

AL-KO drives forward with green caravanning

Caravanning is a pretty green way of living in any light but the AL-KO Vehicle Technology Group, part of Dexko Global, is making it even greener. As a major supplier to the RV industry AL-KO is acutely aware that both its manufacturing activities and the use of its products generate CO2 emissions. With this in mind the company is taking a holistic approach aimed at continual reduction

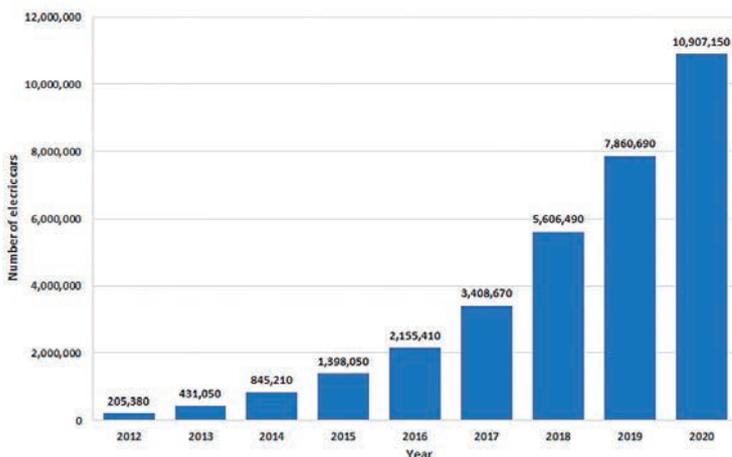
Words Terry Owen

AL-KO started with a long hard look at market trends before arriving at a clear strategic view. It is now in the process of honing its product portfolio and manufacturing processes. This entails a number of key

elements. The first involves building prototypes and doing numerous road tests. The findings are then collated along with AL-KO's own simulations and calculations by the R&D team. This is high level work and to lead the way,

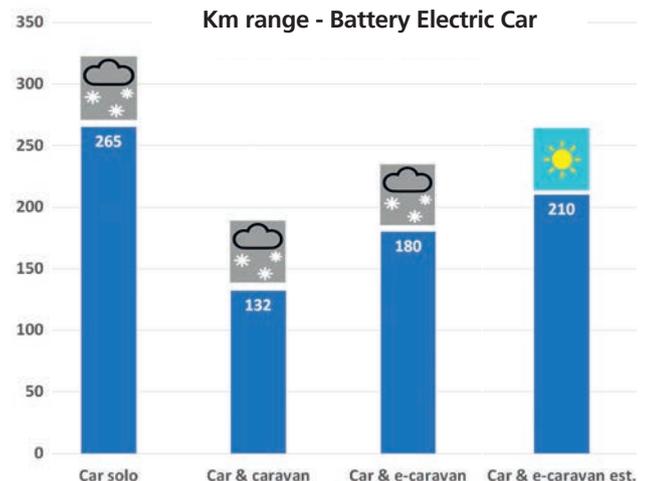
AL-KO is collaborating with renowned European universities and new mobility technology partners such as Huber Automotive. AL-KO has built up further expertise in electrical engineering, electronics and software though stra-

Number of electric cars worldwide from 2012 to 2020



Source IEA
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Km range - Battery Electric Car



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tegic acquisitions of companies such as CBE, Nordelectronica, and Safim. Overall, this gives AL-KO the confidence to push forward with innovations such as the Vario X lightweight chassis and the hybrid motorised chassis.

AL-KO is adopting a two-pronged approach. The first looks at the 'green trailer', and how its production and use can be made to use less energy. The second applies those ideas to the motorhome, to make it greener too.

1 - The Green Trailer

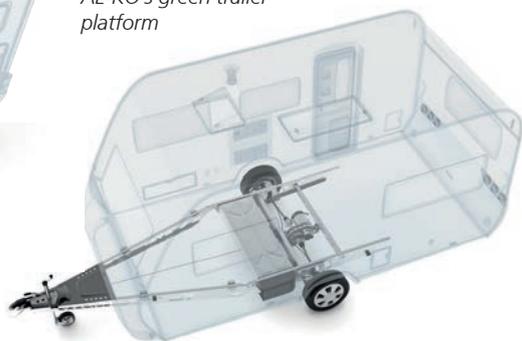
Propulsion trends until 2030

The number of battery electric cars is rising rapidly. The range of these cars can be adversely affected by towing.

AL-KO has a solution for this – a motorised trailer, increasingly referred to as an e-trailer or e-caravan.

AL-KO's system connects the wheels to motor/generators which, in turn, connect to an on-board traction battery. Excess power is fed to the battery when available and taken out when needed, such as for an uphill climb.

AL-KO's green trailer platform



Tests carried out by AL-KO, using a Tesla Model X on a run from Bavaria to south Tyrol during cold winter conditions, produced some encouraging results.

Solo, the car achieved a range of 265 km. When towing an unmodified caravan this dropped to 132 km. However, with an e-caravan based on AL-KO's next generation platform and with improved aerodynamics the range increased to 180 km. The expectation is that, in summer conditions, the towing range will exceed 200 km – a very practical proposition for going on holiday.

An e-caravan has potential advantages too. It can mean a significantly enhanced range for the towcar, especially if it's a BEV. What's more, it's easy to build in such features as stability management, and a manoeuvring system. The motive battery can even be used for energy storage at home when not in use.

Of course, an e-caravan will cost a little extra, but this can be offset by the advantages.

AMC low frame



Saving weight

AL-KO sees energy-effective weight savings as another way forward, e.g. when a 1500 kg caravan becomes a 1400 kg caravan with the same space conditions and identical payload. To this end AL-KO's Vario X chassis saves approximately 30% in weight (up to 35 kg), and this saves energy both in manufacture and in use.

Each year AL-KO fabricates some 60,000-trailer chassis, with an ever-increasing number being the Vario X. Given that each Vario X chassis saves about 20 kg (mean value) in weight, if all 60,000 were to be the Vario X, the weight saving would be equivalent to 1,000 mid-range cars.

Weight is not the only factor to be considered when designing a green trailer. Aerodynamics too, are a very effective lever for reducing the CO2 footprint and increasing range. AL-KO believes that an improvement of 30% is possible in the overall drag coefficient, especially if optimisations at the front, the rear of the caravan and its underbody are undertaken.

Whilst the main responsibility for aerodynamics clearly lies with the caravan manufacturer AL-KO can help with things like design cladding for the hitch to body gap and underbody smoothing.

Ecology and sustainability

AL-KO strives for a CO2 neutral supply chain – all the way from the choice of materials, through upstream suppliers, to its own production. For most components, steel is the material of choice for a number of reasons. Firstly, it takes significantly less energy to produce than other materials such as aluminium, carbon fibre, or magnesium.

Secondly, it is 100% recyclable, indeed some 570 million tonnes are recycled annually (source: Stahl-online.de article "Recycling-Weltmeister Stahl"), making steel the most frequently reused material. When considering what material to use for the Vario X chassis AL-KO chose steel because it represented by far the best ratio of economy to ecology.

2 - The Green Motorhome

AL-KO's lightweight AMC (AL-KO Motor Chassis) has been setting standards in lightweight construction for over 35 years. Constant evolution means that it now saves 30 to 40 kg compared to the original chassis. Indeed, a 7%

weight saving has been achieved just over the last four years.

As well as the AMC, AL-KO offers a low frame version designed to reduce the overall height of the motorhome, improving aerodynamics. This chassis is also configured to provide the necessary installation space for alternative drives without compromising the overall vehicle height and thus the aerodynamics. Moreover, AL-KO is promising a further big evolutionary step soon.

All AL-KO's components are produced using highly efficient, state of the art machinery. This, in itself, saves several hundred tonnes of CO2 each year.

Furthermore, AL-KO is actively shaping new vehicle concepts and system carrier platforms like the Hybrid Power Chassis. With these the onboard diesel engine provides the most effective propulsion for long distances, and the pure electric mode for Low Emission Zones and campsites. A further benefit is 4WD on demand for all those loss-of-traction situations most motorhome owners are familiar with.

The pure electric range is a very useful 60 km and the vehicle can operate using drive from either the front or rear wheels, or both. The chassis can be entirely self-sufficient with no need to plug it in to recharge the batteries. This is because they are automatically recharged during driving. However, if a charging point is available, it makes sense to use it to store power for vehicle traction or to feed power back to the mains when demand is high.

Conclusion

In 2010 AL-KO was one of the first, if not the first, to present a hybrid vehicle at the Dusseldorf show. It was ahead of its time, but that's all changed now. Driven by the upcoming shift in vehicle propulsion from combustion to other technologies by 2030, AL-KO's two-pronged approach aims to provide the market with suitable new driving gear solutions, and to do so in a timely manner alongside the legal changes needed to pave the path for future registration of trailers with their own traction drive.

As far as AL-KO is concerned it's not just about green caravanning, it's also about making it even more comfortable and practical. Examples of this include the integrated manoeuvring system on e-caravans and auxiliary battery on e-caravans and motorhomes along with quiet driving on campsites and low emission zones. This is perfectly in line with AL-KO's mantra 'Quality for Life'.

