



Caption: The heaviest and most important part of the electric car is the battery cells. Otherwise there is not much else in the car. So far, the battery cells came mainly from Asia. Where does Europe actually stay?

Mobility in the age of environmental protection

What are the usual batteries? Where do the manufacturers relate their raw materials? How environmentally friendly are e-cars when they are still using coal power? What about the necessary unified plugs for charging and how many charging stations will be available in the near future? Questions about a worldwide discussed topic.

Which are the most common batteries?

In the mobile sector, the well-known lithium-ion technology is often used as a basis. Such battery cells can be found in cell phones and tablets, electric tools of all kinds and in e-cars, for example in the Tesla, where around 8,000 such batteries can be found in the underbody of the car. Accutron is consciously active in the industrial segment, with 80% of its delivered rechargeable batteries being used in medical

devices, where above all quality is the most important argument. Accutron also leads all known, resp. common batteries / rechargeable batteries for industrial use, starting with the lead-acid batteries, which have an extremely favorable price / performance ratio. These are used in the power protection (UPS), emergency lighting systems, etc. The nickel-cadmium batteries in turn are likely to be used only in medical applications, in aviation and in the military. However, there is a rumor that the EU will impose a ban on imports of these cadmium types. Reason: All batteries are actually poisonous, but the cadmium type is the most toxic. Nickel-metal hydride is partly conceivable as a substitute for NiCd, but the energy density is about 50 times lower than with lithium technologies. So lithium will increasingly replace Ni-Mh. Lithium iron phosphate e.g. is valued in emergency light and also in the medical industry. This technology is considered the "tractor" in the battery field because it is very robust. Noteworthy: All other batteries are estimated to have about 350-550 recharge cycles, but this amounts to a staggering around 2,000 cycles. The industry is currently exploring solid-state batteries that cannot burn.

Who supplies the raw materials and guarantees production and environmental protection?

Let's stay with the highly up-to-date **battery cells** for the electric cars, which are supposed to replace diesel and petrol soon and everywhere. There is an extremely tough predatory competition around these basic materials and battery cell production worldwide. Here, the Asians are currently clearly the industry leaders in technology, robotics (Japan) and artificial intelligence. So Europe is lagging not only in this area, but also in other extremely important areas of the future, such as communication, etc. (USA: Facebook, Google, Amazon). Autoland Germany and its many Swiss suppliers have to rethink, because e-cars do not need gearboxes, exhaust systems, tanks and the like. The structure is so much easier and requires significantly less labor everywhere.

Before an e-car can be manufactured, the **battery raw materials** (cobalt nickel, etc.) must be recovered and processed. For example, cobalt is mined in hard work in Africa in large quantities. When cobalt and nickel are decomposed, however, large amounts of sulfur oxides are emitted, which become fine dust in the atmosphere. Is an e-car so much better when it comes to environmental protection? Here you can find a variety of calculations when you check how many miles you can drive a normal car until it reaches the same levels of pollution as a clean e-car. When comparing the size differences of the car must always be included, otherwise you will compare apples with pears. Depending on the study, numbers from 60,000 kilometers to well over 100,000 km are listed. Whatever the case, it is crucial in which way the power is generated for charging the battery cells. Is it dirty coal power stations or clean renewable energy like sun / wind or hydroelectric power plants? Our country is known as Europe's moated castle, and our electricity is therefore already cleaner than elsewhere. However, the sinking performance of the battery cells due to the countless charging processes must also be taken into account.



Everywhere enough charging stations with uniform plugs?

Before the e-cars are bought in huge numbers, the sales prices have to be massively reduced in advance, and above all there are enough charging stations with standard plugs and the same payment methods. Here it still lacks tremendously. In multi-family houses, in some cases, the entire electrical installation will be expensive to change and be accepted by all residents. If you do not have a garage, you do not want to lay a long electric cable over long distances even outdoors (lantern parking lot). What about recycling or disposing of batteries? Questions about questions and the car buyers are unsettled accordingly. In addition, there are other energy technologies such as gas or fuel cells and the like. Should the automakers really only rely on e-cars?

Environment: Incredible population explosion in no time!

Protest marches are taking place across the world against even more pollution of the air and the seas (plastic) and so on. But what is often ignored is **the incredible population explosion in no time!** We humans like each other so much that we have tripled from **2.5 billion people in 1945 to 7.6 billion people in 2018**. By 1945, Switzerland had a population of 4.5 million, today it is 8.6 million and in 20 years the statisticians expect around 10 million! There were only about 1 billion people worldwide around 1800, and even before that, the number of people has grown very slowly over many millennia. **The term "ecological footprint of every human being" is currently on everyone's lips.** This incredible worldwide population explosion in no time will even increase over the next few years! Then it plays in the road ultimately no too big role, whether we are with an electric car or with an older diesel / petrol engine in the permanent traffic jam! Cynical, but honest.