Quo Vadis, German Car Manufacturers?

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From big-headed and saturated to dynamic and future-oriented within 12 months?

During his worldwide observed speech in Mid-January to his managerial staff the boss of Volkswagen, Herbert Diess, used unexpected distinct words to describe the situation of the corporate group in the world market. It´ll be an extremely tough race for Volkswagen if the transition commences at the same speed as of today. The transition leading the car manufacturer towards a technology corporation – and Diess talked about the Nokia moment they must avoid. If the boss of the world's largest car manufacturer says there´s a 50/50 chance to win the fight for the mobility of the future, this isn´t only an appeal, it is more like a cry for help. And it is a wake-up call for the whole nation since some other German car manufacturers aren´t even there where Volkswagen already is.

If it jolts in the German automotive industry, Germany begins to wobble. This is of concern within politics and society in Germany. In the key industry of Germany – with all directly and indirectly participating companies – work as many as 1.8 million people. This economic sector provides approx. 7% to the GDP and generates about one fifth of the export turnover. This is just the domestic view: the German Automotive industry purchases many items, products, assembly groups and services from the surrounding countries. If Germany wobbles, if rumbles through Europe an even worldwide.

The automotive industry is a success story of the national economy and a cluster risk. It began with the pioneering invention of the car back in 1886 and became the fate of the fourth largest economic power in the world. The German automotive industry is sitting in the eye of a severe storm of change from which Herbert Diess says it has just begun. This storm takes country and society along. The self-conception, the sentiment of an easy-going future as well as the wealth for some are sitting in the middle of the storm unsettling society and politics since a few years already. Furthermore, this storm hits a country in an uneven social situation with economically and structural left behind regions and a much uneven distribution of wealth. This uneven distribution of wealth (GINI coefficient by Credit Suisse) similar to emerging countries like Morocco is one reason for the rising tension within the German society. On top of it, the increasing poverty not only among pensioners but also within a quickly widening society with many children among them. The introduction of hundreds of thousand low wage jobs since the nineties for the economy and the automotive industry have become a true challenge for which politics seems to have no solution since the number of challenges is huge.

In contrast, politics, government and authorities primarily concentrate to undermine their own credibility as competent captains and sailors in the rough sea. As an example, the Federal Constitutional Court said beginning of November 2019 cuts of the Hartz IV social benefits can exceed 30% only according to strict rules respecting proportionality. However, the Federal Office of Labor deliberately opposed this court ruling and was planning higher cuts using some tricks. This wasn´t well received by most of the population and many of them never being in the situation of claiming such support perceived it as governmental despotism. It was noticed by the people we talked to as politics and government moving away from general public. Several genuine financial and political errors of performance of the government add to this. Most often mentioned was the road charge debacle by the minister of transport Andreas Scheuer. Many citizens believe the government acts careless with tax money while they suffer from high taxes. But these irresponsible politicians remain unchallenged even taking big money for their errors of performance. Several people we talked to in the Stuttgart area summarized like this: "Diesel scandal and road charge debacle – nobody will be taken in account, we´re left holding the bag, pay for everything and even lose our jobs."

Catalyst for the change in the automotive industry

The Diesel scandal causes headaches to the car manufacturers world-wide and even more in Germany. The criminal acts in the whole field of the Diesel scandal are named as the most important catalyst among international car experts and electric car manufacturers for the introduction and the acceptance of battery electric vehicles (BEV). And these homemade rapid changes take deep effect in the whole German economy and society. Does Germany react on these challenges and begins to shape its future dynamically and innovative? In contrary, as Herbert Diess discovered in his company.

Observers from abroad believe to see a certain paralysis in Germany, its government and economy resulting in a stark rejection of change best described by the Anglo-Saxon term for German hesitation and uncertainty: “German Angst”. Cramping to bygone history, superficial values, status conveying things, and right-wing paradigms document all this quite well.

Yes, they exist, the innovative nucleuses and expanding young enterprises in Germany. However, they aren´t well respected and supported half-heartedly only. Even investors ready to take a risk do not trust Germans start-ups and, therefore, foreign financiers jump in and increase their influence. Innovative nucleuses with the potential for a global experience, pioneering technologies as well as compositions of technologies and services are hardy found. Foreign observers see the status of Germany being a leading economical nation fading. In the innovation ranking (globalinnovationindex.org) of 2019 Germany finds itself on the 9th position – this is a weak sign of “keep on doing” and certainly not one for dawn and shaping the future. In contrast, Bloomberg ranks Germany as the most innovative country in its ranking from January 2020 but their viewing point was criticized – and it doesn´t reflect reality.

During our researches we repeatedly noticed comments in critical times the German and even more the Swabian inventors always show innovative power. Consequently, we soon will see new technologies, solutions, potentials and jobs emerging. And the negative coverage doesn´t reflect the real situation in Germany and its automotive industry correctly, everything is much better – which would support the findings by Bloomberg. These inventors will find improvements the worlds desperately needs, particularly for the Diesel engine which needs to be put back on top of the statistics. Such calls for hope shatter at the reality of the prohibition of internal combustion engines (ICEs) in many cities and some countries.

Over the past years, many German media labelled electric mobility as idiocy for a niche market, now the same media spread the idea of the German art of engineering putting Germany on top of electric mobility soon. Clever engineers certainly can be found in Germany but many of them providing the wrong skills with little perspective in the future. In contrast, there are few around which could be hired right away by car manufacturers. When Elon Musk mentioned during the award ceremony for the “Goldenes Lenkrad” in November 2019 he´ll build the Gigafactory 4 with development division close to Berlin the German media and the industry reacted swiftly. As a typical German reaction, they knew exactly why this isn´t a good idea and why Tesla certainly would not succeed. Factual, this reaction can be described by the words “surprise” and “fear”. In the race for good employees the German car manufacturers got hurt badly since many innovative engineers and specialists consider Tesla being an attractive, though demanding employer. Connected to the hope their own ideas finally find an open ear.

Focused, dynamic – Germany is this too

There are positive developments and Porsche is a prime example: The dynamically acting company defined its strategy to establish their department for electric mobility and to develop the electric Taycan with impressive consistency. Elon Musk, CEO of the direct competition Tesla, paid tribute to the qualities of the 4-door sports car and responded with the hot-rodded Version of the Model S named “Plaid”. Interestingly not the showing off on the racetrack makes Porsche unique. It rather is the consequence in the execution of the strategy to bring a real electric sports car to the market: the Taycan is one of the very few real electric car developments from Germany while most other offerings are conversions of existing cars using assemblies from suppliers and similar solutions. The Taycan really looks the part, is recognizable as a Porsche and triggers the “Wanna-Have-This” sentiment among many prospects. And the +30'000 reservations with down payment are a welcome confirmation for the decision of the company towards the BEV program. And the Taycan wins back many of those customers who went away to Tesla.

The cooperation of the Swabian car manufacturer with Boeing is somewhat unusual: In October 2019, both companies signed a letter of Intent for the joint exploration of the market for passenger drones in agglomerations. The goal is to study electric driven individual aircrafts since Porsche wants to become a leading brand for premium mobility. In this cooperation with Boeing, Porsche pitches in not only its profound experience from the developments for the Taycan.

In addition, they have this newly established large team of development engineers and specialists in the area of electric mobility – a powerful and dynamic group motivated formers of the future. Despite many people worldwide not liking the idea of numerous electrocopters whirring over the city, Porsche's strategy has its own appeal and might securing the future of the company. This strategy seems sensible, since Porsche is one of the prime addresses providing engineering and consulting.

After 1912 and 1985, this is Porsche's third attempt to enter the aviation market and this time it seems much more promising than before. This cooperation certainly is a gleam of hope for Boeing, who has utterly been buffeted by the problems with their 737 Max – whether this becoming something good is much uncertain. Porsche is hoping to produce the electric power units and batteries for modern aircrafts and this isn´t just good news for the jobs: sports cars, sports vehicles and electrocopters (VTOL) also match quite well regarding the brand equity. Critics might drop comments like the inefficient power unit of Porsche might not suit the application in an aircraft. To be fair, there must have happened something unexpected during the test cycles and this is now in the process of being analyzed. The company from Stuttgart still is at the beginning of a marathon in R&D and with their agile teams it is likely they soon will find solutions as well as further evolutions in efficiency. Among all German car manufacturers, Porsche is one of the few being able to focus and to execute in a non-German dynamism. And dynamic acting is required since Hyundai and Uber plan their own drone taxi system. And they not only focus on aeronautics, they think about a modular system of an aircraft unit, a drive unit, a business model and “drone ports”.

What about added value and vertical production integration?

The majority of the German car manufacturers first must accept the challenge of the change in the drive technology. The power train of an ICE included much of the added value of a car and they were the key elements to distinguish the own products from those of the competition in marketing. The decline in quantity of the labor-intensive ICEs and the sometimes in-house built gear boxes leave behind empty production halls. Building and assembling electric power trains is quite a simple task and can easily be automated. In comparison with an ICE the electric power train consists of much less components (about 200 compared to 1200, or over 2400 including the gear box) and their composition is much simpler – thus not less sophisticated.

The simplicity of a battery driven car is so tempting and just because of that such a huge challenge on several levels for traditional car manufacturers. Their perfectionist ability to buy the best components and assemblies at the best possible prices and putting them together for an automobile now becomes a boomerang. Within these traditional car makers, there is little competence in development and production since much has been outsourced to the suppliers. Differently put, there´s little vertical production integration. Due to their simplicity, he electric drive train and the electric motor either have to be fully built in-house or bought as a whole assembly – this being the normal case today. But if the car manufacturers only build the body of the cars on premise, they convert themselves into the holder of a brand and under this name they assemble cars by putting purchased bits and pieces together and selling them. This would be fateful, such cars would be interchangeable and could be sold only via their price. There is an imposing path: more technologies, software, functions, services, design, user experience resulting in a much deeper vertical production integration. Outsourced production areas then will come back into the home factory.

With the battery electric vehicle, the battery is a key element in the view of technology as well as in total cost and for the revenue too: the battery is the most expensive part in such a vehicle. But instead of pushing research in batteries ahead the German government received lots of critical voices for the non-transparent evaluation and decision process for the new location of the battery research center, causing deferral and dissatisfaction. In the meantime, Tesla became the largest manufacturer for battery cells and battery packs for electric mobility, worldwide, while the German government, province politicians, research institutes and manufacturers were fighting for money and power. Now, the manufacturers became active: End of January 2020, Opel announced they will establish a battery factory in Kaiserslautern for cells and packs for their own cars and the ones of the parent company, Peugeot. VW announced last year the cooperation with Northvolt for cell and pack production in Salzigtter. Daimler and BWM too have found their own solutions. This inert pace causes headaches among specialist since today speed is tremendously important: Tesla will unveil a new battery in April 2020 (based what we know the 7th stage of development since 2012) presenting a remarkable step in evolution regarding composition and performance (e.g. load cycles).

The BEV equipped with a fuel cell and hydrogen tanks does not play a role in this analysis, since this technology develops no relevant market position for passenger cars even among optimistic scenarios. The whole system is much too inefficient (requires at least three times the energy for the same distance) and improving the efficiency is much limited. Furthermore, the issue of the marginal fueling infrastructure hasn´t been solved yet, since a Europe-wide fueling infrastructure is mandatory and until now, no company or consortium or state wants to go for this high-risk

investment. Furthermore, soon new batteries allowing to be charged within 10 minutes will hit the streets solving the issue of charging time. On top of it, following the optimization in production BEVs will become cheaper and, therefore, hydrogen cars will be much more expensive in purchasing, operation and total cost, thus leaving them no chance in the market. Green hydrogen most likely will propel vehicles in line operation (e.g. busses, trains, ferries), delivery and trucking services with fixed routes and industrial processes.

Insourcing is a path

Among car manufacturers the tendency towards the insourcing of formerly intentionally outsourced fields can be observed. Volkswagen shows how it can be done and focuses on the software. Late 2019, the group announced the layoff of about 7'000 until 2025 which add to the 30'000 layoffs out of the program from 2016. However, from 2020 Volkswagen also creates 15'000 in for IT and software engineers. Audi communicated similar, with 10'000 jobs lost but 2'000 new jobs created in electric mobility.

This effort unveils two issues. On one hand, more and new competences should be at the manufacturers since the recent questions cannot be answered sufficiently with the usual approaches and job specifications. On the other hand, the cumulation of competences gives the opportunity to understand the whole hardware/software system much better, optimize it, improve efficiency, which is a demanding task particularly with software. Furthermore, this is quicker and safer than with external suppliers. Volkswagen realized the development of functions and improved efficiency of an electric car is successful only if they keep the competence over the whole system software in-house. The company goes even beyond and understands the interface to the user is extremely important – since through this, additional services and products can be sold right inside the car. Something tesla does with his cars already but until now limited to the own products only.

During the upcoming 10 years, many jobs will be eliminated inside the shop floors throughout Germany. Which people and how they will be laid off during the ongoing change processes is much debated. While the car manufacturers play it down and inform in small steps and set the real figures off by adding the new jobs, the Plattform Zukunft der Mobilität (NPM) lead by the head of the IG Metal union Jörg Hofmann talks about 410'000 lost jobs until 2030 – which for sure will provoke social tension throughout Germany. Both views have their clientele in focus blatantly seeking arguments for the financial support by the government. Both approaches have been perceived with disturbance outside of Germany: Instead of going ahead with a vision, everybody sit and wait for the government to disperse some money. At the same time, Tesla is the sole big investor into the car industry of Germany asking the government for some subsidies for the battery cell production gets denounced – despite now only creating jobs, but also transferring knowledge and expertise in a seminal sector of technology in the country. “The Germans don´t really know what they want” was the comment of an American technology expert.

And: fundamentally, every technological change has created more jobs than those got lost. The challenges are those losing their jobs might not find an adequate position in the new environment and these new jobs do not become available at the time the others got lost. Therefore, the figures of the renowned CAR Institut of Ferdinand Dudenhöffer might have scenarios and figures being more accurate than all those forecasts with their own political and financial objectives in mind – or those who just want to use cheap propaganda for their own agendas.

System thinking and system development

Recent products consisting of hardware and software can only be used dynamically and optimal if the software is frequently updated. This is what´s expected form a product with software operation, and frequent updates are mandatory for security reasons, too. Just like smartphones: operating system and apps are frequently updated via the internet, bugs fixed, functions improved, new services introduced, use guidance and design improved, and an ongoing improvement is pursued – usually free of charge. People expect this form a car too, particularly from an electric car. While talking with Tesla owners we learned about the positive sentiment when entering the car in the morning being welcomed by improvements and new functionality. An owner stated: “It is like entering a new car every few weeks – this simply is cool, is fun, and I have the feeling of being taken seriously as a client the first time.” Experience with these Over-The-Air updates in general is positive even if occasionally a function has been made worse. Due to the frequent updates and their simplicity such problems were solved swiftly. Well, it is nice seeing the erratic action of the windshield wipers suddenly behaving like good automatic wiper. But for driving the car the optimization of the efficiency of the whole system, charging management and battery management as well as updates for the navigation system and the autopilot are relevant. Frequent updates of the car to maintain it and for keeping it up to date is consequential. With Tesla, even an owner of an eight years old Model S gets the same frequent updates and,

therefore, drive a car being better in many areas compared to the car once delivered. This gets the disapproval, particularly in Germany, where it is not an accepted concept suddenly having a car with more range or being safer. In this case, such a car would no longer correspond to the officially approved vehicle and, consequently, would be taken out of service or would need a new approval. This is not practical.

Reality with most car manufacturers is one of the last Millennium Until today, traditional car manufacturers sold their cars without any intention and objective to adapt or improve after sales. In cases of a product recall only small parts of the software and/or the hardware are changed. General improvements out of the ongoing development are not intended to be given to owners of existing cars. And with electric cars too, manufacturers hold to this principle. Or instance, the software of the Renault ZOE – a much convincing, well matured car – can be updated at the Renault service station only. This is arduous, takes some time and the personnel often is overstrained. Another situation: Audi improved the poor efficiency of its e-tron 55 a bit – but has no plans to offer these improvements to existing car owners. The reason being the hardware which needs to be adapted together with the software. Early customers don´t believe this is appropriate which this statement of an e-tron owner clearly depicts: “this is highly aversive towards customers” – which is a tough statement but regarding to the content not utterly wrong since expectations today are different. Audi does offer Over-the-Air updates but they cover certain functions only, a scheme found with BMW and Mercedes, too.

Just like with the customer-friendly services and update schemes efficiency shows much potential for improvements. Particularly in efficiency other manufacturers are ahead of the bunch, Hyundai in 2019 had even more efficient cars than the pioneer Tesla and illustrate how far they go with efficiency. In contrast, the German BEVs stand out with their inefficiency. Of course, the German car manufacturers must work on their general backlog in development first, being a huge challenge but finally resulting in an improved efficiency, too. However, the pompous claim of soon being leader in electric mobility does not translate into reality. Porsche, for instance, will improve efficiency of the nice Taycan despite the controversial result in efficiency during consumption measuring. This seems to be manageable since Porsche builds and programs much by itself. And exactly this is the key for future: only those understanding the vehicle in its entirety will be able to optimize the system with a system software. Such a system consists of electric motors, battery management, charging management, recuperation and brake management, battery and charging climatization, Heating and climate system, internet and mobile communications, suspension control, light and display control, autonomous driving, control of all other functions such as windscreen wipers, electric seat adjustments, door controls, screens, media system, navigation route calculator, and much more up to the interfaces for shops, streaming services, other services and soon more. This list illustrates the complexity. Now it is obvious why Volkswagen want to hire so many software engineers.

Using all these functions, services and future offerings car drivers no longer are the user hardly ever seen again. From now on, the manufacturers remain in a dialog every single minute, exchanging information and data and services will be provided – either as part of the concept of the car, as option at cost, or as compensation for data. This is where the beef is: every single vehicle can generate businesses and important data from the use of the vehicle for further developments – a mindset still difficult for traditional manufacturers. And something else is difficult for them: getting the idea of functions and services must be nicely designed, work intuitively, easy and a include a valued experience. Tesla, for instance, not only is bought since there are no other true and modern BEVs in the middle and upper market segment available. Equally important for the decision of purchase and customer satisfaction are the new values of Tesla, conveying involvement and valued experience in operation, interaction and use of the vehicles and their emphasis on the design of the human interface and its appearance. Summarized by an owner: “This car is so refreshingly different and still very intuitive, as a customer I feel involved and it is true fun! It´s like car driving 4.0 for customers 4.0.”

Innovations wanted

Future users will not be happy with just a well-made electric vehicle. This causes insecurity in all management levels in most companies in the automotive sector. It still isn´t or just vaguely clear what customer want. Genuine ideas and innovations are badly lacking in a sector which sold the smallest evolutionary steps for decades as a huge revolution. Quite often the managerial staff lacks the ability to develop big and extensive visions since this never was needed.

Lacking the dead weight of grown structures newly founded battery electric car manufacturers can act and innovate more dynamically and brave. Byton, for instance, has put all the promises from about three years into actions, presented at CES 2020. Their cooperation with the media company Viacom-CBS points into a similar direction as the concept car Vision S by Sony and puts much focus on entertainment and work inside the car – which will be driven autonomously in the future. Similarities with Tesla can be found in the cooperation of the Chinese StartUp with

Marubeni providing experience in operating solar parks and battery storage for cars and buildings. In the same price bracket, the U5 Ion SUV by Aiway is stretching its body towards the size a Merced EQC. Innovations at Aiway are the exchangeable and rentable battery pack providing additional 20 kWh increasing range from 460 to 560 km (280/340 mls), biometric equipment, and the technical provisions for simple autonomous driving of level 2. Production for the market introduction in Europe has been initiated late last year and from April 2020 the vehicles will become available in Germany.

The concept car Vision S by Sony presented during the CES 2020 impressively indicates how innovations can look like. It is much unlikely Sony becoming an electric car manufacturer soon despite Sony being able and financially ready to do so. The electronics company see itself as the provider of innovative ideas in the area connectivity, entertainment, audio/video experiences and this they presented perfectly during the CES 2020. And for safety and autonomous driving, too: Sony is a major supplier of sensors for autonomous cars and possesses the knowledge to develop such systems. The Vision S Concept was built with the help of European companies presenting their components for electric cars, among them also German suppliers. This is a ray of hope since there were also companies which had a hard time during the change in the automotive sector and had to lay off recently or will lay off people in the upcoming months.

With the electric car it is no longer just about the car, it is also about innovation, competences, technologies, design and co-operations. January 2020, Renault, Nissan and Mitsubishi unveiled a joint platform for electric and hybrid cars. Now, it is interesting to what the finally build and provide on this platform. For all manufacturers it becomes vital to look beyond their own noses, comprehensive thinking, acting and co-operations are the keys. Following Porsche or Sony makes no sense. It will be exciting to observe development of the automotive world and those being brave. Rivian, for instance, announced the integration of Alexa by Amazon. Audi and Volkswagen already have the Alexa integration in their conventional cars and have gathered some experiences. Now it is about what they do with Alexa, and there are a few brave visions around. Since 2015 Amazon has invested an estimated 50 billion Dollars in the development of autonomous driving, and by buying companies in this technology sector. For car manufacturers this opens up several opportunities.

A world of Alexa ordering the detergent, then commanding the car to autonomously drive to the pickup place to get the detergent is not very innovative, though conceivable. It is less probable with the cars we have today. No question, autonomous driving will be one of the major elements in the development of the automobile. Indeed, German engineers and specialists in the area of autonomous driving told us this will take another 10 or 15 years. In contrast, we in person were driven autonomously through a medium-sized European city on a winter morning with wet roads and demanding detours around road works in dense traffic – back in late 2018. Safely and comfortably. We, therefore, are convinced autonomous driving will arrive much sooner. At least outside of Europe where restrictions hinder such developments and the use of such vehicles.

Speed of innovation among new companies is high. How innovative German car manufacturer can be is crucial – also how brave, decisive and how quickly such innovations are brought to market. From abroad, people viewing to Germany are a bit irritated. We heard many comments, and this summarizes all of them nicely: “We perceive Germany as society and industry as smug and they refuse much not coming from their own people. Germany seems to prefer the standstill which is surprising. This isn´t a good sign for the future of this country.”

Software isn´t the only thing

It is precisely the German cars providing unparalleled qualities and not being software and digital transformation: mass-production vehicles equipped with individually fitted and outstandingly crafted interiors providing superb comfort and various materials, pleasant luxury and high utility – keyword “batch size one”. This isn´t enough for the future, but it is a distinctive attribute for the purchase decision. Buying a Tesla via the smartphone is a simple, clear and surprisingly inspiring experience. This is easily possible since the choice of options is little. However, many prospects wish for more individualization, and they are ready to pay for – a service some German electric car manufacturers can provide in perfection. This becomes a distinctive feature in world of comparable technology.

Another aspect is the network of charging stations. The charging infrastructure of Tesla is one of the selling points and all other vendors are lacking this. There´s a growing network of charging stations but particularly in Germany there´s chaos with identification, use and billing. Some German car manufacturers have founded Ionity to provide with joint forces a growing network of fast chargers. This was a good step of the companies and for the car drivers but faced its setbacks. End of January, Ionity changed their contracts, some of them were intransparent, resulting in much higher prices. Such a hike might be economically sensible, but it is cumbersome in this market setting. Even more, since the

hike remains minimal for clients with certain contracts and customer cards now paying about the same as they would at Tesla superchargers. This isn´t clear – intransparency and lacks in communications as they shouldn´t be. Another large European operator of a charging network unveiled no operator today has an idea which business model finally bringing some steady revenue – it is about trial and error. Ionity is going through an orientation phase and will learn how they should handle contacts with their clients.

Car distribution network – curse or mercy?

One of the strengths of the well-established car manufacturers is the nicely branched, even worldwide distribution and service network. Close to the customers in every situation, from the introduction of new models and technologies, sales and assistance during use, and in the cases of service and repair – and to initiate another sale. The lack of such a distribution network caused Tesla to receive heavy complaints during the introduction of the Model 3: many vehicles were delivered with (usually) minor, but annoying flaws such as scratches and enclosures on the surfaces, damaged tires, lacking charging cables and similar. But it was the slow and dissatisfactory reaction by the Tesla service being the real problem. Tesla sorted this out quickly, but wouldn´t have happened with a dedicated distribution network since they would have used their own motivation and means to solve the problems.

Looking into the figures, the distribution and partner network is of high pertinence. Depending on the manufacturer up to 50% of the turnover is generated by after sales from wear and spare parts, body components, consumables, accessories and other products. A major share is contributed by distributors and their service centers. The turnover at a dealer is composed of 20 % after sales and 40% each in sales of new and used cars. The conflict of goals is imminent: The work and the clearable time for BEV in after sales is minimal. Thus, a dealer isn´t interested at all to sell a BEV since this client won´t contribute much to the turnover in after sales. Tesla, for instance, has declared services no longer being needed, since over 90% of the issues are detected by the car system, communicated and solved over the internet. Just the biennial check of the brake fluid needs to be done, otherwise wear on the cars is much less than expected. Besides Tesla, there is no car manufacturer handling their cars entirely “Over-the-Air”, thus these customers must go to the shops. However, executing a software update or changing a setting in the software does not create the same turnover compared to a service or repairing an exhaust – and it certainly will not be perceived as up-to-date, but rather annoying.

Cars with internal combustion engines need services for endurance and repair of the complex mechanics ensure work and turnover. One example: With oil changes, in Germany 90'000 people find jobs in the areas of production, distribution, stock keeping, oil change, customer service, disposal and recycling of motor oil. Since preferably expensive branded oils are sold revenues are convenient. The wear of the brakes of cars with ICE are another revenue stream while the brakes of electric cars are much less stressed and show less wear due to the recuperation function. Due to their complex mechanics aged cars with ICE ensure profitable services and repair jobs for the shops. Still, one could say, since as soon the owners of ICEs realize how expensive services and repair of their cars are and what convenient revenues are made such profits could erode.

Dealers, respectively their new car sales, have a hard time selling BEVs. Secret shopping at car dealerships in Germany since 2016 didn´t result in much pleasant experiences. The sales personnel seemed to be overburdened, badly informed and preferred to sell a vehicle with an ICE instead, preferably one from stock. For achieving this, they did not stop for falsehood and spontaneous test drives often weren´t possible – since they were with cars with ICEs. This situation has changed notably, a good knowledge base and a balanced debate were usual. Sales of a BEV often happens the way of selling conventional cars: through discounts and giveaways. And we repeatedly observed the urge to sell electric cars from stock to get rid of them: without touching the subject of discounts we were offered cars such as the Audi (e-tron 55) and Mercedes (EQC) from stock with a 15% discount – as starting point for negotiation. But as soon as we touched subjects like the app for the car, its operation, experiences, regularity and scope of updates over the internet responses often remained lean. As long as the distribution network sells discounts instead of cars the change towards electric cars will be tricky for the car manufacturers. Communication towards the dealers conveyed the messages of Tesla and Renault ZOE being poor, therefore these people now have a hard time to change their mindset and attitude. Up until now, there isn´t much we can see from the car manufacturers side to support the distribution network, informing and profoundly covert them and guiding them towards the future. Meanwhile, dealerships have realized they will be of less use in the future and they will make less turnover – not suddenly, but within the upcoming 5 to 10 years.

But how will the customers react? Resale values of Diesel cars already are under pressure in some regions, and, therefore, more petrol cars are sold. Which isn´t good for the carbon footprint. Depending on the study, the resale value of BEVs sometimes is better, sometimes worse than the one of cars with ICE and much depending on the make

and model as well as the country the values are investigated. In our estimation the value of cars with ICEs will come under pressure around 2023/2024 – but in this dynamic surrounding such statements are everything but certain.

The pricing of Tesla is another huge challenge for manufacturers and distribution partners since it has great influence on the market. A few years ago, Elon Musk stated optimization in production will directly reduce the price of his cars. The price of the fully loaded Model S Performance in 2018 was sold at approx. €175'000, in the meantime the same but much developed vehicle costs less than €120'000. The Model 3 too has seen changes in price, particularly the top version has seen some downs and ups – originally sold at €75'000 early 2020 the price stops at €69'000. Such fluctuations in price of products primarily sold on-line, such as Tesla, not only are common for the customers but expected. Besides a fixed price there´s something else not available at Tesla: discounts. Just like with most purchases in the internet customers pay the given price, there are no negotiations. This being one reason for the relatively high revenue per car Tesla is making (not to be mixed with profit and loss of the company).

Such fluctuations in price and zero margin for discounts are a disaster for the distribution network of traditional car manufacturers. Price adjustments by the manufacturers not only apply to the new car stock at the dealers but equally influence the used car price calculation: millions would be destroyed. And the discounts are missed in negotiations when the facts have no effect. Free trade having taken some new cars from Tesla in stock on their own risk already have made unpleasant experiences. The used car prices of Tesla went down in parallel with the dropping prices of ne cars having caused anger among customers and dealers. It is a question for traditional car manufacturers, whether and how they want and can include the distribution network in future business models. With a distribution network are benefits coming, but the increased and more intensely direct customer contacts to the manufacturer bypass the distribution network and follow-up businesses for the dealership: dealers as well as service stations and workshops have to develop their own business models – in dependency on the manufacturer.

Change in mobility – another irritation

Since the profound change from fossil fuel to electric vehicles wouldn´t be enough, there are further challenges waiting for the car manufacturers. During the past decades, most cities were designed for and around the automobile, streets and parking spaces gained priority, everything was subordinated to individual motorization. Predominantly local trade and crafts pushed for best accessibility by car – and scared away walk-in customers who prefer to buy on-line instead of squeezing themselves along narrowly parked cars along dirty, noisy street.

Over the past half century of car focus quality of life in most cities was lowered remarkably. But since a few years, cities have begun to shape their areas with a view for a fair relation among all users. The approach is similar everywhere: A car parked for hours isn´t of any use for the residents, trade, crafts, theaters, cinemas, bars, restaurants and others, but they occupy space which could be used else. The same applies for the car in motion requiring the multiple space needed by pedestrians and bicycles, not moving rarely more than one passenger, furthermore emitting noise and exhaust fumes. Meanwhile, many cities have banned cars from their centers, Copenhagen being an excellent example for Europe since it is a good model for many cities. Such changes can be done surprisingly quick, if the changes are wanted. Birmingham with more than a million residents, for instance, has reached its goals 11 years prior to the planned schedule. The results are convincing, quality of life has gained noticeably and visibly, air quality and noise now are more human friendly, there are less fatalities from traffic, the emptied spaces now are used productively, and the prosperous life in the city ensures better turnover for trade and crafts. This didn´t remain unnoticed, large companies such as Deutsch Bank, HSBC and KPMG have moved their UK headquarters to Birmingham due to the increased quality of life.

Unexpectedly for many Europeans, the excessive dominance of cars in the USA is reduced. During the upcoming years the City of New York will establish areas for pedestrians and bicycles. Success is likely since turnover of the businesses along recently installed cycling routes has increased by 50%. Meanwhile, 364 cities in the United States of all sizes (in 2019) provide car-free zones, city centers, and convenient routes for pedestrians and bicycles: San Francisco, Springfield, Ann Arbor and Ithaca are examples of large, medium-sized and smaller cities in the USA. A rising number of people live in cities and will no longer either be able or want to buy a car on their own. Company cars, too, appear to be less attractive since use and benefits are in decline – and according to researchers in mobility first cities will provide convenient offerings with autonomous vehicles before 2030.

Protecting human beings manifest itself as well I law making. Until today, ten countries ban the registration of cars with ICEs in the near future. Norway as vanguard is among them banning such cars already from 2025, the majority following 2030, some in 2040. In Germany a ban is under discussion for 2050 – five years after ICE cars are prohibited in the first countries and must be taken out of service. Some cities plan to ban or already have banned vehicles with

ICE either as part of the development of the city or even independently – some European Capitals among them. But Berlin got massively criticized when it wanted to ban Diesel cars from the city center in 2030 and from city limits in 2035. This is way too much of change for some politicians, despite Berlin as the Capital of the Car Nation Germany could have been a role model. Or in the word of Americans: “German Angst”.

Market and State

Another challenge for the automotive industry looms in “Car Peak”, the limit of growth in the car sector. This means to all manufacturers there will be less cars sold. The good figures in 2019 for the German car makers in Europe are misleading (caused by delayed deliveries due to WLTP) and are deceptive regarding the sales of vehicles worldwide and the figures in China which are static. The share of BEVs of all car sales is rising, but the total number of BEVs remains on a low level. The transition from a Diesel or petrol car – including hybrids – towards pure battery electric vehicles happens slowly. Provider of autonomously driving “cabins” such as Canoo and GM Cruise preferably want to serve cities and agglomerations and their business models also include subscription models – which, again, diminishes the market for cars.

Since several developments and challenges overlap each other predictions neither are easy to make nor certain. Despite the expectations in the sales of BEVs and the customers transition towards ecological vehicles it seems to be legit to keep predictions of quantities for the upcoming years conservative. Each year more BEVs will be sold and the quick, major steps in the development in battery technologies and optimization in production result in lower car prices: parity of the price between a BEV and an equal ICE propelled car should be reached in the United States within two years. Savings in production must be given to the customers since good and valuable cars soon will be coming from China to Europe and the US. Different from their attempt about 15 years ago their products have matured, are well built and safe. And they should have the certain something in design, user experience, comfort and functionality – if so, the prices of the manufacturers not offering true innovations will come under pressure.

Two examples: the Fisker Ocean is a mid-sized SUV having quite a self-conscious, maybe a bit a chunky appearance – but is surfs along the Zeitgeist and Fisker hits the bull's eye. Together with its price at 37'500 Dollar it granted numerous reservations despite deliveries for Europe commencing in 2022 only. Interesting: after the USA, the majority of reservations were made in Germany. Byton has a more discreet, cultivated appearance and an impressive display which stretches over the whole vehicle width and gesture control. In comparison, the display of most other cars appear puny. The Chinese have received more than 50'000 reservations no matter whether the gesture control of Byton might be convincing in real life – and began with pre-production. The Norwegians have signed for 14'000 cars, while the other Chinese electric car manufacturers will come to Europe in the mid 20ies.

In the face of the pressure from China, the German government will not be able to straighten it out for all companies in the automotive business despite the lobbyists of the automotive industry pushing it successfully with the killer argument of the jobs and, again, demanding financial support. Since politics doesn´t really know what to do, where financial support will have an effect and since other demanding, expensive areas have to be financed, there´s not that too much money for automotive industry at hand.

German Katerstimmung? (Katerstimmung = Disillusion causing Despondence)

It might be sensible to listen to Colin Rusch, financial analyst with Oppenheimer and a long-term critic of Tesla, when he talks positively about the American electric car manufacturer. During an interview with CNBC in mid-January he stated: “We believe the company’s risk tolerance, ability to implement learnings from past errors, and larger ambition than peers are beginning to pose an existential threat to transportation companies that are unable or unwilling to innovate at a faster pace.”. This truly clear statement reminds of the speech by Volkswagen boss Herbert Diess. Put differently: to abandon hesitation and their behavior to block are the first and most important steps the German automotive industry has to take for being able again to take the shaping of the future back into their own hands.

Talks like the one by Herbert Diess jolt the people but is isn´t really motivating. Rolling up sleeves is one of the mottos, bravely developing new Technologies with focus and true added values, user utility, positive emotions, pleasure and a beautiful experience. Such beautiful experiences only come with a nicely designed product capable of addressing the emotions of the customers, being fun and ready to flatter. Hence, the products from Tesla are not just bought, but intentionally chosen and even loved – since it is a unique experience to drive and operate a Tesla, and to enjoy things with a smile which after all are nonsensical. Just like the open fire on the display with the sound of fire and the heat from the heating. Brand loyal driver of Audi and Mercedes reported their experiences with the e-tron 55 and the EQC:

“excellent cars but missing the Certain Something”. The Tesla effect can be observed in the sales figures, 2019 Tesla sold 367'000 cars – while all other electric car manufacturers do not really profit from the surge towards electric mobility. Their products either are not available or stir little interest: Tesla is lifestyle while many manufacturers offer just some tedious remake of known concepts in combination with an electric motor or struggle with their production.

All this indicate there´s much movement in the automotive industry today and in future and all goes ahead at a high pace. Today, it is a true challenge to lead a automotive company into the future – just because the difficult predictability. Suppliers generating more than a quarter of their turnover in the automotive industry are forced for profound changes. The upcoming three years are the critical ones for the German automotive industry as well as the one worldwide. Will they be able to bring inspiring, user-friendly and cool electric vehicles to the market and will they be able to react on the changing mobility at the same time? Will there be even more manufacturers renting their cars instead of selling – like Elon Musk originally planned – introducing new business models? And get the suppliers hold of new orders in the electric mobility and can they open new markets for their products and service in parallel?

The keys are the will power and creative power of each one inspired by those going ahead. They can put down perplexity and paralysis, find orientation, identify opportunities and the playful pleasure to innovate. In a team of people being brave, develop visions and strategies, allow errors and reward trial and error to work and realize with conviction – this is the dynamism saving jobs and creating new positions. The managerial personnel addressed by Herbert Diess must push themselves from sluggish toward enthusiasm. But not only in Wolfsburg, but within all manufacturers and suppliers throughout Germany. The mainly shallow automotive digital labs in Berlin and company StartUps without reason and objective are not needed for this. It might even be the renaissance of the German and Swabian inventor teams consisting of people from various proveniences, capabilities and ideas.

In this scenario, “German Angst” will not become “German Katerstimmung”, but a “German Kraftwagen 2020”.

Katerstimmung = disillusion causing despondence
Kraftwagen = very German way to say Automobile, translates as “powered carriage”