

Precision
Performance
Power



motion control

Power Generation Systems

Electric Powertrain Solutions for HEV and BEV

Since 2006, WITTENSTEIN has set benchmarks in power-to-weight ratio, efficiency and intelligence for powertrains of electric and hybrid vehicles. Our unique engineering solutions and serial products are a perfect fit for space-restricted applications with small serial quantities. WITTENSTEIN is your global partner for highly customized solutions from a few hundred to 10,000 vehicles per year.



Technical Data

Motor

| | Prototype Platform | Customized Solution Range |
|--|--|--|
| Available solutions | Broad portfolio available upon request | Frameless Cartridge Fully housed |
| Stator outer diameter | | Up to 500mm |
| Active part length | | Up to 500mm |
| Voltage | | 48 - 1,000 V _{DC} |
| Current (peak) | | Up to 1,000 A |
| Power (peak) | | Up to 900 kW |
| Speed | | Up to 200,000 rpm (E-Turbo) |
| IP protection class | | Up to IP69K |
| Special options | | Direct in-slot oil cooling High sophisticated material selections |
| Customized design available We customize up to 100% of the electric motor design for the best possible integration into existing package requirements. | | |

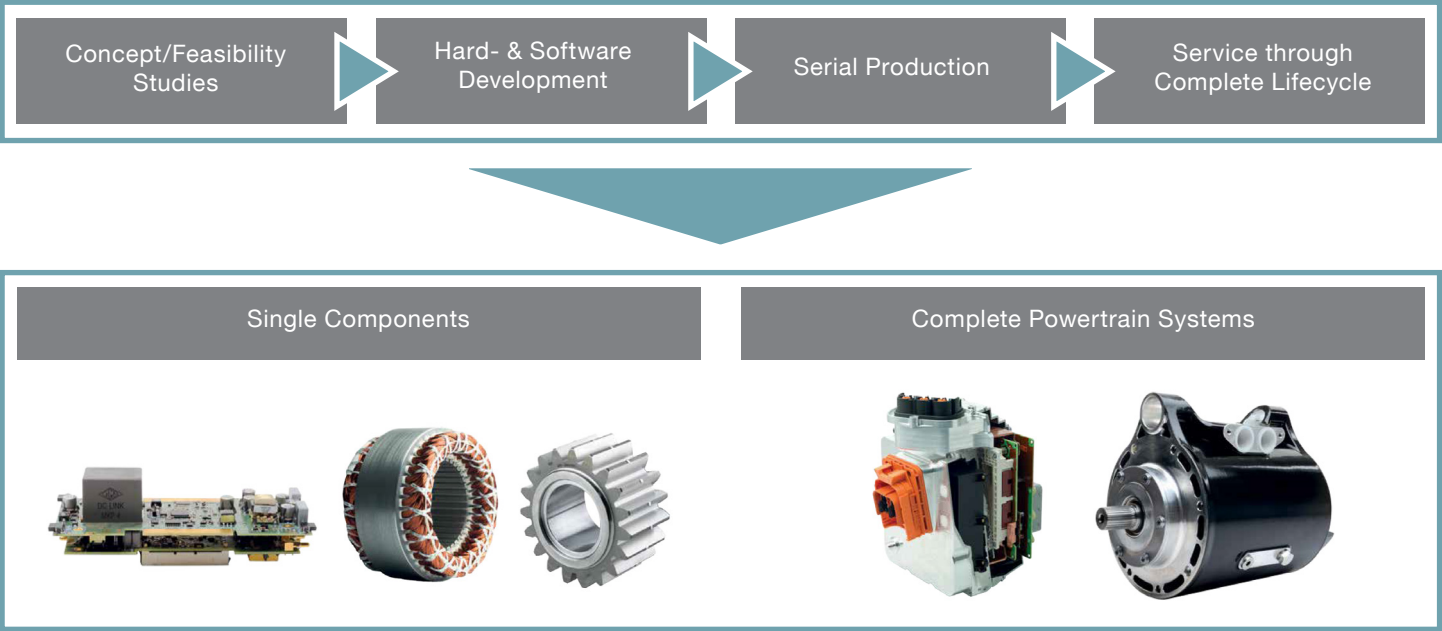
Inverter

| | Prototype Platform | Customized Solution Range |
|-------------------------|---|-----------------------------------|
| Power | Up to 250 kW | 5 - 300 kW (more upon request) |
| Voltage | 100 - 400 V _{DC} or 400 - 800 V _{DC} | 48 - 1,000 V _{DC} |
| Current | UP to 500 A _{eff} | Up to 1,000 A |
| IP protection class | Up to IP67 | Up to IP69k |
| Switching frequency | Up to 48 kHz | |
| Communication interface | CAN Open, CAN J 1939 (others upon request) | |
| Special options | HF & back-EMF sensorless control EMC filter integration Maximum torque at standstill SiC power module technology | |



Put us to the test - we provide an electronic powertrain solution that is 100% tailor-made to your requirements. Small serial quantities from a few hundred up to 10,000 vehicles are a perfect

fit for WITTENSTEIN. Our innovation consistently sets new industry benchmarks, which ensures our customers' success today and for the future.



Electric Motors

| | Radial flux | | Axial flux | |
|---------------------|--|--------------------------------------|--------------------------------------|-------------------------------------|
| Stator / rotor size | Ø: 150mm L: 140mm Weight: 8kg | Ø: 180mm L: 200mm Weight: 18kg | Ø: 220mm L: 280mm Weight: 41kg | Ø: 210mm L: 50mm Weight: 14kg |
| Performance (peak) | 70 kW 100 Nm 10,000 rpm | 120 kW 200 Nm 14,000 rpm | 190 kW 300 Nm 12,000 rpm | 110 kW 200 Nm 7,800 rpm |
| Special options | Delivery scope with/without housing, High speed design up to 25,000 rpm (Traction) and 200,000 rpm (E-Turbo) available, Cobalt Iron laminated core | | | |

Inverters

| | POWER-IQ 150 | POWER-IQ 250 | Customized |
|---------------------|--|---------------------------|----------------------------|
| Power | 150 kW | 250 kW | 5 - 300 kW |
| Voltage | 100 - 400 V _{DC} | 400 - 800 V _{DC} | 48 - 1,200 V _{DC} |
| Current | Up to 500 A | Up to 300 A | Up to 1,000 A |
| Switching frequency | 16 kHz | 16 kHz | Up to 48 kHz |
| Special options | HF & back-EMF sensorless control, EMC filter integration, Maximum torque at standstill, SiC power module technology | | |

Our North American headquarters in Bartlett, Illinois houses our executive, sales, engineering and technical support teams, as well as our Technical Center for machining, assembly, testing, service and inventory of products. We locally produce 75% of the products we offer, while continuing to add to our local production portfolio. Our Midwest U.S. location puts product, expertise and quality within easy reach for our customers in North America. You can always contact WITTENSTEIN motion control for assistance with technical, design or application-specific questions.



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