



## CURRENT STATE

- 1) *regulatory pressure* and 2) *changes in demand patterns* (consumers appreciating the advantages of electric cars; Tesla S sales surpassing the S-Class) lead to a **shift from regular powertrains to electric drives**
- European OEMs, seeing their core competency at risk, so far have gained expertise in various parts of the new value chain. Their **current focus lies on a) assembling and b) integrating** the battery packs
- The **main components** – the battery cells – are, however, **currently supplied by Asian manufacturers** like *Panasonic* (Japan), *LG/Samsung* (Korea) and *BYD/CATL/Boston Power/CALB* (China)
- On the one hand, to increase its flexibility **EV pioneer Tesla Motors has partnered with the market leader Panasonic** to create an American counterpart, the so-called “Giga Factory”, thereby doubling the global cell output
- On the other hand, avoiding investment risks and relying on their massive purchasing power **European OEMs seem to have accepted the outsourcing** of 30 to 40% of the value added in BEVs
- Major European suppliers, such as Bosch, also fear the high investment risk and hence rather prefer to supply control systems and engine component
- While operating at an average supply surplus of a mere 30% in the next few years, the market is expected to face a **shortage in of battery cells as soon as 2025** caused by the fast ramp up of electric vehicles (just 1% market share in 2017)
- At latest **from this point on European OEMs (especially at their local facilities) put themselves at danger of being dependent on foreign suppliers**. In the best case they might 1) pay a price premium, 2) receive lower quality tranches or worst 3) not obtain supplies at all. They are further **exposed to exchange rate risk**



## STRATEGIC OPTION

For Continental the **revenues of the powertrain division are at stake** (2017: EUR 7.7 billion, 17.5% of Total Sales). In addition to replacing these sales, venturing into the battery cell production as a European counterweight to the Asian dominance offers considerable potential for excess profit. Configuration could look as follows:

- **Organization Type:** Where a solo-approach (like for Bosch) puts too much risk on a single entity, a *joint venture* (see Tesla/Panasonic) or even a *consortium* are possible options. The latter poses the possibility of integrating future clients, pre-selling capacities and thereby smoothing fluctuation in demand (OEMs will be interested due to the factors stated above)
- **Timing & Technology:** Both 1) the switch to a supplier market and 2) the crucial breakthroughs in the new state of the art technology “solid state” are expected for 2025. At this point Asian competitors lose the advantage of decade long experience in manufacturing lithium-ion batteries. Clocks will be set at zero
- **Location Factors:** The final factory site should reflect ideas of factor productivity, economies of scale, cost of energy and distance to final assembly line
- **Governmental Affairs:** A consortium of European players very likely is entitled to significant subsidy programs
- **Additional Value Streams:** In case of initial insufficient demand there are revenue potentials in 1) *other e-mobility solutions* as well as in 2) *stationary applications* e.g. improving grid stability
- **Financial means:** An investment of EUR 5.7 billion is needed for an annual production of 35 GWh (R&D + plant cost)



## RECOMMENDATIONS FOR ACTION

- Continental AG **should lead a consortium** with strategic partners along the supply chain
- (Not only European) OEMs will value the existence of a tier one supplier for their European outlets. As part of the consortium, potential customers (OEMs) can reserve future capacities against upfront payments. During the project’s setup phase, **the local advantage over Asian suppliers has to be stressed out towards the customers**
- Even though demand will not peak prior to the year 2025 **substantial funds are needed early on**. This money is needed to further finance R&D in finalizing solid state batteries and their industrial scale production. Therefore, **subsidies (European and national level) and consortium payments** will cover a part of these cost
- Output is expected to **start at 35 GWh per year in 2025** and will be increased according to demand (40 and 45 GWh)