The spoken word shall prevail.

What Will Be Driving Germany in the Future?

Evolution and Renewal with E-Mobility

Observations on the part of the Chief executive Officer of

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A good thirty years ago I drove a green Opel Ascona. Back then there was no getting by without this 13 box wrench. I used it to tighten bolts, make repairs and generally keep my car in good shape. The engine had the scent of oil and gas and liberty. After working on the car, I scrubbed the grease off my hands with abrasive cleansing powder. And I knew one thing: I could rely on my car. I was proud of what I had achieved. I felt “auto-mobile” in the truest sense of the word: Having wheels, I was free.

For my friends and me, the 13 box wrench was a symbol of independent mobility. Indeed, we didn’t just jump into the car to get somewhere. No, it was much more the case that we worked downright hard for our liberty.

Did you perhaps have similar "auto-feelgood sensations" of your own?

Liberty of this kind is, admittedly, a thing of the past. But what, in fact, are thirty years? Time flies. Of much greater importance is, therefore, what these years add up to. In those days we were all keyed up waiting for every new model. And we could rattle off complete engine and chassis data in our sleep.

And what are things like today? Nowadays young people hardly ask about HP, cylinders and torque. They are more likely to ask about a connection for their iPhone and the USB port or about TV and Internet in the car.

We are living in the age of Google, Twitter, YouTube and Facebook. I realize, then, that my 13 box wrench is, in this context, a rather antiquated tool. But even those young right now have to brace themselves for the day when some of their modern accessories are likewise going to be looking like something from the other side of the moon.

Indeed, we are on the brink of a radical development – like Bertha Benz once, when she literally passed up a horse-drawn carriage in the course of her spectacular drive from Mannheim to Pforzheim, 122 years ago.

To be sure, we are doing the overtaking this time with electricity rather than gasoline. I am firmly convinced that e-mobility is on the verge of an extraordinary development. That is the future.

And it has already begun.

I realize, of course, that e-mobility is being grandly hyped up at the moment. But this hype makes one thing in particular obvious: People are wondering and worrying about their future. This is evident in all the talk surrounding green energy production.

It is high time that we finally take these people' concerns regarding their future mobility seriously and get a fundamental and wide-ranging debate going.

For me in the automotive sector, the pivotal point in this debate is e-mobility. It offers German industry excellent chances. It leads us into a new age of knowledge, added value and growth.

Whereas the leap from the horse-drawn carriage to the motor vehicle ushered in a radical transformation of the prevailing technical system, the leap from combustion engine to electro power train amounts to a fundamental redefinition of cars and motoring.

Those born with gasoline in their DNA, for whom motoring is all about HP and ‘flooring it’, will, of course, have a hard time falling in love with an electro car. I can very much appreciate that.

In any case, it is already evident at this time that cars will change radically. Many people are not yet aware, however, that the surrounding circumstances are going to change just as fundamentally. The most important question today, therefore, is whether we are sufficiently taking all these changes into account.

My following reflections are based on a key premise. They come down to this: The coming generations will likewise want to decide largely for themselves and individually as to their mobility – in other words, how and when they reach a destination. They want individual mobility.

This wish for liberty is their due. It is our task to facilitate this to the best of our ability.

To be sure, individually mobility is jeopardized in the long run. That is already drastically evident in our present-day world.

That’s because nowadays a man averaging 82 kilograms (180.4 pounds) and a woman averaging 67 kilograms (147.4 pounds) drive a 1.5 metric ton car. This car is roughly four meters (13’) long and about 1.70 meters (5.5’) wide. And they drive this large, heavy car to work, to see friends, to get rolls for breakfast and when they go on vacation.

I am thoroughly convinced that this very "car for all purposes" will no longer exist in 2050.

I see three striking developments that provide reasons for this. We shall definitely have to face up to these in this context:

First: the change of our values in favor of climate-neutral mobility.

Second: the depletability of fossil fuels as the global population grows.

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And third: the migration into cities and urbanization.

What can we do and what impact can we have in all three fields?

Trend one: The value change. People are demanding an intact environment and solicitous treatment of our earth.

Of course, we in Germany still live in a car paradise. But please don't think that we have nothing to do with the massive problems in other parts of the world. Pollution and its deleterious effects on human health in Manila or Shanghai, for example, are not local problems that will remain confined to those places. It is quite evident to me that the globe's economic networking and the industrial countries' moral obligation are two sides of the same coin.

Trend two: Fossil fuels are finite, but the population will grow from seven million today to over nine million in 2050. All of us know what that means: We have to save energy and, at the same time, tap energy sources that are as CO_2-neutral as possible.

And trend three: The migration to the cities results in urbanization of unimaginable dimensions. Already at this time more people live in cities than in the country, and this trend will continue unbroken. In 2050 three out of every found people will live in cities and thus provoke a mega metropolis boom, with cities of more than 10, 20 or even 30 million.

Above all in Asia there is no end to the city boom in sight. In China alone we shall be experiencing in the next few decades the greatest migration of people in human history. More than 300 million people will be moving into cities, creating, by all forecasts, 200 new megacities.

The dramatics will run their course. For with the growth in population, motorization will also increase. The number of cars will nearly triple in the coming decades – from 700 million at present to at least two billion. And all these vehicles will not be evenly distributed across the globe. Much to the contrary, they are concentrated in a small area – choking urban centers and robbing the people living there of air to breathe. There, in any case, cars are no longer an apt symbol for liberty and independence.

The same holds true for German cities. In Berlin, for example, cars creep along through town at an average speed of no more than 24 kilometers/hour (approx, 15 mph) because the streets are so congested. Any cyclist in reasonably good shape can easily keep up.

Yes, ladies and gentlemen, Bertha Benz once played a part in motorizing the 20th Century. We are now on a new threshold to seminal change. For it is not a matter of simply replacing the combustion engine with an electric power train. That would be too easy. It would only amount to looking at things in the old familiar with our hackneyed frames of reference.

I am aiming for something bigger: on a master plan of future mobility. That is a plan that bundles together in interdisciplinary fashion the diverse upcoming requirements and the know-how needed to arrive at solutions.

This plan relies on e-mobility over the long run, and it simultaneously takes into account the transition into a new age of mobility.

We need the combustion engine for this transition. It would be a mistake to prematurely write it off. And to do so especially in view of the fact that our engineers have the gripping ambition to make the diesel engine as climate-neutral as the gasoline engine and the gasoline engine, in turn, as thrifty as the diesel engine. I expect them to succeed in reducing fuel consumption by 40 percent as we move toward 2050. Even emissions will be cut considerably.

This very optimization is, however, also absolutely essential. And what sounds like a contradiction – climate-neutral combustion engines without any loss of engine output and driving pleasure – is actually feasible.

There was a time when the auto industry's answer to the momentary market needs was "ever bigger and more powerful." Today it is just the opposite: Downsizing – primarily a reduction in the size of engine displacement, in other words – proves it: Cars are getting thriftier without any loss of driving pleasure. To this end, a large number of new or improved technologies are to be found under the hood of the car, including turbochargers, direct injection, variable valve gear systems, improved electronics, sensors and exhaust gas aftertreatment.

The further optimization of the combustion engine is thus making headway. But in the next few years and decades there will be increasingly fierce competition between this engine and the electric power train. And the competition is not just at a technological level, but above all a social struggle. For climate and mobility must no longer be mutually exclusive.

It is highly interesting to observe the present situation: These developments, opinions and trends confront head-on a society whose demographic development and conceptual worlds seem to downright predestine it for e-mobility. People are getting older and more mobile; in other words, they need additional driver assist systems as well as smaller, more agile vehicles for shorter trips.

On the other hand, the infotainment demands of young people are becoming more and more sophisticated. Internet, cell phone and computer are the new status symbols. They triumph over the shape, looks and ownership of a car. Earlier, owning a car was just as important as driving a car. Owning a car, by contrast is too expensive for many young people, too much of a nuisance. And “no longer turns them “.

The customers, therefore, consistently inquire about what new, completely individual utility that the car has to offer. In earlier times manufacturers could respond to this in a technological vein – and they built off-road vehicles, SUV, sedans or minivans, for example.

But the nub of the matter is that this differentiation will take a different tack in the future. Whereas a convertible can, for instance, currently cover all forms of mobility from shopping to vacation trips with, in the future things will depend much more on a combination of utility and destination. This utility-destination thinking will become an essential factor for this new car generation.

Those buying an electric car will naturally opt for the variant that provides them the greatest utility. It will thus be very exciting to see what kinds of ingenious car-sharing and rental models will develop to accommodate situations where the motorists deviate from their usual utility behavior, when they head off on vacation, for example.

I therefore reckon with four different utility types or, more aptly expressed, with four different mobility concepts:

1. for city driving,
2. for commuters,
3. for the long haul and
4. for recreation and time off.

I invite you to hop aboard for test drives into the future.

Let's begin with city driving. It's the year 2050 and we're on the way to the office. Our electric vehicle is ideal for short stretches. It is a single-seater, or maybe even a two-seater. The car is short, narrow and lightweight. It is shielded by a protective shell consisting of sensors complete with vehicle electronics. It thus requires less in the way of mechanical impact protection.

Our car exchanges information with other cars, with energy providers, grid and recharging stations operators as well as other external sources. So we always know what we need to know in good time. The driver is the one determining what is relevant.

You control the car's multimedia system intuitively and by voice command. You have complete access to your personal server and to the functions of your smartphone. Intelligent traffic systems operate online and guarantee congestion-free driving in town.

You always get where you want to go – safe and sound and relaxed.

You have to go to the doctor after work? The computer immediately reserves you the next slot in the parking garage. It also gladly books you theater tickets or makes restaurant reservations. It downloads music titles on request – against payment, of course. It orders shares at the stock exchange in Tokyo, New York and Frankfurt and guarantees you top-shelf multimedia applications.

Let's now take a look at the second scenario. Imagine, if you will, that you are a sales manager. Sometimes you're not on the road very much, sometimes constantly. You also commute sixty kilometers from your home to the office.

Your car is probably equipped with hybrid drive. It ensures that you always make optimum use of energy when you are on the go. Regardless of whether you are out on the open road, in a traffic jam or in the city, your car automatically shifts to the drive with the most efficient type of energy. On eight out of ten trips you will be electrically on the move; the car will switch to the combustion engine only in exceptional cases.

There is an accident behind the next curve? Sensors on the car involved in the mishap have already alerted the operations center, transmitting information about the location and gravity of the accident and warning others on the road. The assist systems installed in your car immediately record this data and support you as driver without your having to do anything.

Your car promptly flashes the accident warning in your line of vision – as hologram in the vehicle or projected onto surfaces, and does so that you see it regardless of where your eyes may be directed at the moment the danger crops up. This enables you to react much more quickly.

But it is not only in dicey situations that your networked car supports you. En route to the customer you receive essential voiced information on the company, the contracts involved and the persons you will have to deal with. Your e-mails are read aloud to you and you can voice replies to them while driving.

Third scenario: You're up for an educational excursion from Leipzig to Florence on the morrow? Your vehicle for long-haul trips is, of course, larger and more comfortable. You can arrange for a trip bereft of any traffic jams. In Germany this can save around 14 billion liters of gasoline each year. In this case, however, you experience a marked limitation on your individual liberty for the first time. This is because you are assigned a specific slot for the motorway trip similar to what airplanes get prior to take-off. It reads something like this: Leipzig, November 9, between 7 a.m. and 7:15, autobahn A 38, ramp B2 via Wundtstrasse. The distance amounts to 1, 100 kilometers and you have to pay a toll for each kilometer. As soon as you enqueue on the motorway, you are hooked up to an electronic drawbar. You drive on autopilot. The assist systems hold you in your lane and see to it that you make good headway.

Your car is transformed optionally in an office, a travel guide or a concert hall. Let's pick the travel guide: The friendly voice of your board electronics tells you about Florence during your trip – about its churches, palaces, museums and restaurants – gladly reserving seating for you, if so desired.

At 6 p.m. you reach Florence after exactly eleven hours on the road, including breaks – precisely as calculated beforehand.

Fourth scenario: You get into a recreational car – a sports car. You proceed to one of the special racing tracks, which will presumably be almost as numerous as go-cart tracks are these days. Now you really floor it again, as in earlier times. And you test the vehicle's limits and your prowess. Maybe you even go for a spin with friends

In every case, a wide range of vehicle electronics provides you with all the data you need to feel like a Formula 1 driver and make it through the finishing line.

Four different utility types, four different driving concepts. We still marvel at these four scenarios because they radically intervene in the reality we are accustomed to. But I am convinced: These four scenarios, or something like them, will dominate our mobile future. They are already looming on the horizon.

They will become reality because they serve many different goals at the same time: Drivers want the right mobility for their purposes, cities want a higher quality of life, climate-neutrally produced electricity is to be made available everywhere, billions of additional people want to be “auto-mobile“.

There is quite a lot to do here. For that very reason it is important that an overriding master plan be developed. For this is the only way to avoid getting bogged down in individual actions.

Already today future electric mobility is making inroads here and there. China already has more than sixty million electric scooters on its roads, and every year another 20 million join them. They form an excellent nucleus for the introduction of e-mobility on an incomparable scale. The government is rigorously implementing its strategy – ultra precisely, unbelievably fast and with generous incentives. The central government alone will be investing 10 billion euros for this purpose in the next ten years – in other words, a billion euros per year. Here China envisions its chance: With e-mobility it would skip the race to catch up in terms of combustion technology – in certain areas, at least – and instead establish a front-runner position in terms of e-mobility. We are well-advised to take this agenda seriously without allowing it to unsettle us.

For the development in China, the huge Middle Kingdom, is an enormous opportunity for us in Germany! We cannot and may not, therefore, reserve our technological solutions for the industrialized and affluent countries alone.

Instead, we have to build cars that meet the needs of the emerging countries.

And that means: Cars with lower emissions, better air-conditioning and a higher level of traffic safety – and all of that at affordable prices.

We now have a chance to make Germany the leading supplier of e-mobility on the worldwide markets.

Yes, indeed, Germany as leading supplier – I very deliberately say leading supplier and not leading market – for e-mobility: exactly that is my pragmatic vision for one of the most innovative and strongest value creating industries on this planet.

To this end we need the master plan referred to. All partners should be rated on the basis of how they measure up to it: the automotive and energy industries, the urban and traffic planners, the IT experts, designers, institutes, fleet managers, scientists, politicians, administrators and many others. The highly sophisticated expertise available to us interconnects across discipline boundaries. This networking is what is going to keep Germany going in the future.

Expertise and networking for tomorrow's e-mobility: Let's make another export hit out of this!

Underway from Mannheim to Pforzheim, Bertha Benz' courage turned an invention into an innovation.

This woman simply took off, into the future.

Now it is high time that we also climb aboard and head off into our new future. A mobile future – eco-friendly, energy-saving, safe and rewarding, for everyone involved.

Today's VDE Congress offers us a wonderful place to get started!

Let's go for the pole position!