Electric Mobility Advances to the Implementation Phase

Experts from across the automotive industry are scheduled to meet for the 1st elect! ATZ Congress Electrified Mobility at the Stuttgart Trade Fair on October 8 and 9, 2018. The congress comes at a time when theories about electric and connected mobility are giving way to practical solutions, and learning from the best is taking place at an international level.

INTERNATIONAL PLATFORM FOR ELECTRIC MOBILITY

Nine years ago, at the inaugural event of the German National Platform for Electric Mobility (NPE), Norbert Walter, former Chief Economist at the Deutsche Bank, admonished NPE members not to restrict the scope of NPE activities to Germany, and instead to seek partnerships at an international level. A number of cooperative endeavors had been initiated at the time, including SB Limotive, a joint venture involving the South Korean battery manufacturer Samsung and Bosch, to develop high-voltage batteries. The separation of the technical know-how and common experience alone was almost inconceivable.

"A sensible distribution of roles and an efficient exploitation of a range of strengths remains a key to success when it comes to electric-mobility projects," Professor Hans-Christian Reuss, Scientific Director of the 1st elect! ATZ Congress Electrified Mobility emphasizes [1]. To this extent, it seems that many market observers have been right to conclude that the NPE has failed. In the absence of an international organization, however, exchange platforms such as the ATZ Congress, supported by Schaeffler, provide an opportunity to learn from, emulate and even cooperate with a number of already successful enterprises and institutions. For example in China, already the world's leading market for electric vehicles and continuing to develop rapidly. Many of the presentations that will be given in Stuttgart address this high-volume market.

ENHANCING THE LEAD CHINESE MARKET WITH GERMAN KNOW-HOW

Beyond the joint-venture arrangements the Chinese government has imposed on foreign companies seeking to do business in China, German carmakers have also begun to invest in Chinese automobile companies. Daimler, for instance, acquired a 10-% stake this year in BJEV, the electric vehicle subsidiary of the BAIC Group, one of China's largest automotive manufacturers. Marcus Hafkemeyer, CEO and Director of Powertrain Development, is slated to give one of the keynote addresses at the elect! Congress. Former working at BMW and in battery development at Samsung, Hafkemeyer is one of several German executives to take on executive roles at Chinese enterprises. Hafkemeyer knows that the 103,000 electric vehicles BJEV is expected to build this year (91,000 in 2017) do not yet meet the expectations of an international clientele. That is why he has targeted German suppliers as a source of automotive parts. Quality has increased as a result. In future, the company will not only equip existing models with electric powertrains (conversion design), but will also develop vehicles to match battery-electric powertrains (purpose design). Indeed, BJEV has commissioned an Austrian company to perform this task, with a total of five models set to make their market debuts in the coming years, beginning this year.

Carsten Breitfeld is another example of the German brain drain. The former Chief Developer of the BMW i8 is now CEO at Byton ("Bytes on Wheels"), a new automotive OEM founded in China. Instead of focusing on electric powertrain, Byton has directed its attention to seamless connectivity and the digital customer experience. In the interest of providing insight into this exciting

new field, ATZlive and the editorial team invited Byton representative Abe Chen, Senior Director of Cloud Network, Connectivity & Security, to give a presentation in Stuttgart. The security specialist previously held various positions at Apple.

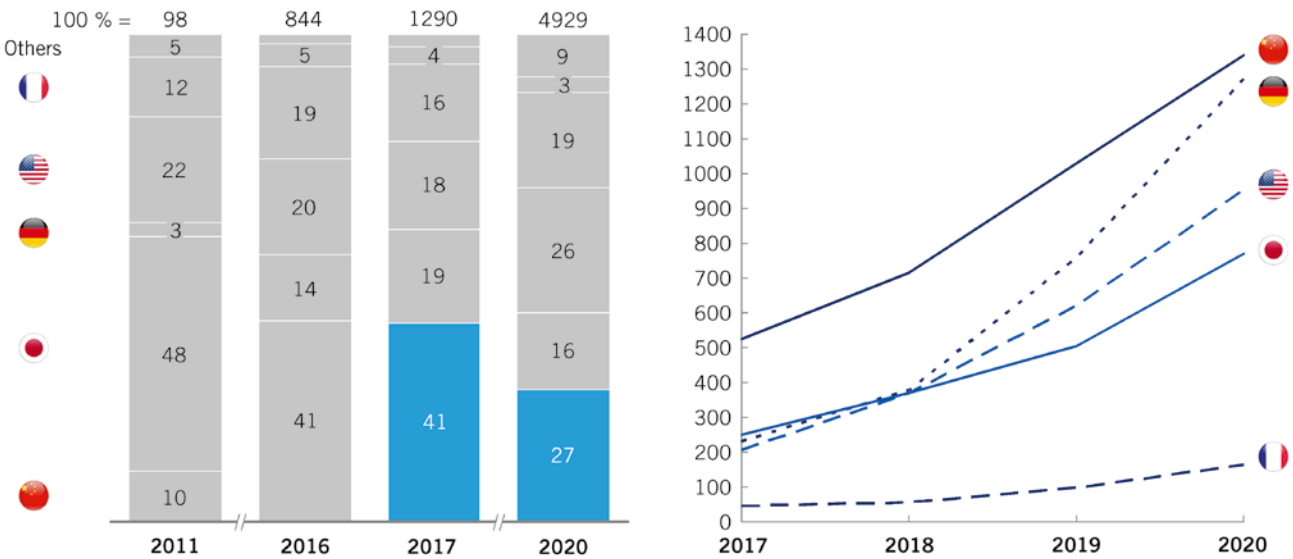
Matthias Zentgraf, President of the European subsidiary of the Chinese battery manufacturer CATL, is yet another German engineer scheduled to speak at the conference. Zentgraf was one of the executives behind the decision to open a battery-production facility in Erfurt, Germany. CATL is one of the world's biggest manufacturer of battery cells and has also become a supplier to several carmakers, for example BMW.

ENERGY STORAGE SYTEMS

While German industry representatives and lawmakers began many years ago to emphasize the urgency of establishing domestic battery-cell production facilities, Asia-based companies went out ahead and actually converted their plans into reality. However, far from reality, a wishful thinking still remains in people's mind: In July of this year, Winfried Kretschmann, Minister-President of the German Federal State of Baden-Württemberg, even went so far as to criticize CATL's plans for production facilities in Germany. Next to him on the podium at the presentation of the Strategy Dialogue Baden-Württemberg were the unsuccessful protagonists in this field: Daimler CEO Dieter Zetsche and Bosch CEO Volkmar Denner. The latter had shut down all high-voltage battery activities in March 2018 after the failure of a successor cell generation (the colloquial solid-state cell). All of this is reason enough to devote special attention to the various aspects of energy storage at the elect! Congress – since the manner in which the subject is discussed in general often tends to be diffuse or even misleading, particularly when it comes to the demarcations between battery generations and the nature and cost of the developmental stages.

Representatives of the Meet Battery Research Center and the P3 Group will

China once again outperformed European and US markets in 2017: electric vehicle sales (BEV, PHEV) up 72 % to 603,000 units, nearly half of the world market (quantitities in thousands) (© McKinsey)



OEM country share in global EV production (thousand units and share in percent); companies are grouped to represent a country based on their headquarter (e. g. Germany includes the overall volumes produced by BMW, Daimler and Volkswagen Group on a global level)

Chinese OEMs are currently leading electric vehicle (EV) production, but German OEMs are catching up quickly as measured by their announcements of their production plans (quantities in thousand) (© McKinsey)

In the summer of 2018, Daimler Evobus gave the go-ahead for the construction of the production-ready electric bus e-Citaro; Robert Kappel, Director of Product Engineering Powertrain/Testing will speak at the elect! Congress (© Daimler)

be on hand to address the technical, economic and operational issues involved. Panelists will also be on hand to discuss the growing public perception that cell-production operations are prohibitively energy intensive and that the automobile industry is facing a dangerous scarcity of raw materials; the mining and processing of some materials such as cobalt are inextricably tied to human rights violations. These serious reservations will be discussed and solutions will be sketched in accordance with the editorial orientation of ATZ and ATZelektronik. Given the centrality of research and development, it is important not only to identify current weaknesses but to offer potential improvements. Christophe Pillot, Director Avicenne, will use his extensive knowledge to analyze the dynamics behind the availability of raw materials and what we can expect in the future. And finally, AVL will present an international battery benchmark.

MANAGEMENT STRATEGIES AND TECHNOLOGIES

While ATZ congresses are traditionally oriented to the latest technological developments, the strategic and societal aspects of the disruptive changes taking place in the intertwined industries of automotive and mobility as well as transport and energy warrant examination.

That is why the in-depth technical presentations relating to future vehicle technologies and advances in process engineering have been scheduled to take place in a parallel strand. In addition to the above-mentioned discussions of battery-related topics, these include sessions centering on electric powertrains, vehicle electrical systems, charging infrastructures and energy supply. In connection with vehicle electrical systems, representatives of Byton and other producers have been invited to address the phasing out of the traditional system. Semiconductor specialist NXP, for instance, has already mastered Over-the-Air (OTA) software updates, cloud connection and backend processors with partners.

Why was this apparently unusual topic selected for a conference on electric vehicles? The answer is that vehicle electrical systems form the spine of the interconnected (and in the future automated driving) vehicle, and the value of the control system in an interconnected, electric vehicle is incomparably higher than that of a conventionally-powered vehicle. The built-in advances here introduce an opportunity to optimize range-management systems with more reliable navigation and real-time vehicle-to-vehicle and vehicle-to-infrastructure communication, effectively reducing vehicle-range anxiety. Pilot applications can be found in vehicles produced by new manufacturers, which can respond with far greater agility to new developments than the traditional manufacturers that are condemned to accommodate both the old and the new world. As NXP will report, Chinese manufacturer Nio is making great strides. German manufacturers have also begun integrating service-oriented vehicle electrical systems into their electric vehicles, but series production will start later. Not in 2017 like Nio, or in 2019 like Byton, but only in 2021, for example, Audi will follow with the new vehicle electrical systems (first for electric vehicles). The added value will help to energize the EV market and facilitate the scaling up of production numbers.

MOBILITY CONCEPTS

“We can’t expect a breakthrough in electric mobility until both product and infrastructure have been perfectly harmonized,” says Dr. Johannes Liebl, Confer-

ence Director and Editor in Charge of ATZ, MTZ and ATZelektronik. Several speakers from various backgrounds will focus on the subject of charging infrastructure and energy supply. Their presentations will focus on technical aspects and both regional and global developments. This is another area where best-practice examples are motivating. The city of Oslo, for instance, has long since succeeded in establishing a high-availability charging network. Electric vehicles belong to the cityscape. Further best-practice examples reveal that many of the problems that have proven to still be a stumbling block in Germany, and the source of a misguided dialogue, have actually been solved elsewhere. Baden-Württemberg is one of Germany's pioneers in this area, thanks to the engagements of the government institution e-Mobil BW, represented among the conference speakers.

Cities in the Netherlands are comparable to Oslo when it comes to the high availability of charging infrastructure. Bart Kraajvanger, Manager of the Zero Emission Program at the Connexxion public transportation company, has been charged to expand the country's fleet of electric buses. He is the one who decides which buses, which charging strategies and which infrastructure concepts are best suited to which cities. He is thus familiar with the still small but growing international product range of electric buses worldwide. Favourites and trends can be identified from his presentation. One such company is the Daimler subsidiary EvoBus GmbH. At the Stuttgart Trade Fair, Kraajvanger will meet Robert Kappel, the Director of Product Engineering Powertrain/Testing at Daimler. After having moved its e-Citaro forward to the series-production phase, EvoBus is now poised to supply buses far and wide.

Electric buses represent a part of the e-mobility bottleneck. City administrations and public agencies called upon to act in the wake of climate change have also proven to be a part of the bottleneck. As Oliver Arnhold of the Reiner Lemoine Institute, among others, reports, these public agencies in Germany have been remiss in performing their duties: "Communities need guidelines and responsible leaders, people willing and bold enough to implement real changes at local and regional levels."

Hyundai Nexo, the first cheaper car (under 60,000 euros) with fuel cell-powered electric drive (FCEV); the company will provide information on the background and plans for mass production at the elect!; the falling prices of lithium-ion batteries as well as the increasing driving range of battery-electric vehicles (BEV) are a cause for discussion (© Hyundai)

DISRUPTION AND TRANSFORMATION

The traditional automobile manufacturers are under tremendous pressure to act. They clearly need to shed their skin, replace their existing business models, embrace data and transportation services and become both more agile and more digital. At the same time, they remain the world's preeminent manufacturers of vehicles, i.e. despite the emergence of new manufacturers of electric vehicles that also engage with many German automotive suppliers. And from 2020 they will account for the largest share of electric vehicles sold. So the forecasts.

In light of this situation, the elect! Congress will feature prominent representatives of the conventional automobile industry, as well as market observers such as McKinsey, to discuss an interesting array of related topics. Jürgen Schenk, Chief Engineer of eDrive Systems at Daimler, will explain the strategies and the anticipated ramping up of series vehicles under the EQ label. Given his presentation headline, "EQ – We Shape the Future of Mobility," those in attendance can expect discussions that go beyond the automobile.

Automobile manufacturers are not the only ones who are called upon to reinvent themselves. Automotive supply companies need to do the same. Among the enterprises that have done an exemplary job at this is Schaeffler. The sponsor of the elect! Congress will be represented by Dr. Dirk Kesselgruber, Director of the company's Chassis Systems division, who is eminently conversant with the change processes involved. There is hardly an enterprise that has reinvented itself as extensively in recent years as Mahle. How successful has the enterprise been? And what is Otmar Scharrer, the Head of Central Research and Development, planning next? What will happen if consumers shift their interest away from vehicles to holistic mobility solutions? How important are automated electric vehicles within the city transport network?

The answers to these and many other exciting questions will be discussed at the 1st elect! ATZ Congress Electrified Mobility on October 8 and 9, 2018 at the Stuttgart Trade Fair – with accompanying trade exihibtion – an invitation to even more dialogue.

Markus Schöttle

REFERENCE

[1] Online: https://www.atzlive.de/veranstaltungen/elect, access: August 03, 2018