to this new strategy, we are able to find the best coolant target value while taking into account the interior and exterior temperature. This enables us to maximize thermal efficiency and minimize power consumption,” declares Federico Coiro, software engineer at Webasto. To round off the air conditioning in the ecarry, a control unit from Webasto is used. “It controls all HVAC devices (fan, blower, coolant pump and high-voltage devices) according to the currently required operating mode,” explains Coiro.

### Clear visions and strong partnerships

The ecarry is just the beginning for Green-G. Further electric vehicles are meant to follow. “We want to enrich the world with innovative technological solutions that are in harmony with ecological sustainability. With Webasto we have a partner in the area of batteries and thermal management, which convinces us with its high quality of its products and services”, explains Alessandro Della Torre, Project Leader at Green-G.

Webasto would like to continue supporting the Italian company in this endeavor. “We look forward to further accompanying Green-G on their journey by providing our products and the related service packages. Through the insights we gain by integrating our products in the ecarry, we can react to market requirements even more flexibly. This collaboration also gives us the opportunity to further grow in the market of inner-city distribution and communal traffic which is very important for the e-mobility”, explains Manuel Kagelmann, Manager Product Management Batteries, Customized Solutions at Webasto, happily.