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From volume leader to innovation leader

What radical changes will the electric car bring into the automotive sector? – Opening Statement.

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Ladies and Gentlemen, the title of this session is: “What radical changes will the electric car bring into the automotive sector?” I will give you some comments from a European, German perspective.

Part one: Long battle of powertrain technologies

First, I have to say something regarding the term “radical changes”: I am deeply convinced that the future of the car will be electric. Because only the electric car, i.e. Battery Electric Vehicles (BEV) or Fuel Cell Electric Vehicles (FCEV), will and can reduce the CO₂-problems and the dependency on oil.

And yes, there will be radical or I would say “revolutionary” changes to the automotive industry. But this “revolution” will not come over night, like the fall of the Berlin-Wall. We will see much more likely a long “battle of powertrain technologies” over the next 20 years between the Internal Combustion Engines (ICE), Hybrids (HEV) and “pure” Electric Vehicles.

In our projection of the future, Internal Combustion Engines will still remain the backbone of the global car market in Year 2020. We expect that at least 85 percent of new car registration will have a gasoline or diesel engine only. As an important transition technology to pure Battery Electric Vehicles (BEV) or later to Fuel Cell Electric Vehicles (FCEV) the share of Hybrid Electric Vehicles (HEV), especially Plug-in Hybrid Vehicles (PHEV) will increase. In 2020 we expect to see a share of about 10 percent HEV of new global car registrations.

Plug-in Hybrid Electric Vehicles have two advantages: The option of CO₂-free electric mobility for a limited range of about 50 kilometers. And the option of longer driving ranges if necessary, using the gasoline or diesel engine. So PHEV can be also used as the first and only car in the household. Of course, PHEV have also disadvantages: Especially purchasing prices for customers will be higher compared to ICEs because of two engines needed.

In 2020, for Battery Electric Vehicles (BEV) we expect only to gain a global market share of about 5 percent of new car registrations.

Part two: Improvements in energy efficiency of gasoline engines are often underestimated

Secondly, an often neglected main reason for the prospected long battle of powertrain technologies is the high energy efficiency reserves of gasoline engines.

Global car manufacturers like VW, GM, Ford or BMW, are currently spending a lot of effort in improving the energy efficiency of gasoline and diesel engines. Our annual studies on innovations of the car industry clearly show that they are quite successful since 2005.

With various techniques like downsizing, turbo-charging and many others, the energy efficiency of new model generations is sometimes increased by more than 30 percent – on average last year by 15 percent. And the combustion engine has reserves for further improvement of at least 30 percent in the next 10 to 15 years.

That, of course, is exerting a lot of pressure to the electric car. Because from a customer point of view, the usage-costs of gasoline cars decrease in spite of an increasing oil price. So, lower usage-costs of gasoline cars in turn reduce the competitive advantage and market acceptance of BEV.

By comparing the first BEV on the market, like Mitsubishi i-MiEV or Nissan Leaf, an enormous price gap is exhibited: BEVs are two or three times more expensive than gasoline cars even if you take into account government subsidies.

To get a broad market acceptance BEV should not cost US\$ 5000 more than comparable cars with conventional powertrain technologies.

Three main factors influencing the competitiveness between ICE and BEV in the future:

1. Battery costs of BEV: Efforts to reduce costs for batteries must be and will be further increased. We expect them to fall from 500 to 250 Euros/KWh in 2020.
2. Oil price: With increasing global economic growth oil prices will certainly increase from about 100 US\$ per barrel now till 2020 – but it's hard to project what the exact price will be. We expect the price of raw oil between 150 and 200 US\$ per barrel in 2020.

3. Political regulation: Political regulation will have an important role in promoting BEV. CO₂-free mobility will be supported by many governments and cities which can, of course, turn into an important advantage for BEV.

Part three: Electric vehicles will only be successful if they “transform” conventional car concepts

How does the future of BEVs look like: Are we talking about new energy of powertrains or a new vehicle?

In my understanding, to be successful the electric vehicle has to transform the conventional car concepts we had for more than 100 years. So, we are not only talking about an exchange of engine technology: electric engines instead of a gasoline engines.

For a broad market acceptance of electric vehicles, the car has to be re-invented. What are the elements of this re-invention? Necessary are, to name a few elements,...

1. New car architectures/designs for 4-wheelers, but also for 3-wheelers. At the Frankfurt motor show we saw some interesting ideas from Audi (urban car) or Volkswagen (Nils) or Opel (RAGe).
2. New materials: It is well known that “low weights” are crucial factors for electric vehicles. For example BMW shows with the concept cars i3 and i8 what is possible using Carbon.
3. Connectivity: Electric vehicles have to come with new connectivity services, connecting the vehicle with the...
 - private home world,
 - energy world (cars as energy storage),
 - mobility world (public transport, car sharing), and the
 - information and communication world.

Part four: New business models needed for the success of electric vehicles

Furthermore “new business models” are needed for the success of electric vehicles: Buying a car will still be possible in the future, but pay per use–models will become more common.

Many young Germans living mainly in cities don't need to own a car anymore– unlike Chinese people: They don't need it as a symbol for status and don't want to cover the high costs of car ownership, like for parking in cities. Therefore car sharing is getting more familiar: Daimler, BMW and VW, for instance, are testing car sharing in projects in Germany and elsewhere. Car manufactures will increasingly transform into mobility provider. Not just producing and selling cars but also offering a wide range of mobility packages.

Of course, some of these elements of a new understanding of electric vehicles seem to be closer to realization than others. But if you want to create future businesses, one should have to have in mind: If you don't have visions, you should go to the doctor!

Thank you for your kind attention!



Impressum

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