

G – Keynote: Lithium-Ion Batteries go Automotive – Trends, Technologies, Value chain

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Driven by worldwide tightening of CO2 legislation, an increase in the number of EVs and (P)HEVs, a steady growth in renewable electricity production, a change in the electric infrastructure towards distributed energy systems, a rise of the internet of things (web3.0) enabling smart electric grids, coupled with availability of optimized active materials and decreasing production cost for lithium-ion battery cells will result in a significant shift in the value chain for automobiles. A market share of 8 – 10% is expected for the EVs and (P)HEVs in 2020, which will further increase by 2030.

The highest leverage towards improving the technology of the electrical powertrain, however, is the technology of lithium-ion batteries. In the current drives, the battery accounts for more than 80% of the weight, the volume and the cost. Therefore the lithium-ion battery technology is the key enabler for eMobility.

The change towards eMobility is driven by a new market, new market participants from areas, such as consumer or software products, new technologies, new business models, big investments for large scale industrialization and a strong competition. In the oral presentation the influence on the market share as well as the content distribution between OEM and supplier, new players, required competencies, business models as well as a highly probable geographical shift will be discussed. The changes in the value chain of lithium-ion batteries are in relation with the expected few big lithium-ion battery cell suppliers that will dominate the mass market and the transition of the large chemical companies into the market of lithium-ion batteries. These chemical companies will act as suppliers of complete chemical material systems for lithium-ion cells. The lithium-ion cell manufacturers will produce the electrodes, assemble the cells and most likely manufacture the battery modules. The battery systems will be assembled by Tier 1 or by the OEMs. This illustrates that eMobility will cause changes in all parts of the value chain, i.e.

- suppliers
- engineering
- manufacturing
- business models

In the future these changes will require a major shift in competencies for Robert Bosch GmbH, which will be discussed in detail in the oral presentation.