Modulare Konzepte für elektrische Antriebssysteme bei Volkswagen

Modular Concepts for Electric Propulsion Systems at Volkswagen

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Peter Lück, Volkswagen AG
October, 6th 2010

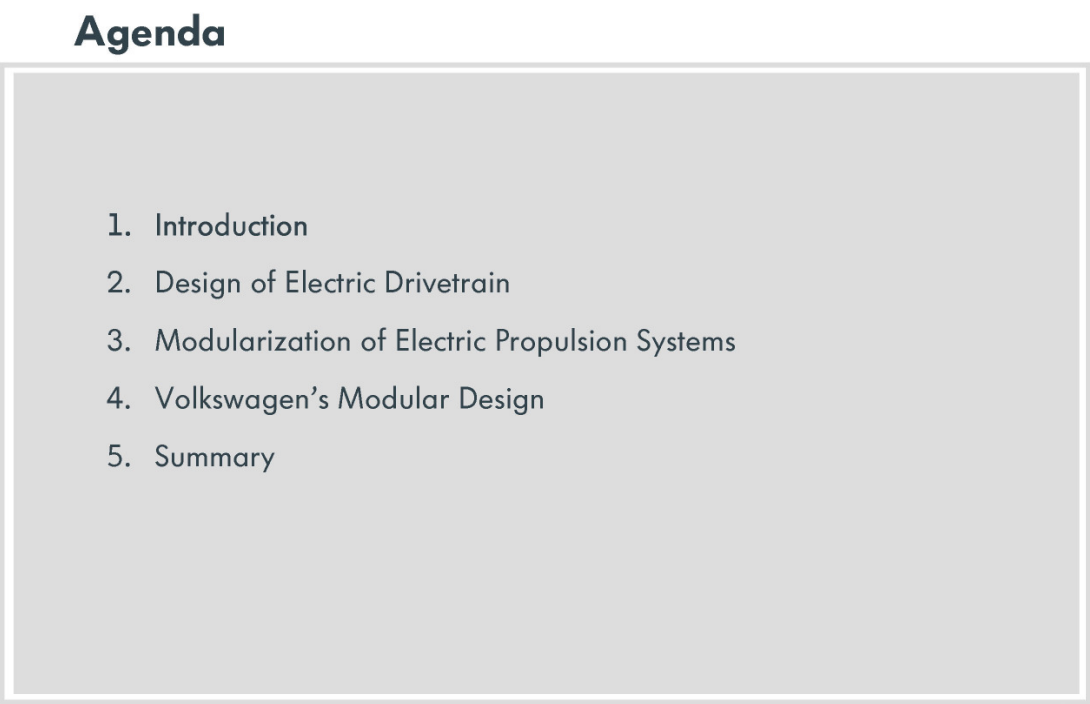

Abb. 1: Agenda

Abb. 2: Mega-Trends

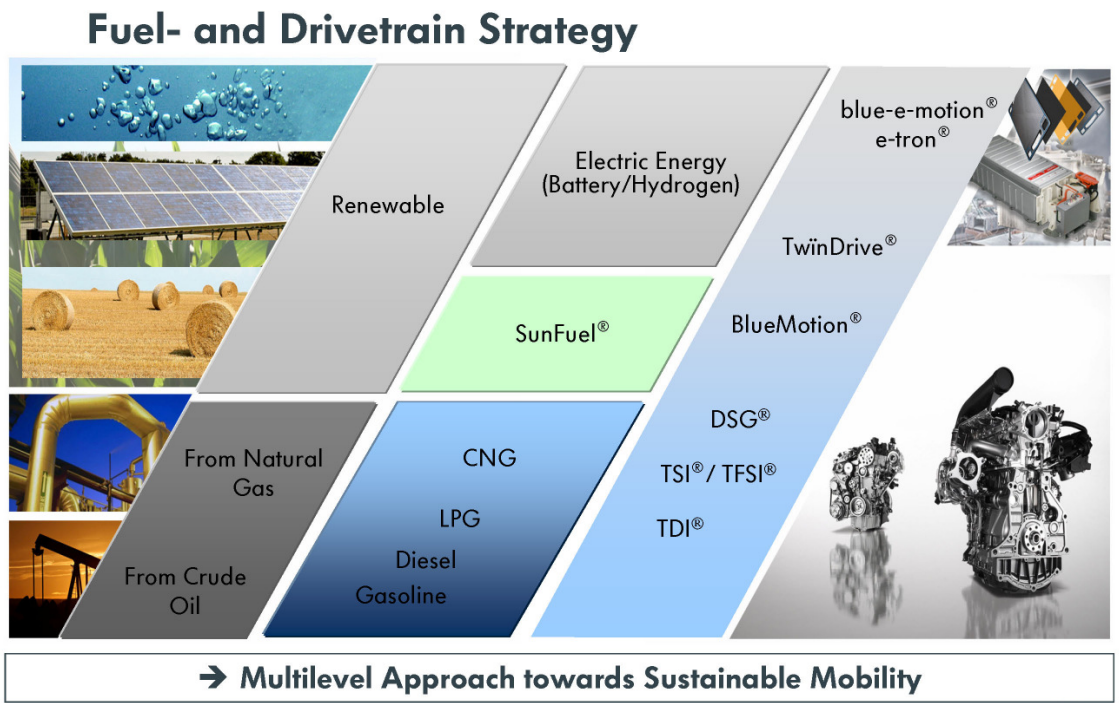

Abb. 3: Fuel- and Drivestrain Strategy

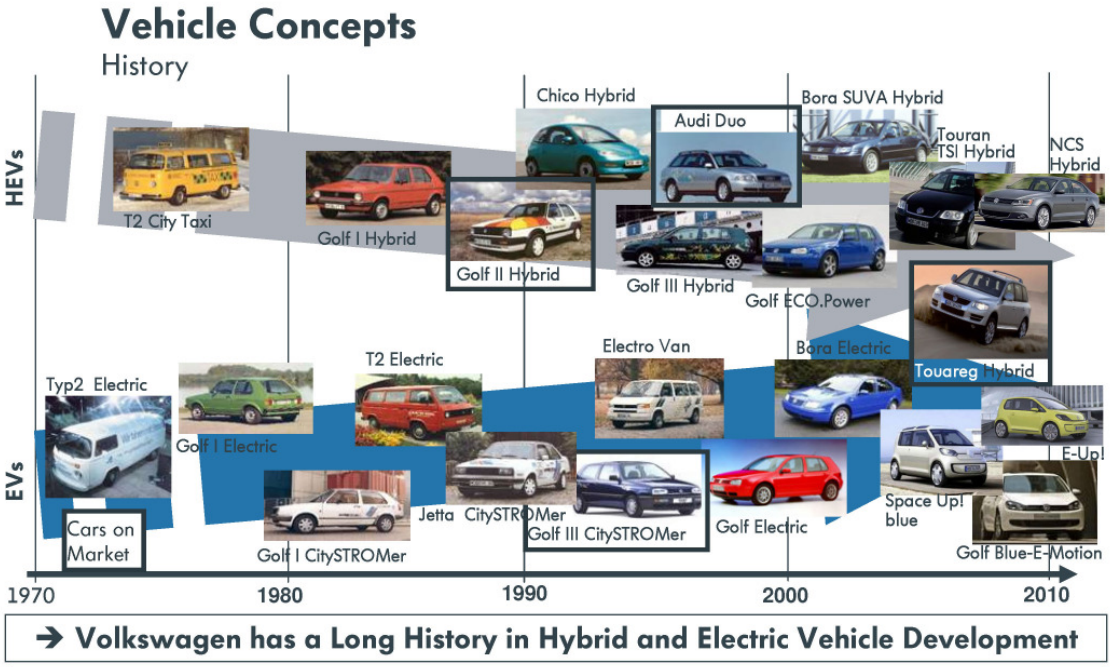

Abb. 4: Vehicle Concepts

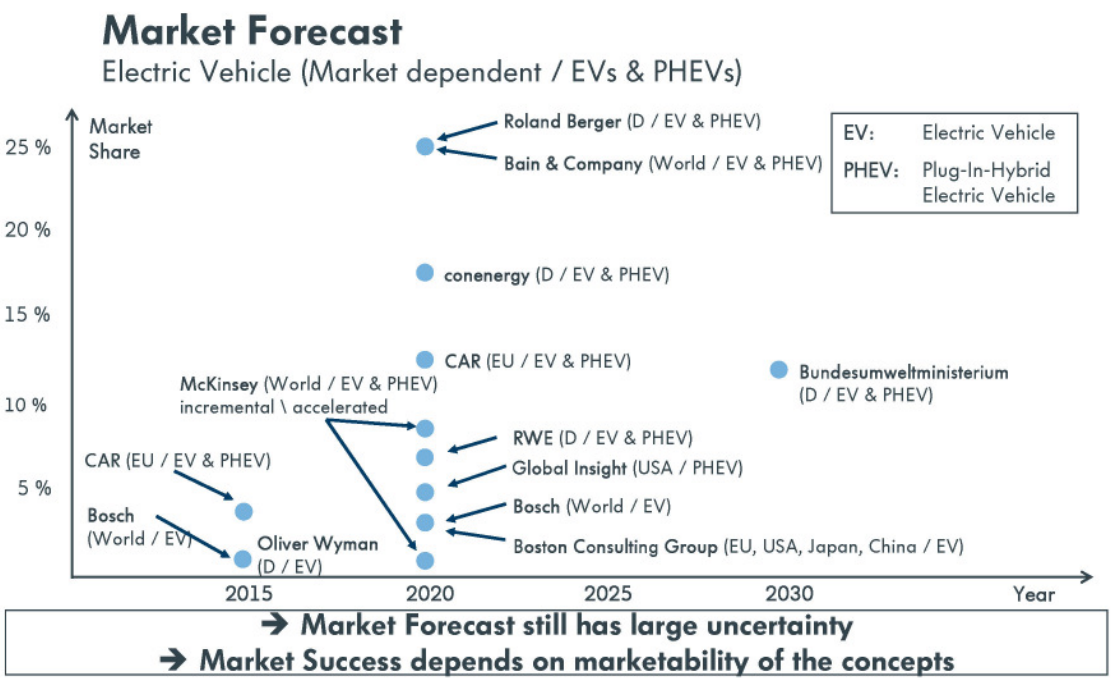

Abb. 5: Market Forecast

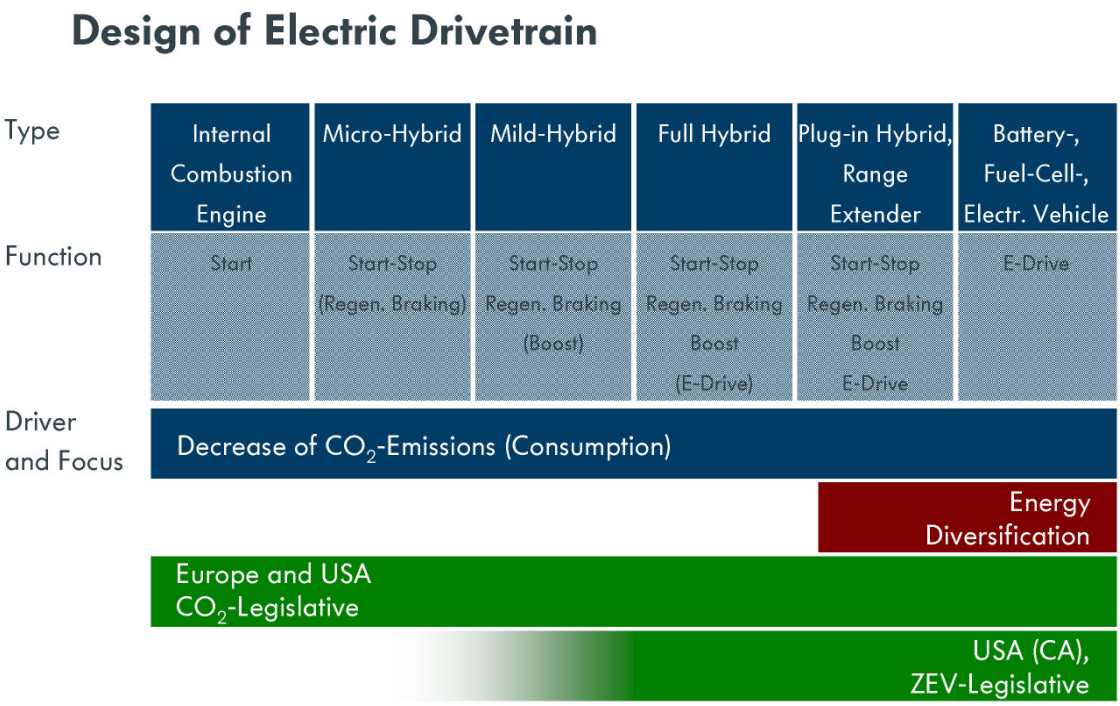

Abb. 6: Design of Electric Drivetrain

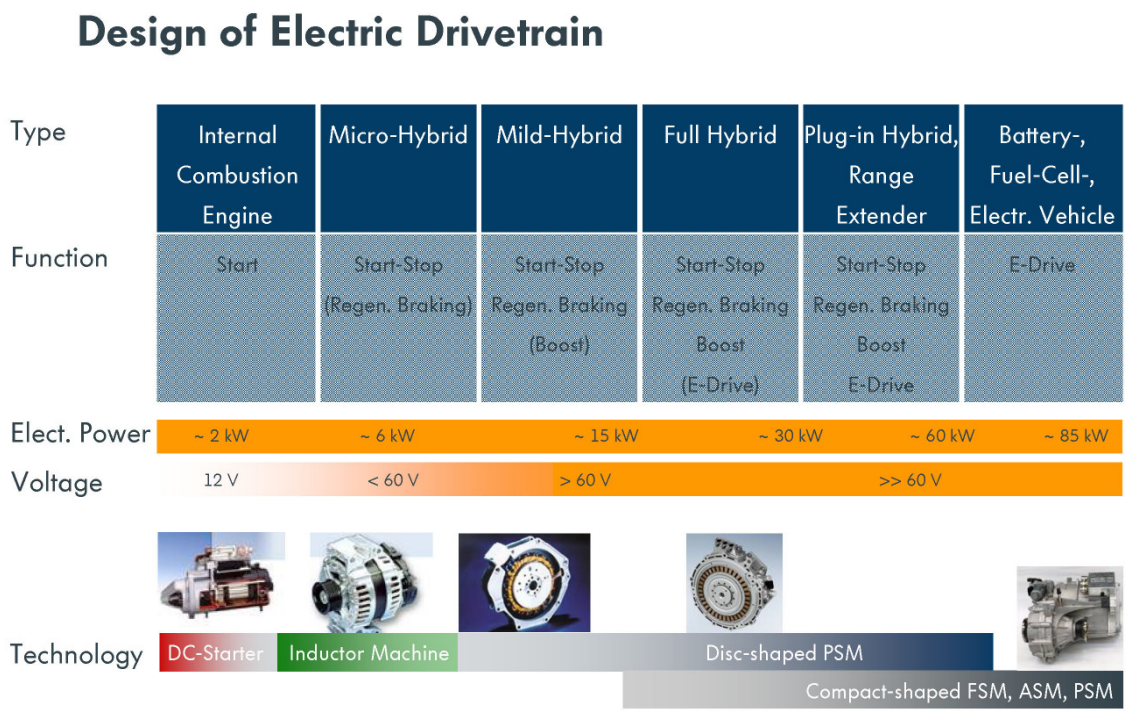

Abb. 7: Design of Electric Drivetrain

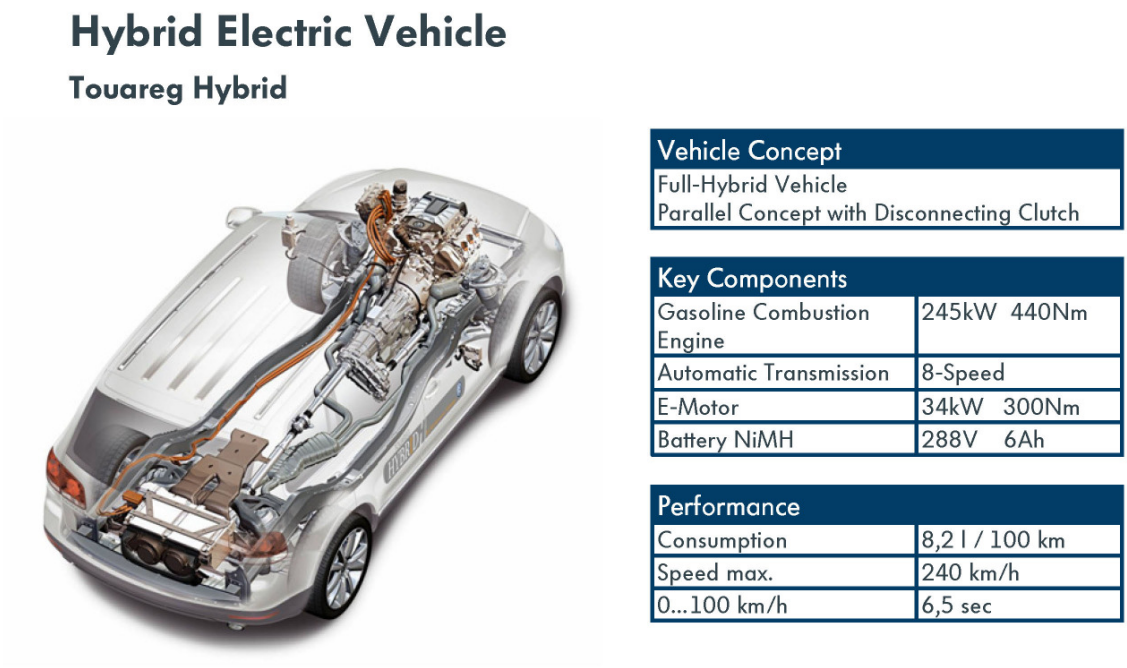

Abb. 8: Hybrid Electric Vehicle

Abb. 9: Hybrid Electric Vehicle

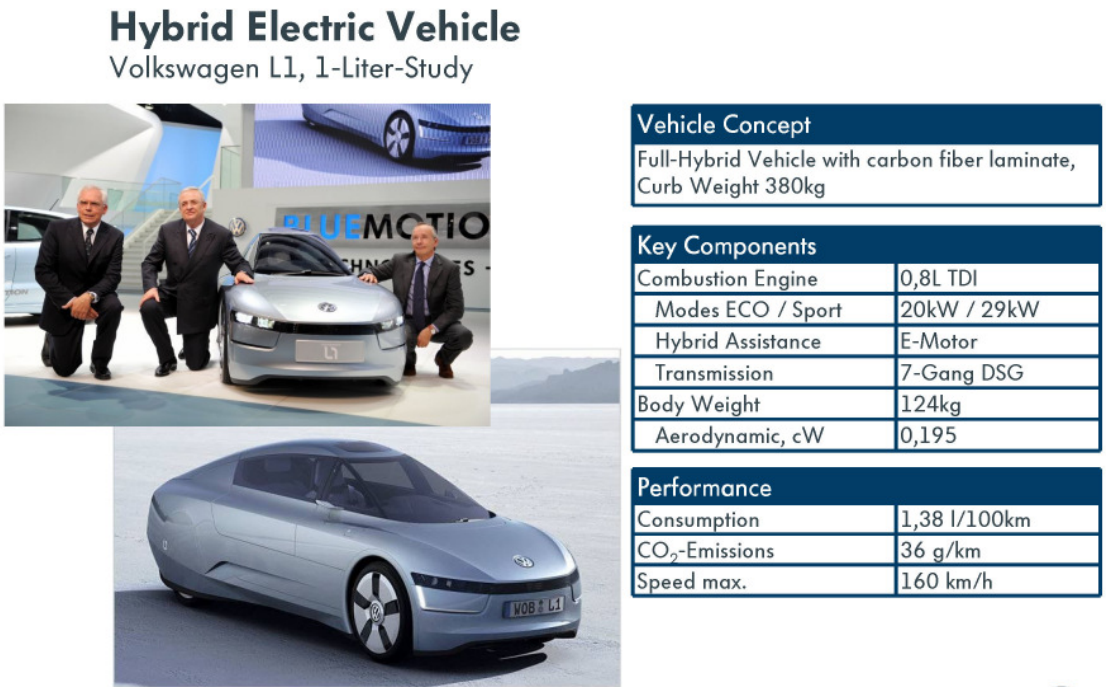

Abb. 10: Hybrid Electric Vehicle

Electric Vehicle

Volkswagen E-Up!

Vehicle Concept
Electric Vehicle with Li-Ion-Battery, Curb Weight 1085kg

Key Components	
Drivetrain	E-Motor
Peakpower	60 kW 210Nm
cont. Power	40 kW
Package	Compact, Integrated
Battery	Li-Ion
Capacity	18kWh

Performance	
Range	130 km
Speed max.	135 km/h
0...100 km/h	11,3 sec

Abb. 11: Electric Vehicle

Electric Vehicle

Volkswagen Golf blue-e-motion

heise AUTOS

„Über den Berg: E-Auto-Rallye im Silvretta“

FINANCIAL TIMES DEUTSCHLAND

„Schnell, leise, sauber„

auto motor und sport

„Das Auto fährt sich grandios“

„Das Aggregat seinerseits unterhält dagegen die Insassen mit der für Elektroautos typischen stürmischen Leistungsentfaltung. „

Auto Bild

„Fazit: Ich will Spaß, ich geb'... Strom! „

Abb. 12: Electric Vehicle

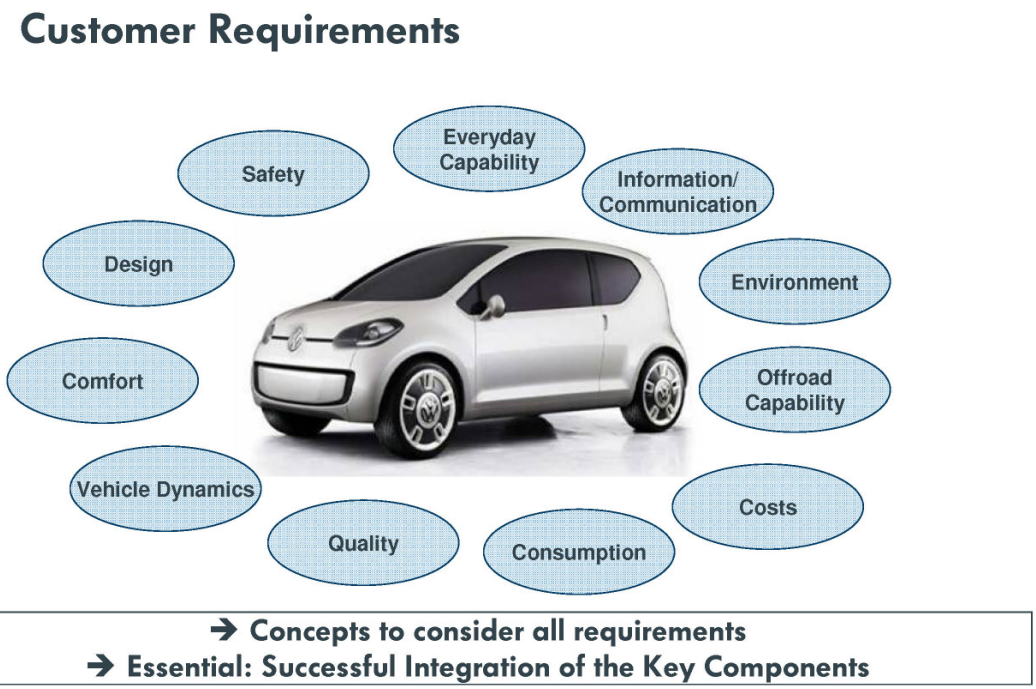

Abb. 13: Costumer Requirements

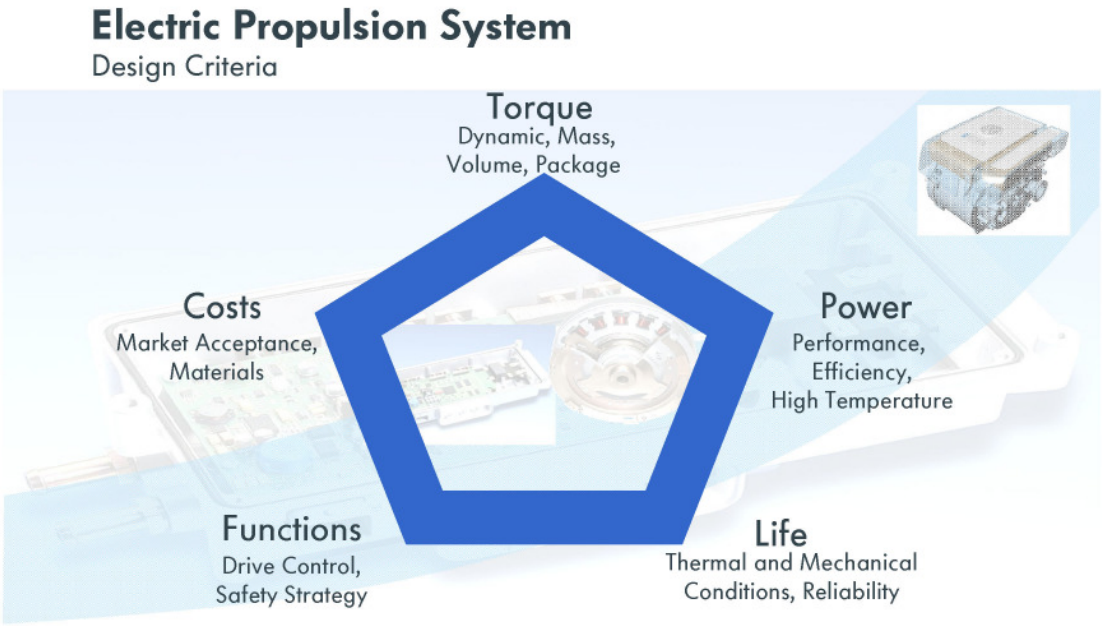

Abb. 14: Electric Propulsion System

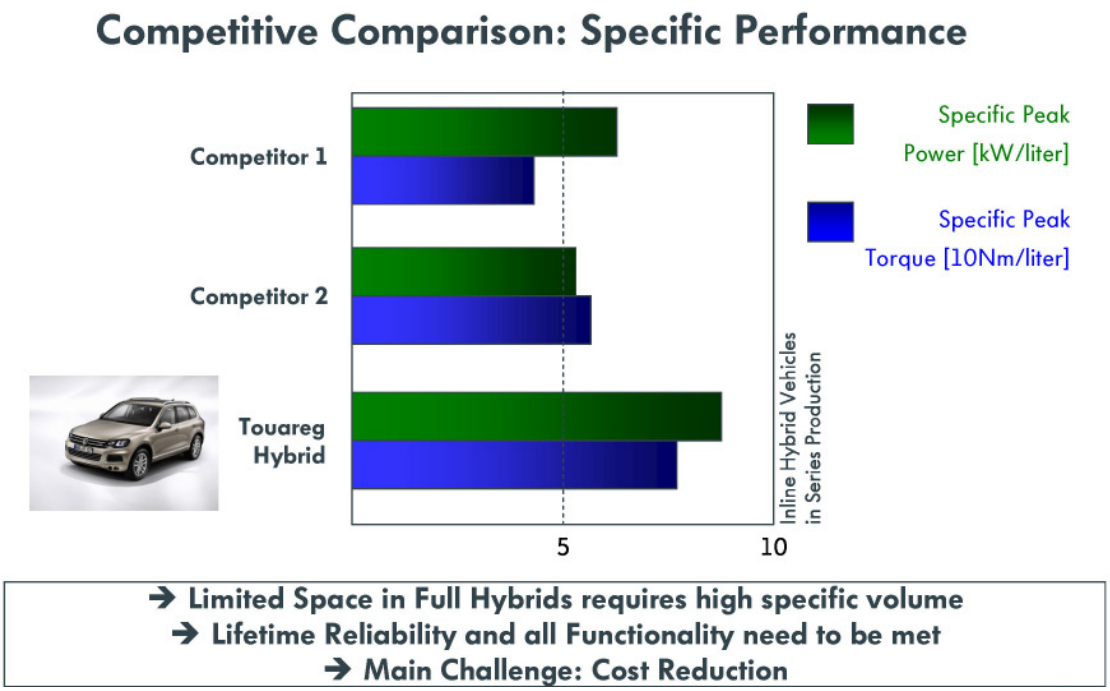

Abb. 15: Competitive Comparison: Specific Performance

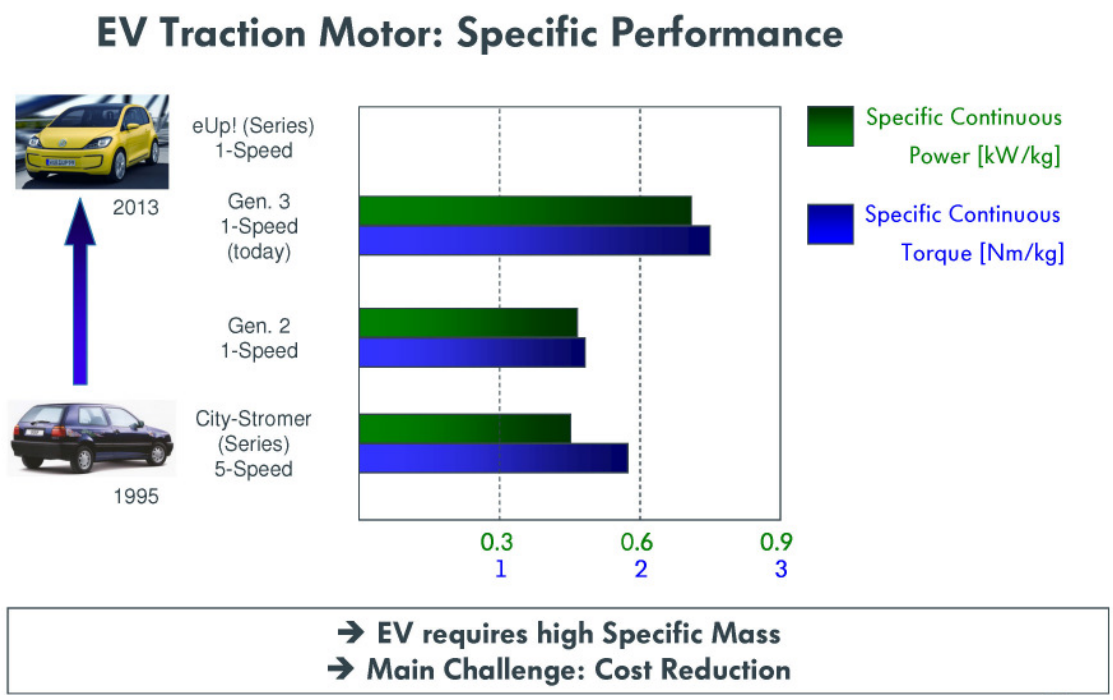

Abb. 16: EV Traction Motor: Specific Performance

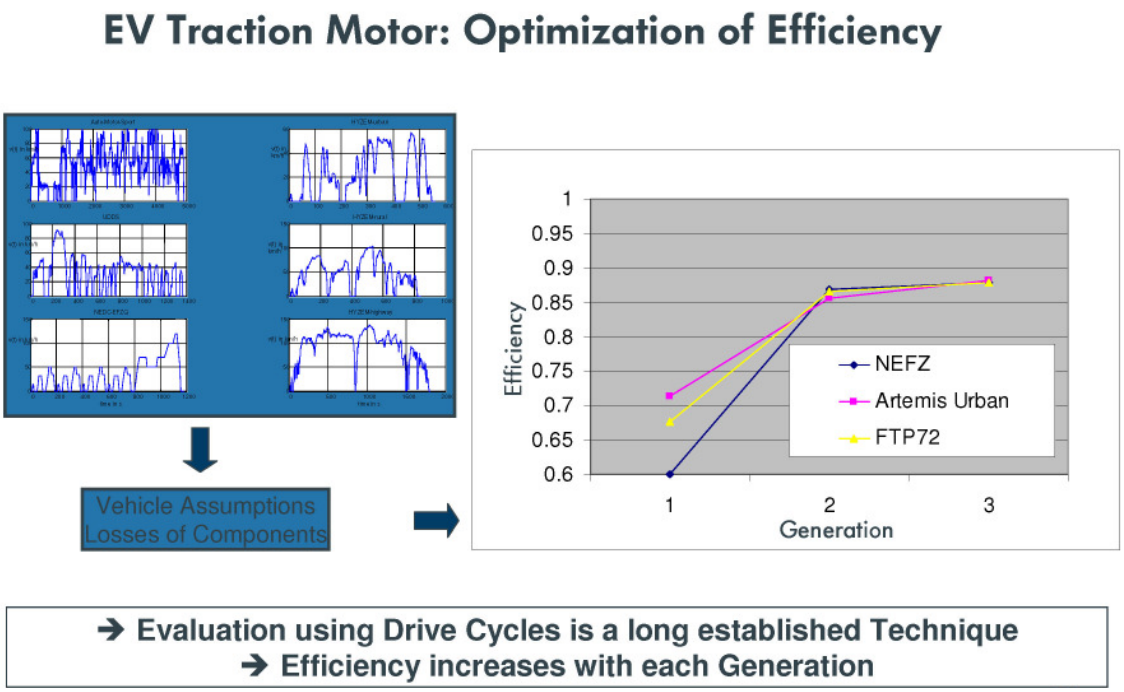

Abb. 17: EV Traction Motor: Optimization of Efficeny

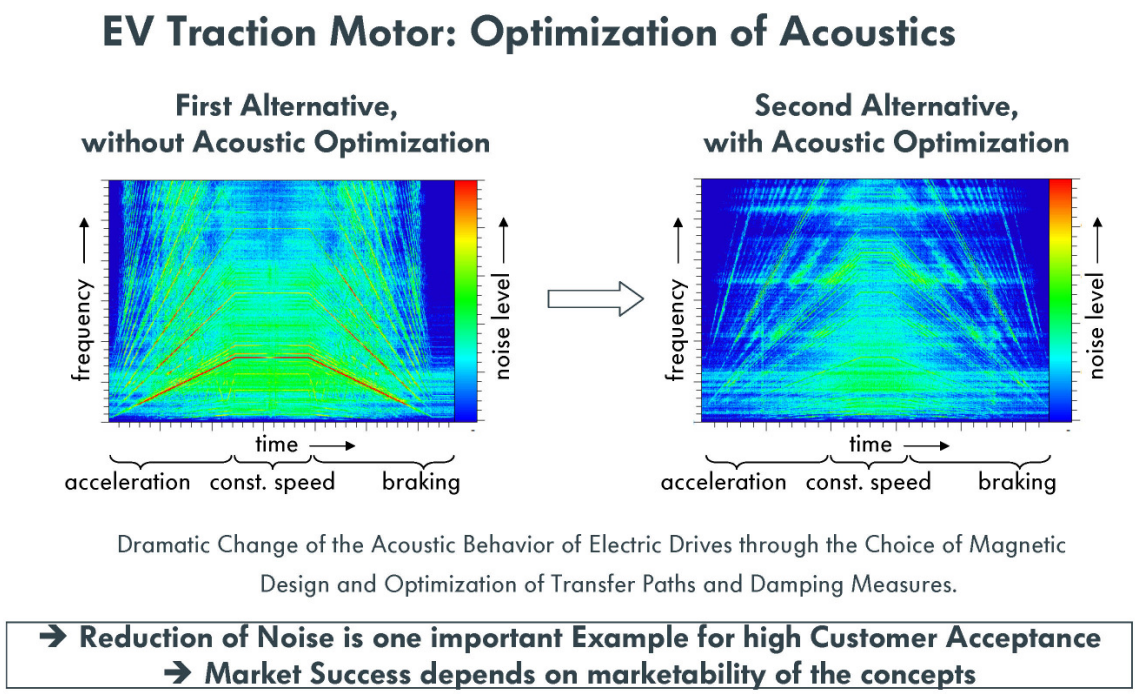

Abb. 18: EV Traction Motor: Optimization of Acoustics

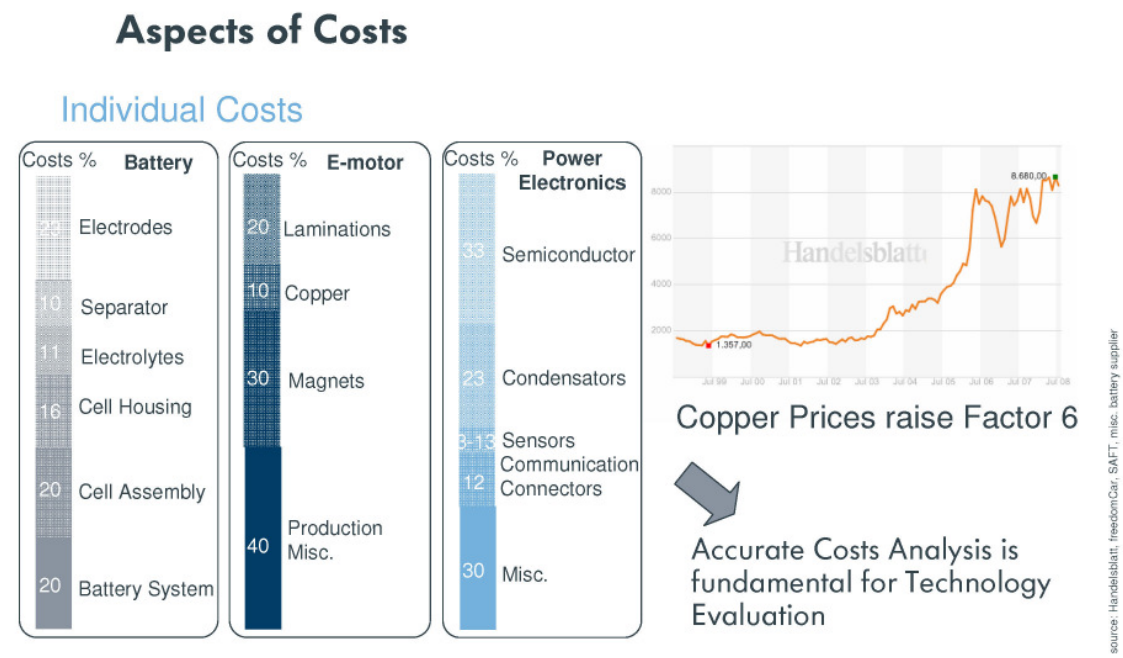

Abb. 19: Aspects of Costs

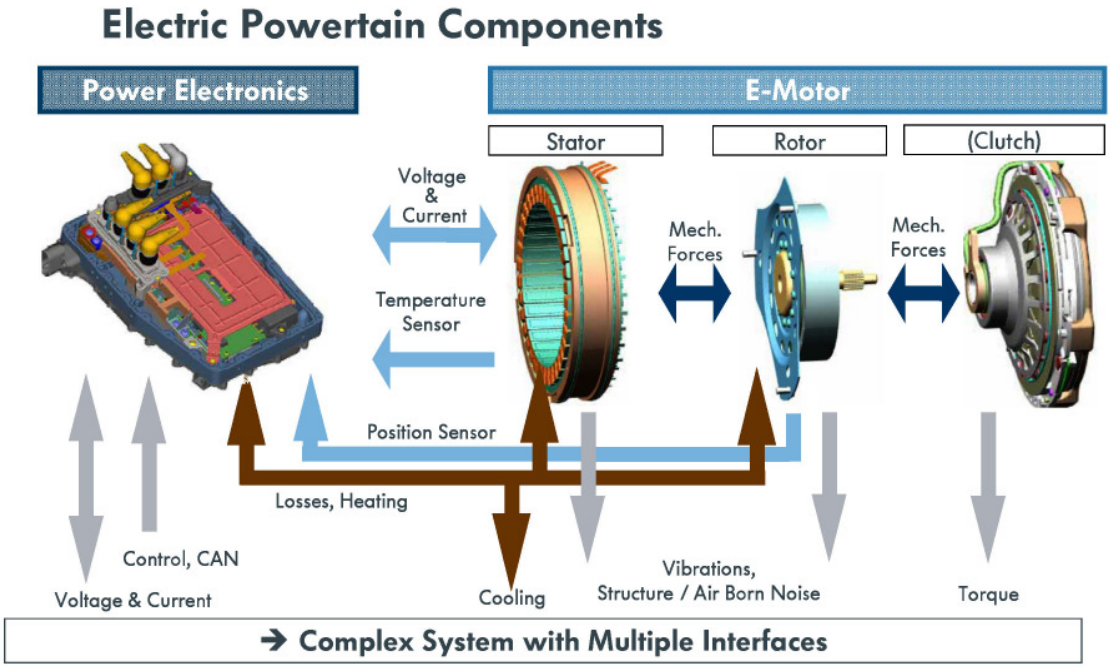

Abb. 20: Electric Powertrain Components

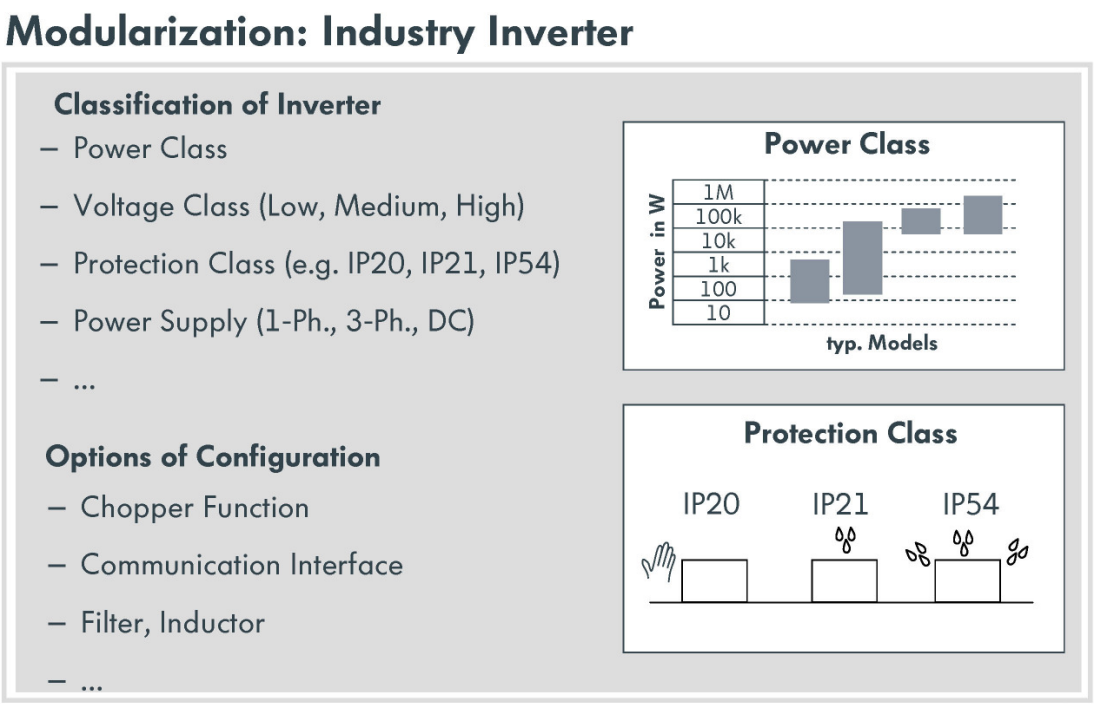

Abb. 21: Modularization: Industry Inverter

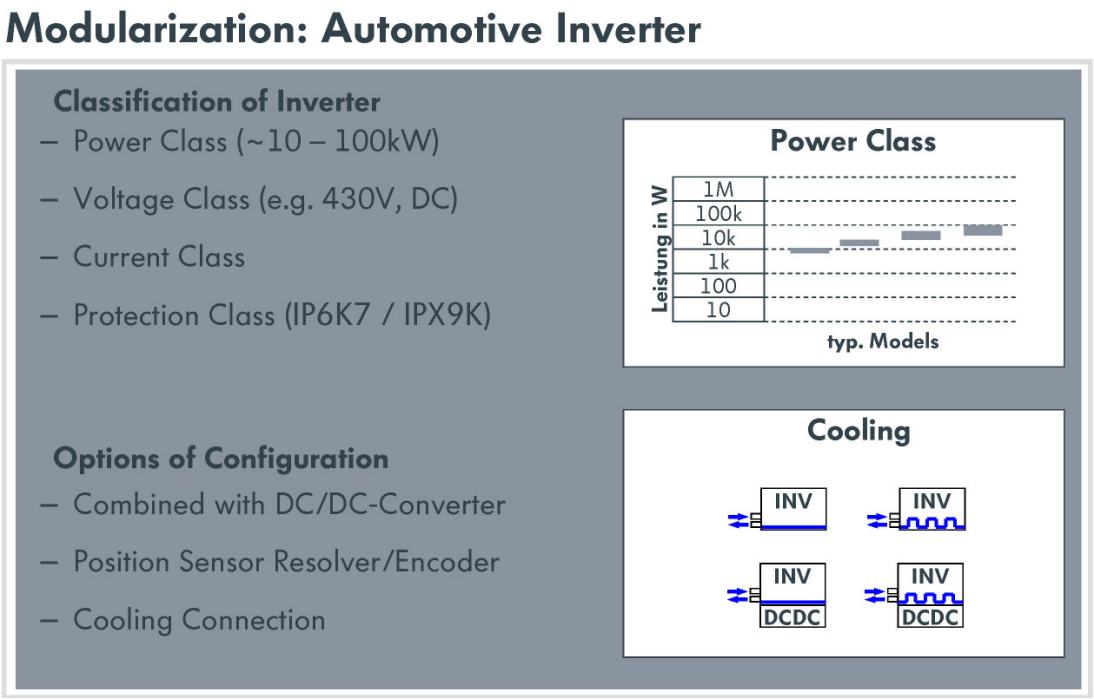

Abb. 22: Modularization: Automotive Inverter

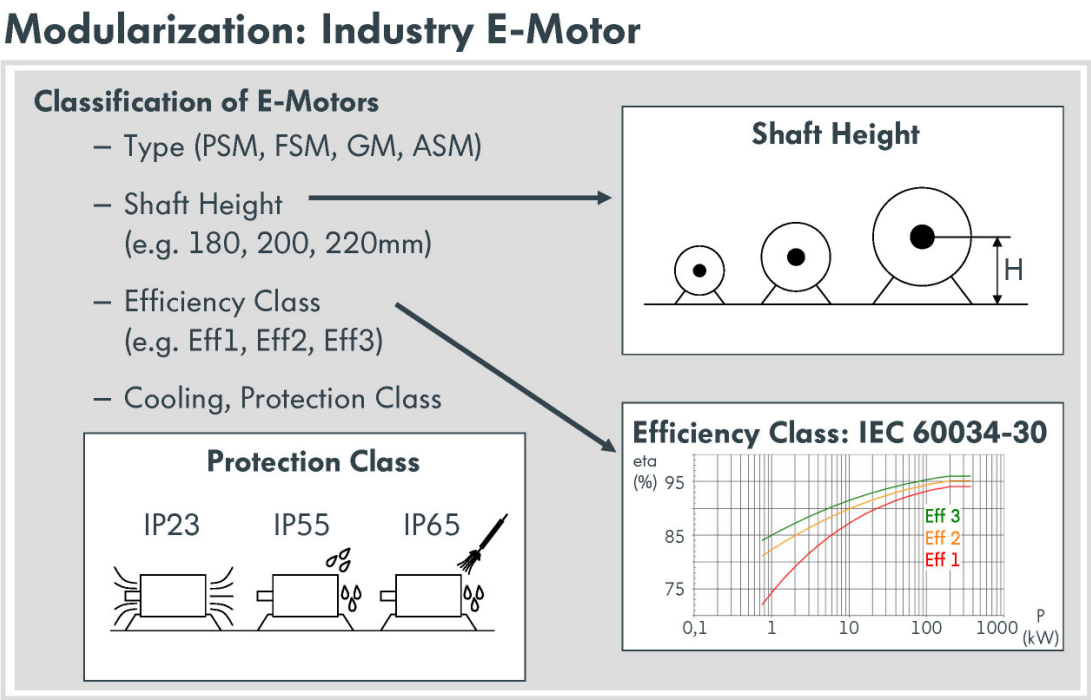

Abb. 23: Modularization: Industry E-Motor

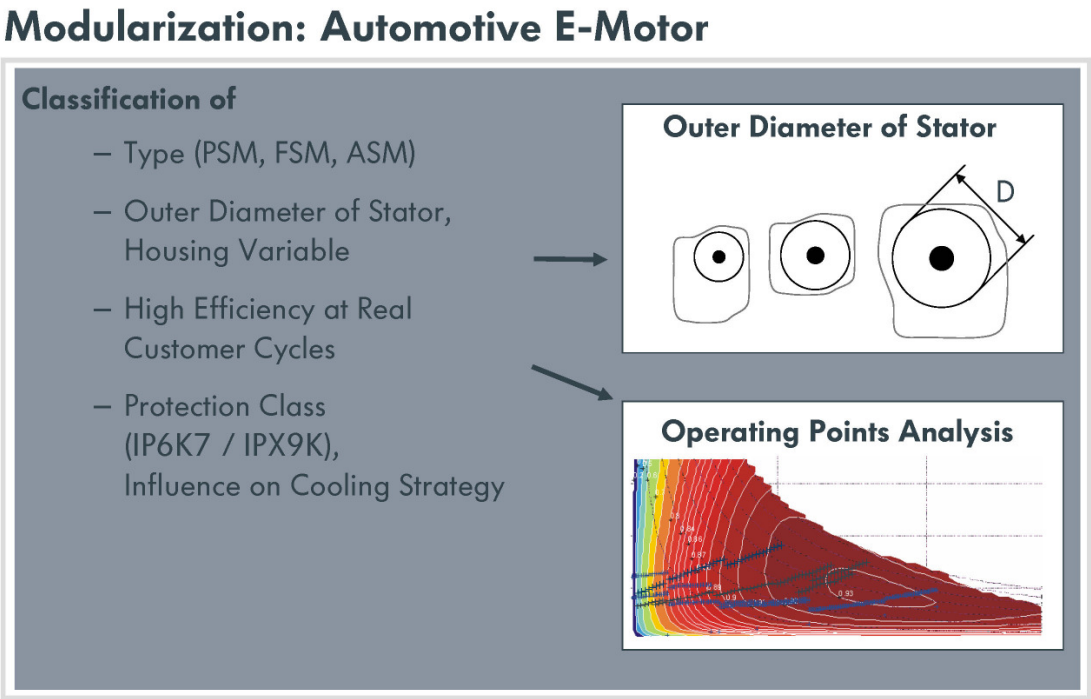

Abb. 24: Modularization: Automotive E-Motor

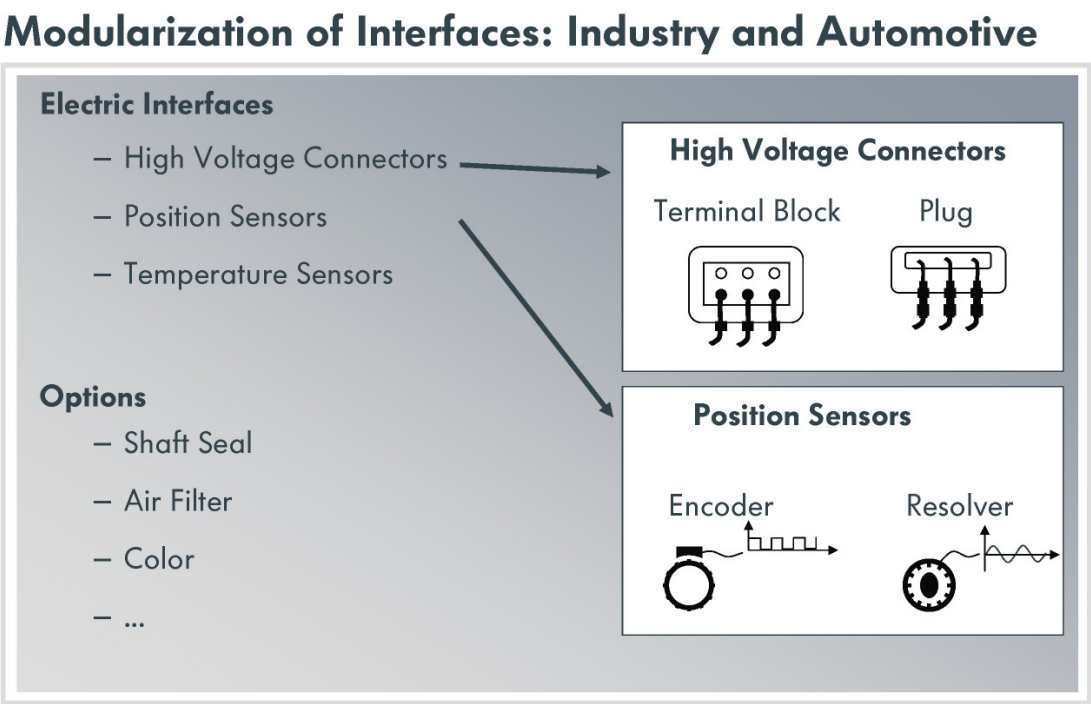

Abb. 25: Modularization of Interfaces: Industry and Automotive

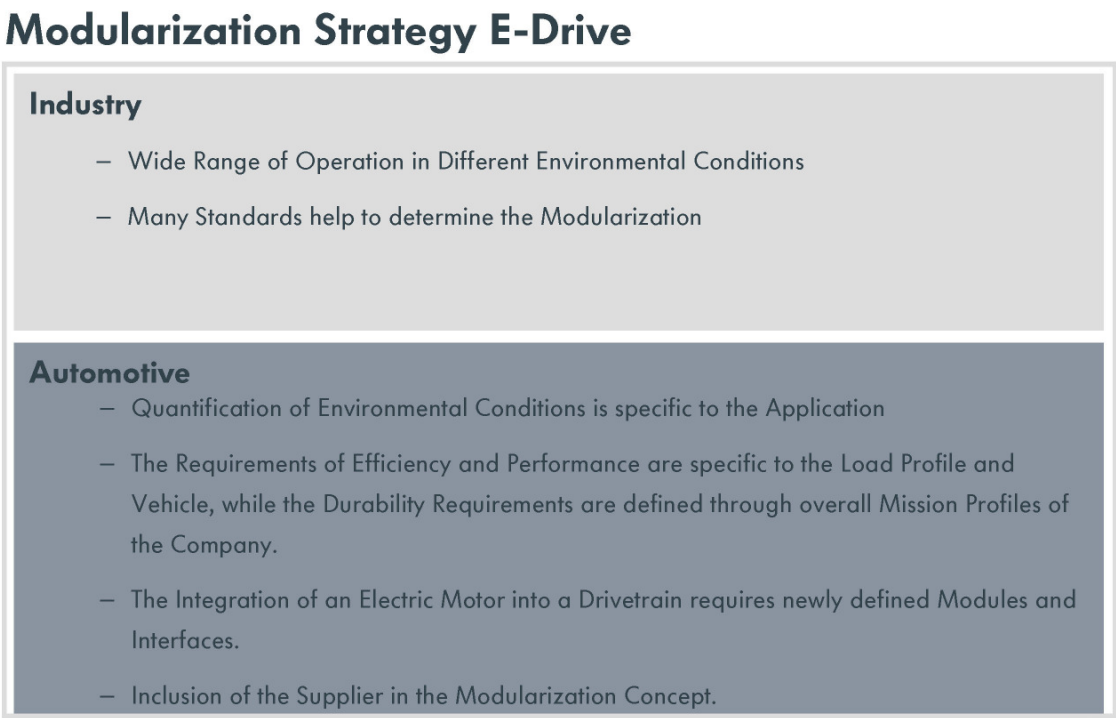

Abb. 26: Modularization Strategy E-Drive

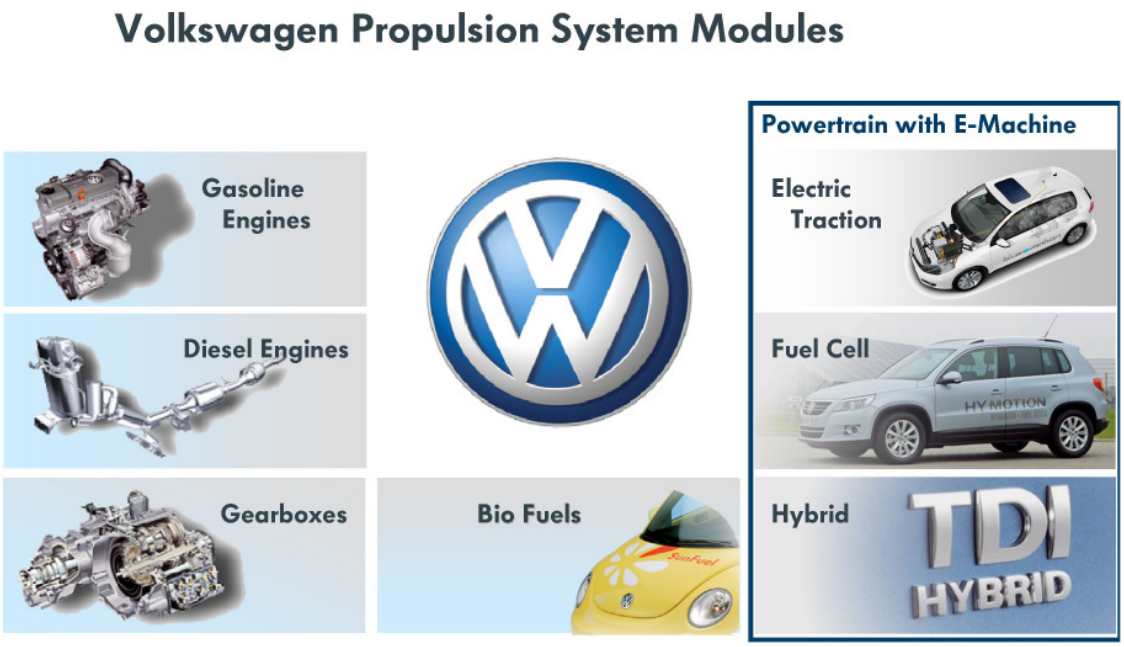

Abb. 27: Volkswagen Propulsion System Modules

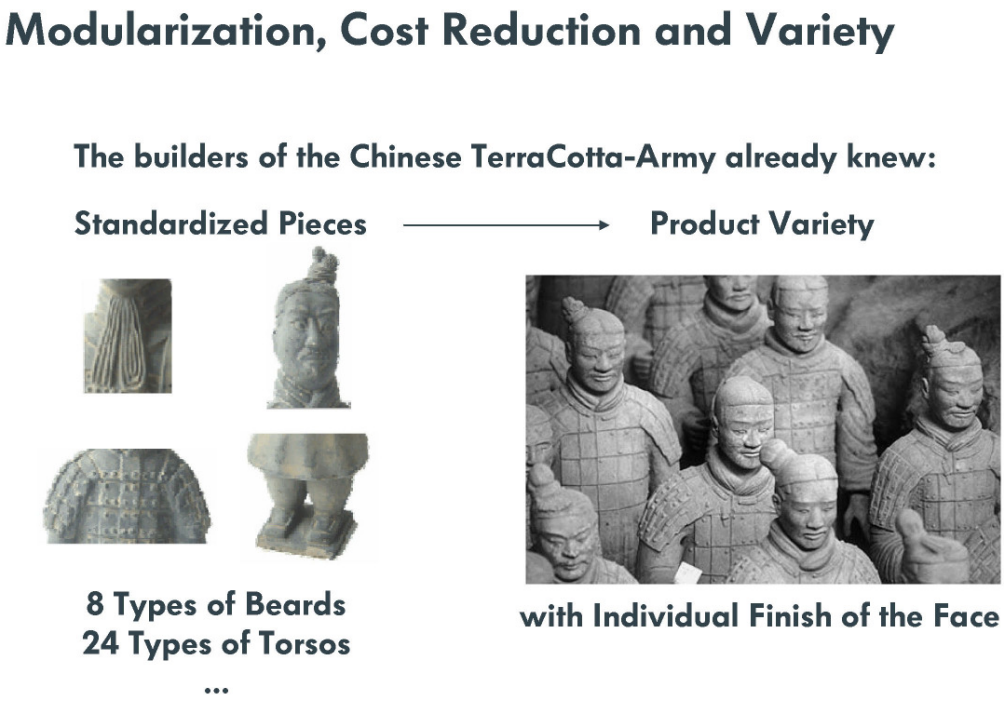

Abb. 28: Modularization, Cost Reduction and Variety

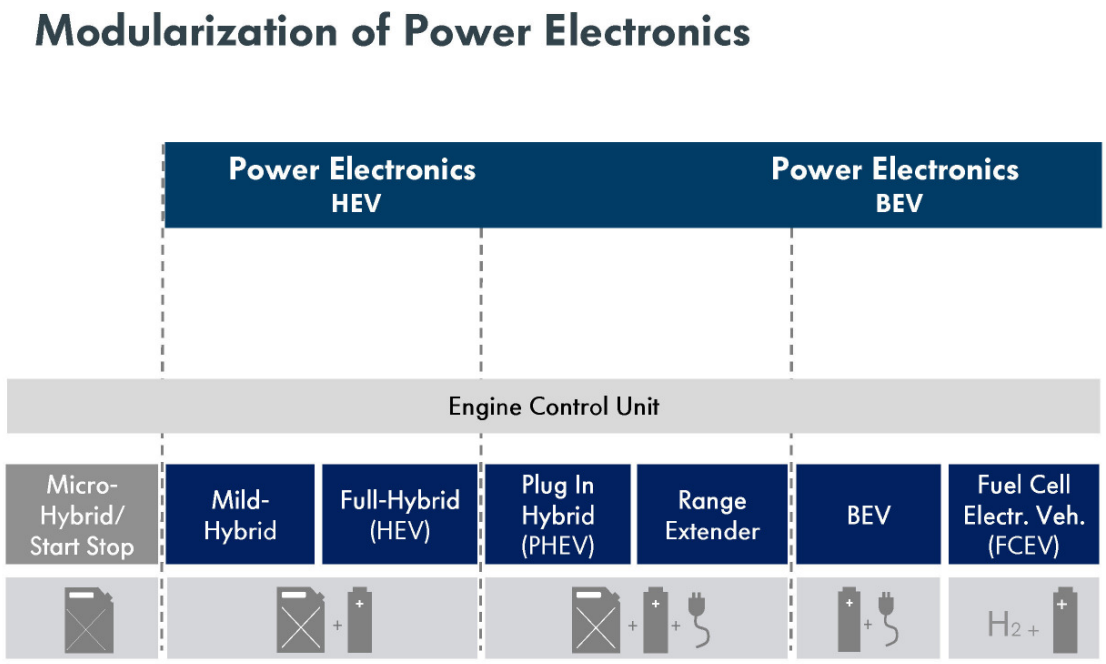

Abb. 29: Modularization of Power Electronics

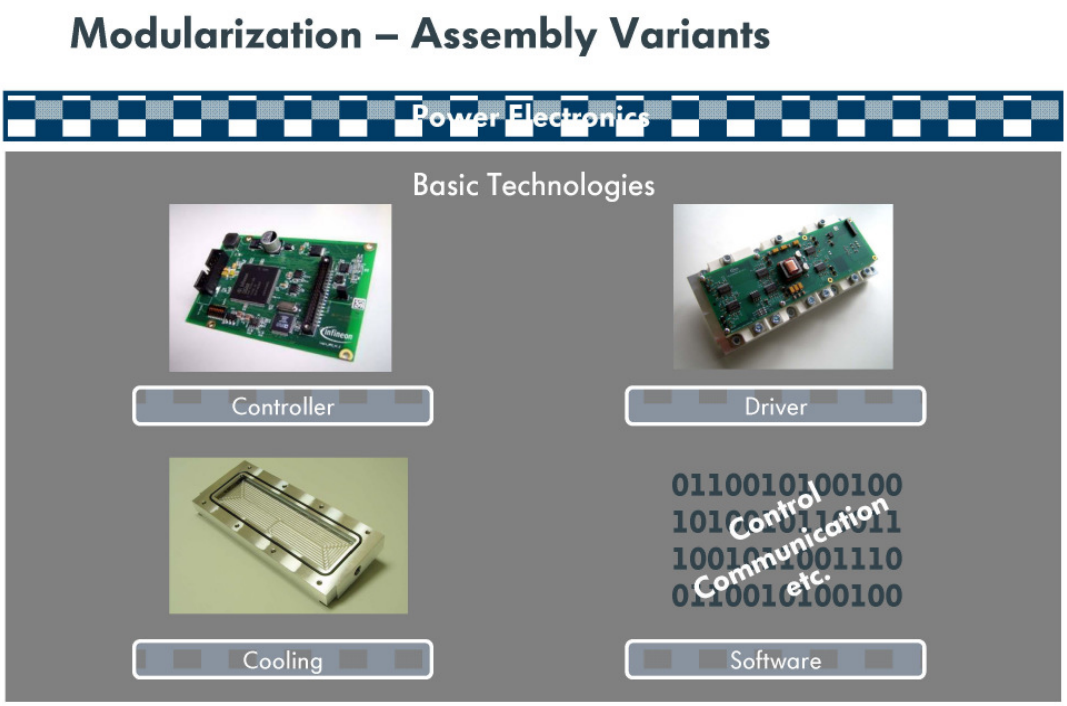

Abb. 30: Modularization – Assembly Variants

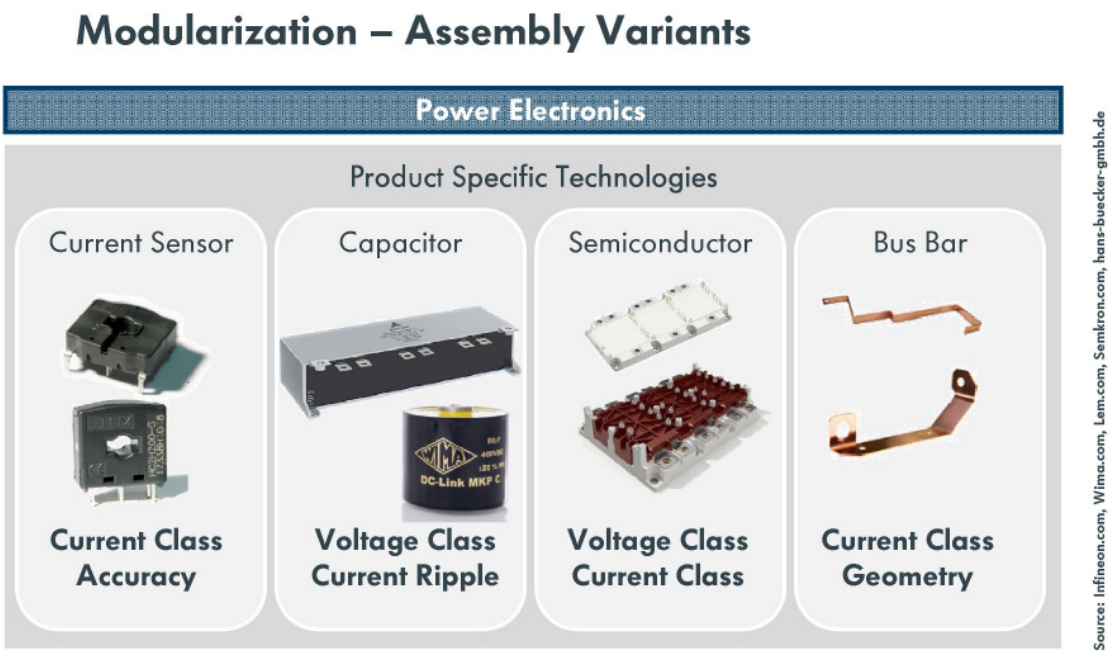

Abb. 31: Modularization – Assembly Variants

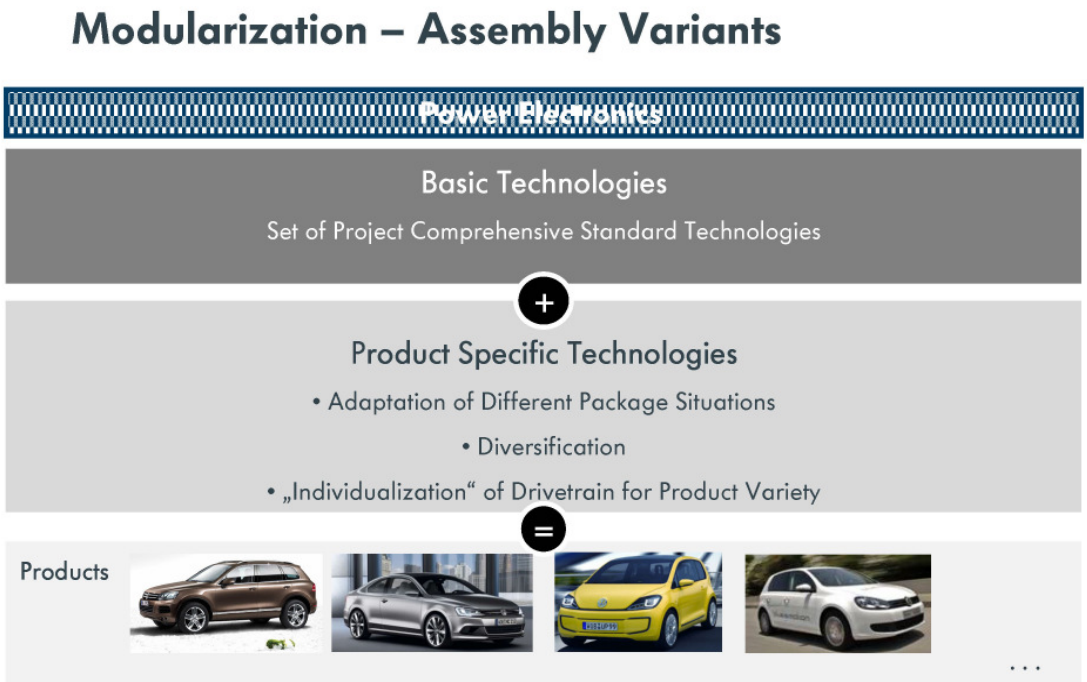

Abb. 32: Modularization – Assembly Variants

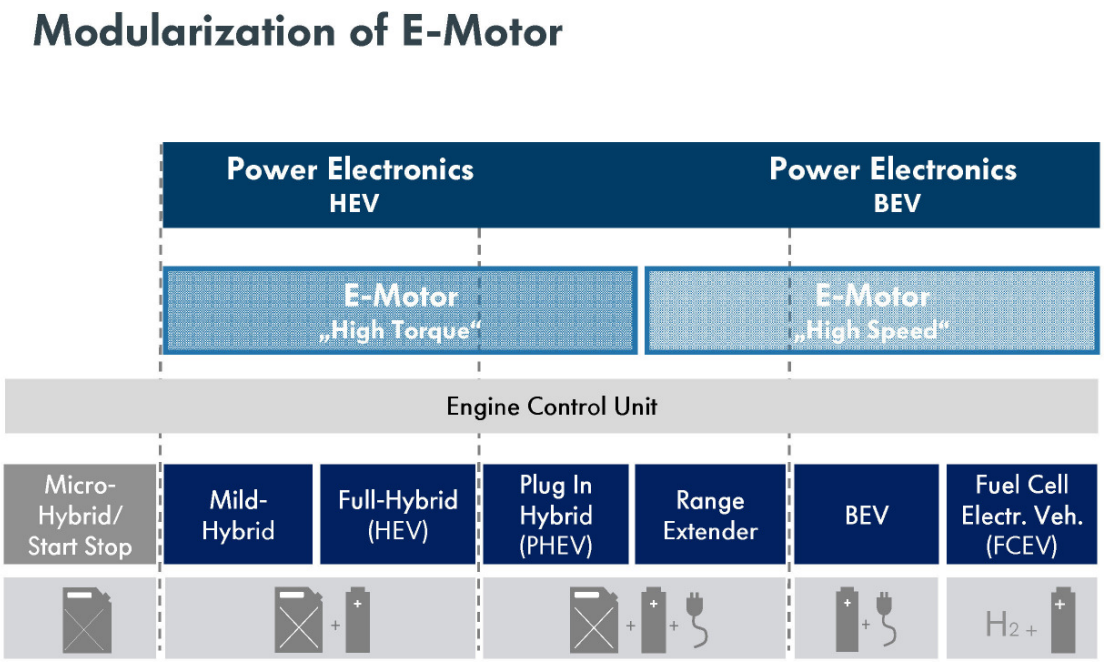

Abb. 33: Modularizationof E-Motor

Abb. 34: Modularization – Assembly Variants

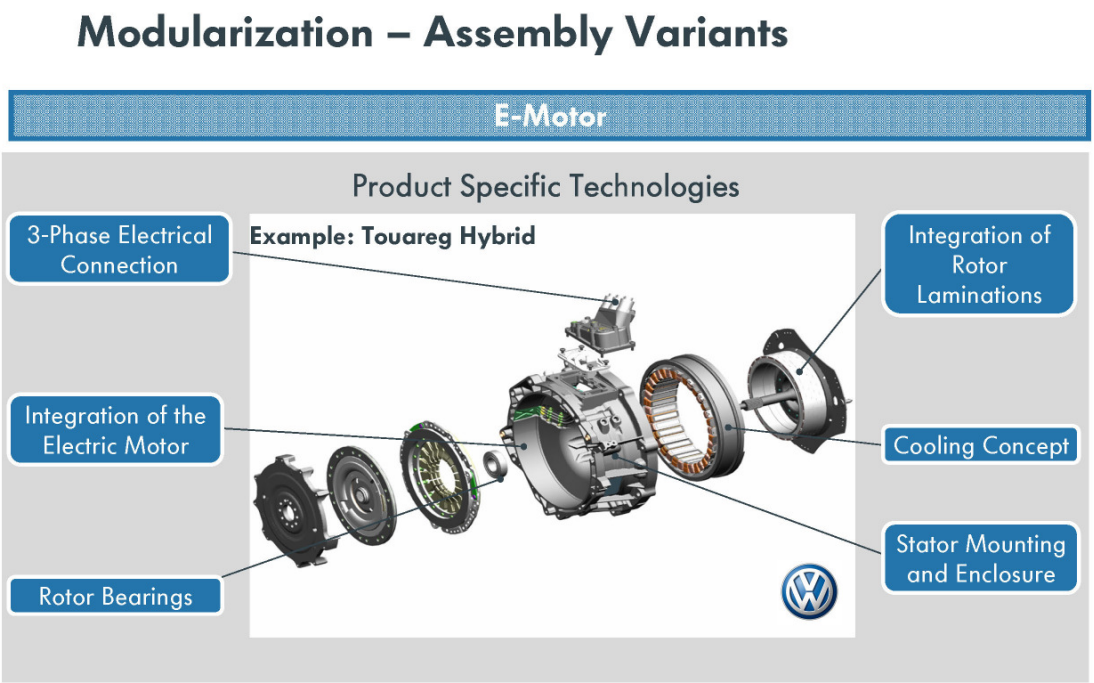

Abb. 35: Modularization – Assembly Variants

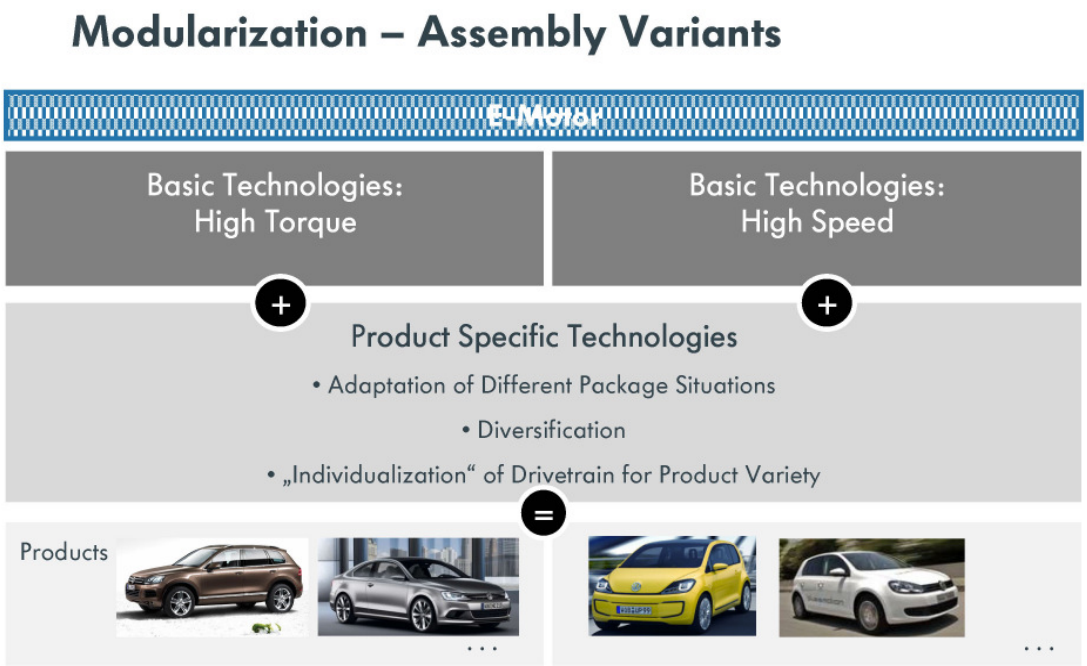

Abb. 36: Modularization – Assembly Variants

Summary

- VW has a long experience in Hybridization und Electrification
- Goal: Affordable and Sustainable Mobility
- Continuous Improvement of Conventional and Alternative Powertrain Components
- Various Differences between Industrial and Vehicle Drive Components are obvious
- Introduction of a Modularization Concept for Power Electronics and E-Motors

Integrated Electric Drive

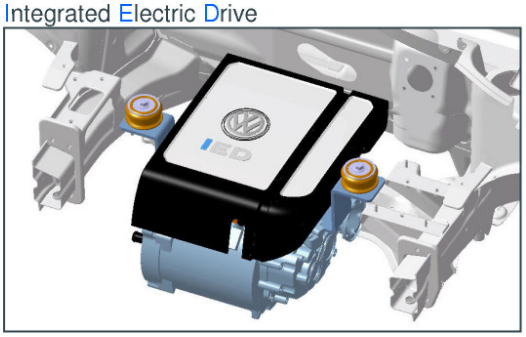

Abb. 37: Summary

Specials

We want you!

Get your EV-driving experience here!

Take a Test Drive during the 19th Aachener Colloquium!

Abb. 38: Specials

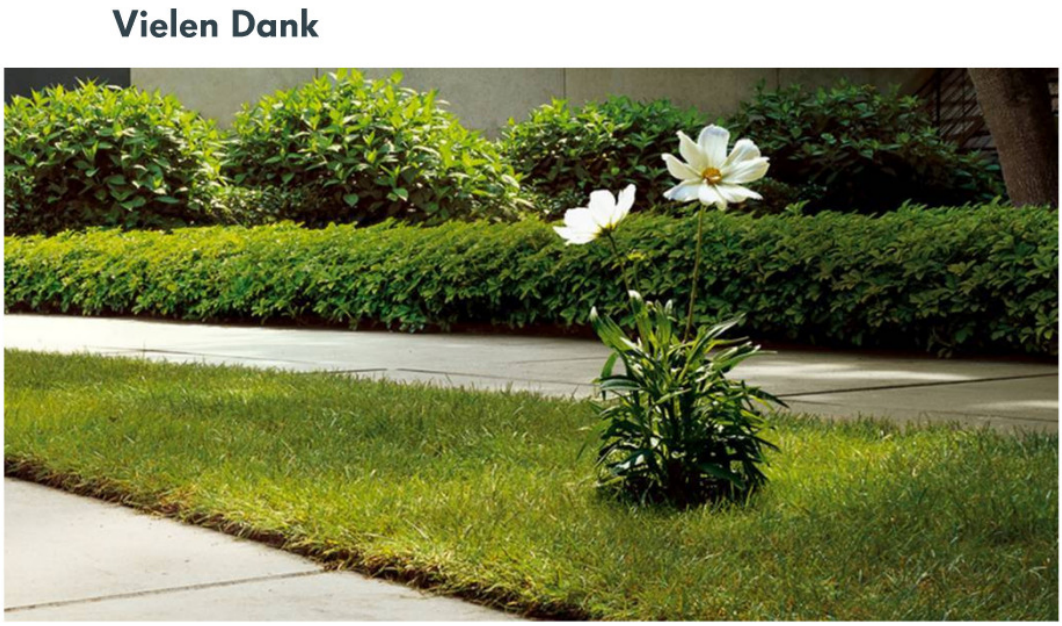

Abb. 39: Vielen Dank