

A close-up, artistic photograph of an electric motor's internal components. The image shows a series of grey, rectangular stator slots arranged in a circular pattern. Interspersed among these slots are thick, braided copper wires, which are the motor's windings. The lighting is warm and focused, highlighting the texture of the copper and the precision of the 3D-printed stator. The background is blurred, emphasizing the mechanical details in the foreground.

Additive Drives New e-RA of e-Drives

Additive Drives – world market leader for
3D-printed electric motors.

About Additive Drives

Location Dresden

- > Founded July 2020
- > Top3 Tech Companies Germany
- > 65 employees
- > High Performance eDrives



Customers



AIRBUS



DENSO

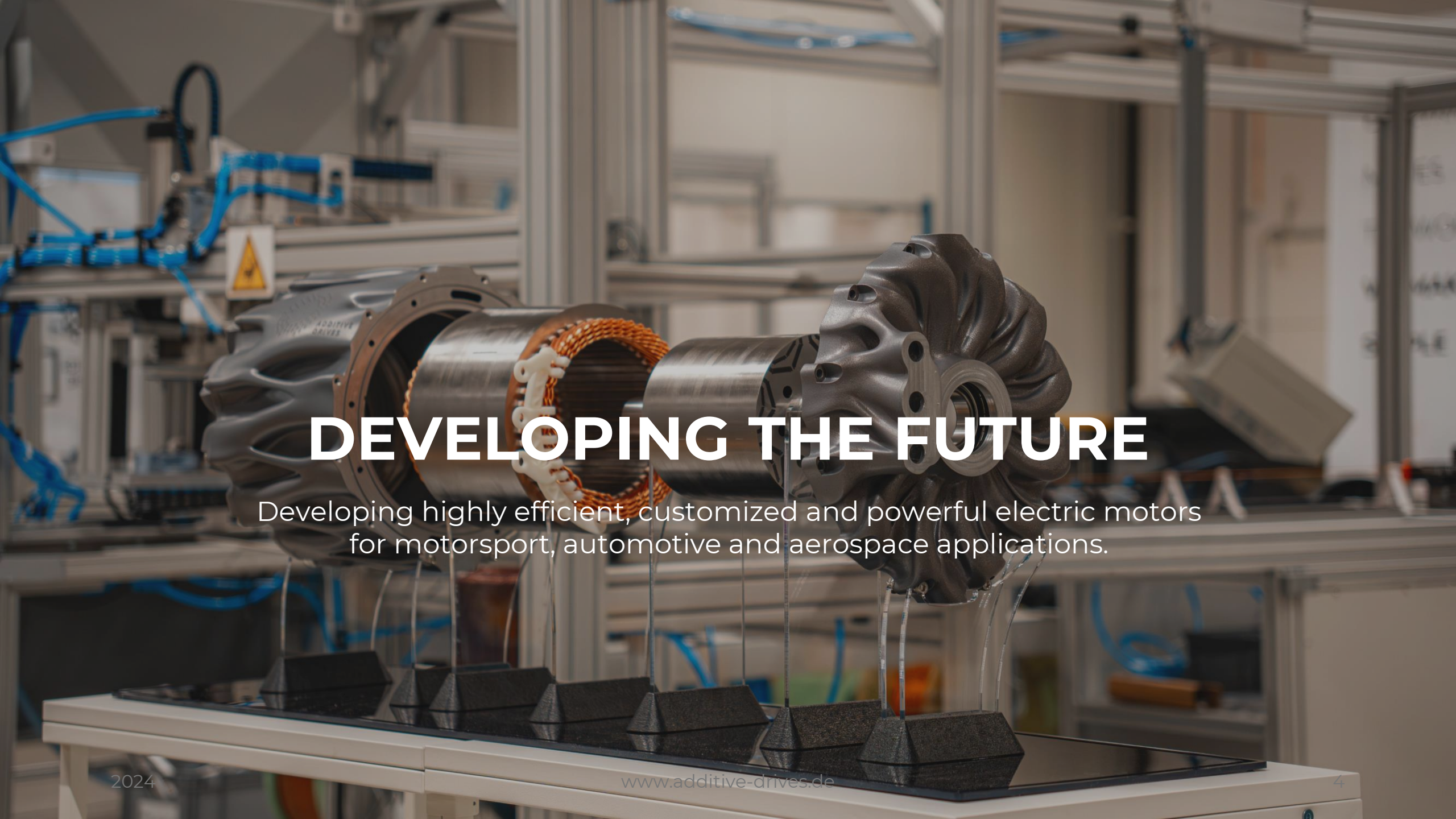


SCHAEFFLER



ABB





DEVELOPING THE FUTURE

Developing highly efficient, customized and powerful electric motors for motorsport, automotive and aerospace applications.

Value proposition

Fastest Prototyping in the world

- Patented manufacturing technology
- Targeted use of 3D printing
- no high one-off costs
- Delivery time of 4 weeks



Value proposition

Developing Electric Motors

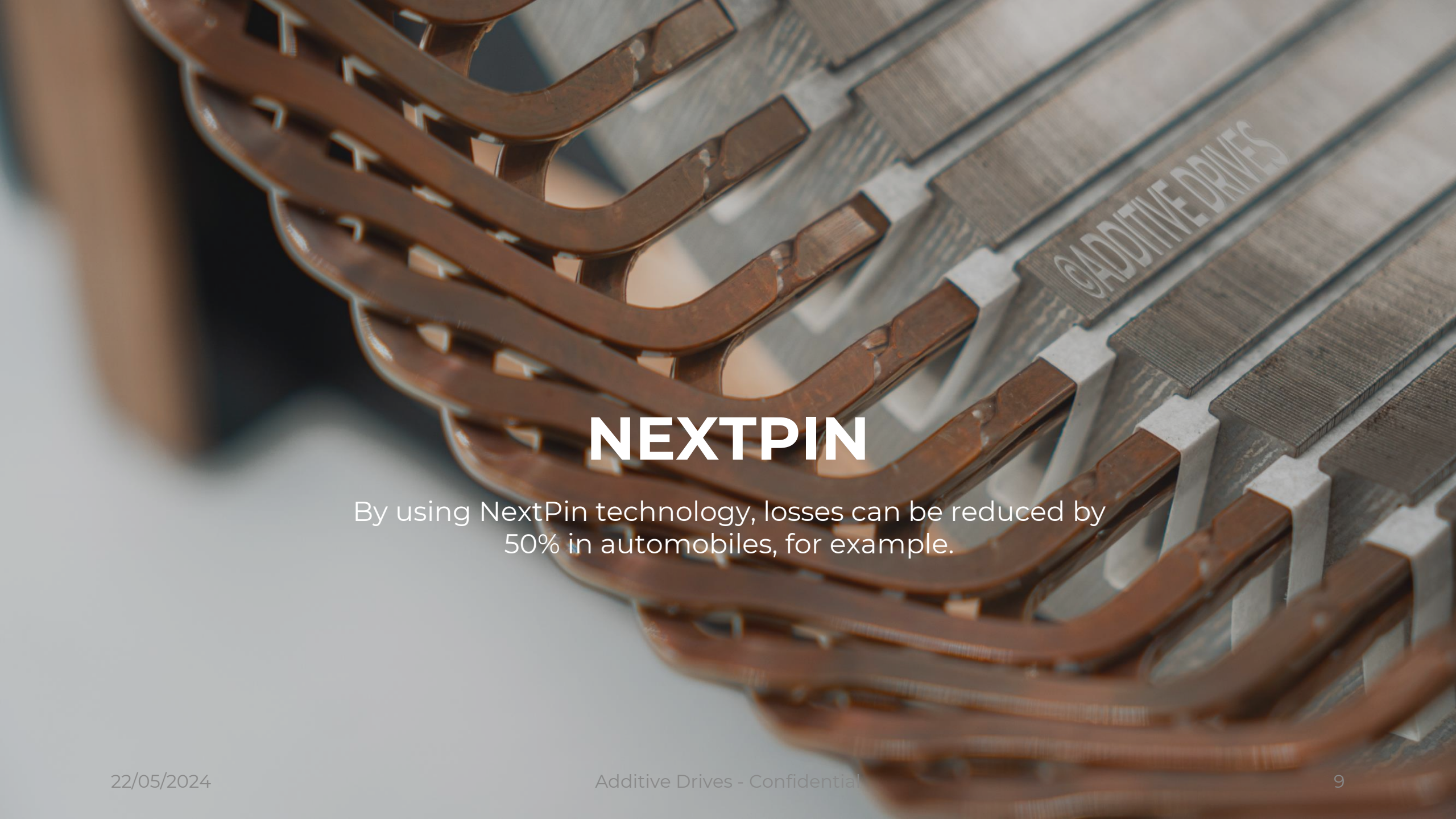
- Customised electric motors
- Customer specific motors for series
- Highest Power Density and Efficiency
 - Up to 98% Efficiency and 25kW/kg
- Various simulation methods and customised designs



A large grey MAN truck with a Knapen trailer is parked in a green field. A yellow excavator is loading green material into the trailer. The truck has 'Knapen Trailers' and 'MAN' logos. The trailer has 'Krone group' and 'TRAILERS' logos. The background shows a line of trees under a cloudy sky.

A CONTRIBUTION TO OUR PLANET

A new generation of sustainable and efficient engines developed and manufactured with state-of-the-art production processes is our promise.



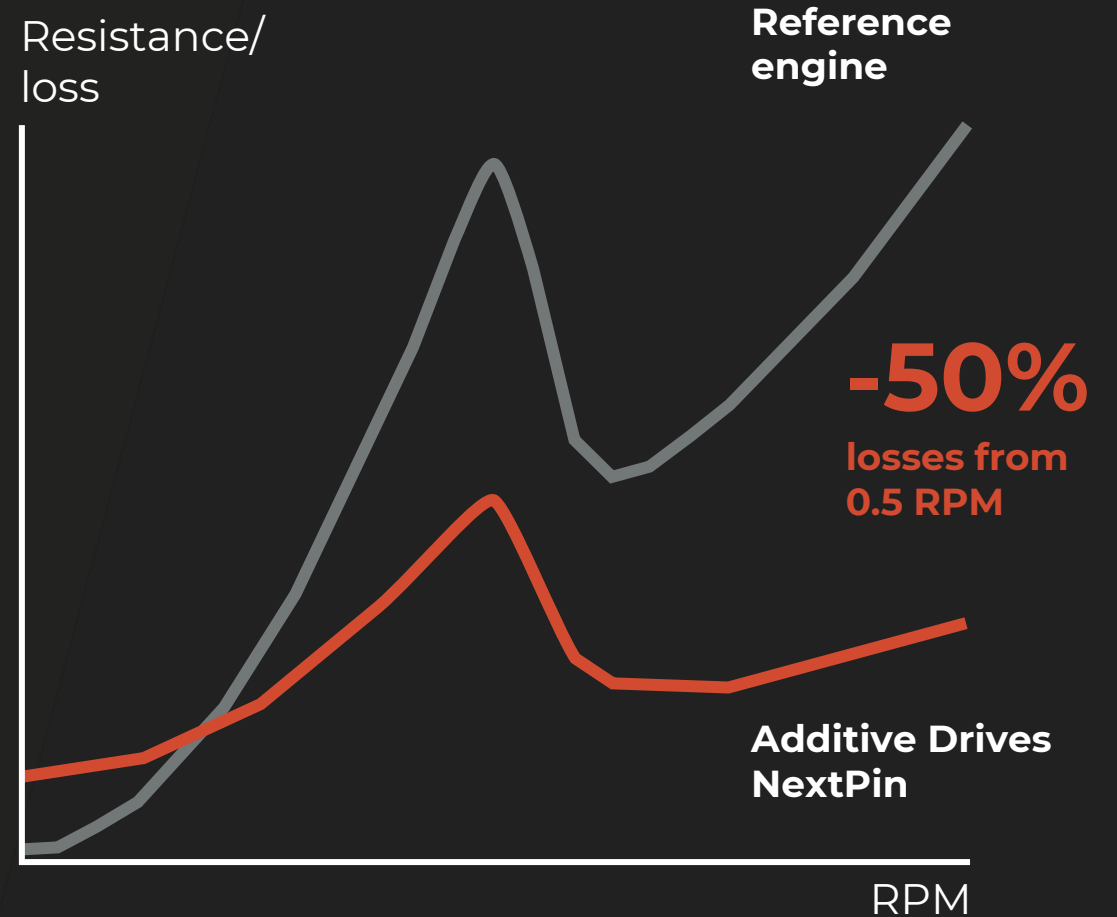
NEXTPIN

By using NextPin technology, losses can be reduced by 50% in automobiles, for example.

NextPin

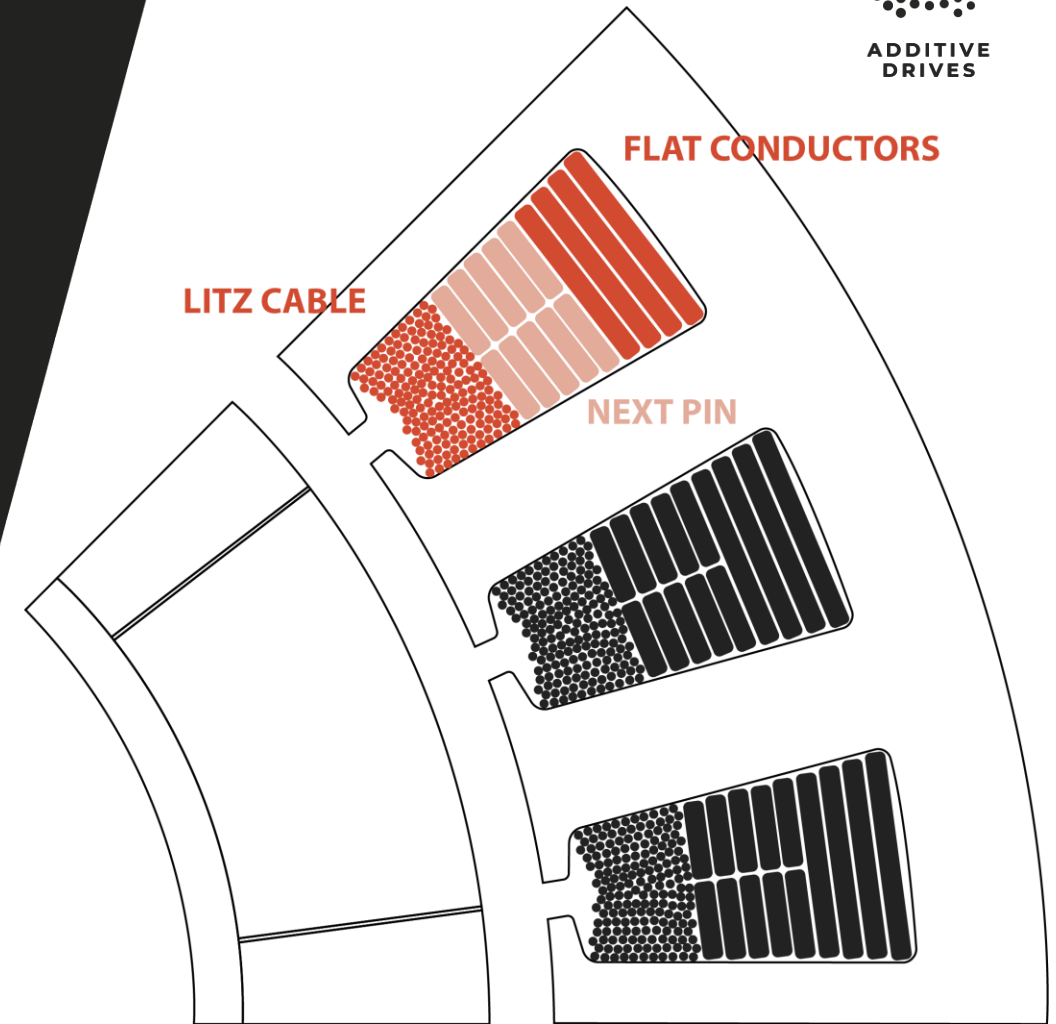
the future of mobility

- > New conductor type
- > Reducing AC-losses
- > High energy efficiency
- > Combining the advantages of Hairpin and litz wire



Combination of different wire types in the slot for improved AC and DC behaviour

- Improved connection by 3D printing
- Combination of litz, split and flat wire to optimize AC and DC losses
- Shorter end turns due to 3D printing



THE IDEAL WIRE FOR EVERY POSITION IN THE SLOT

Thinner insulation materials

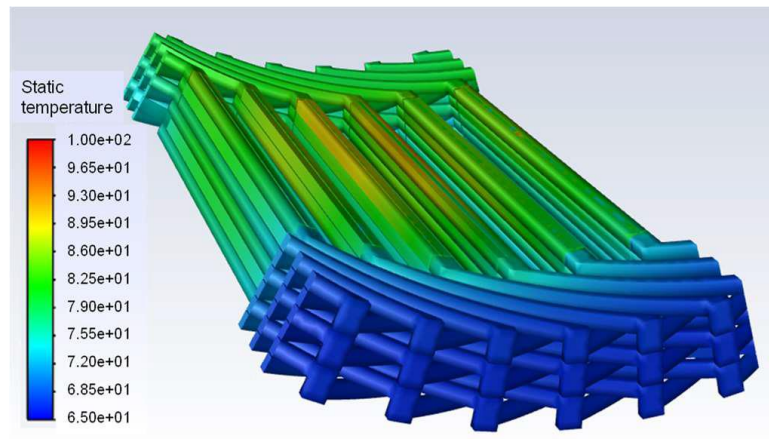
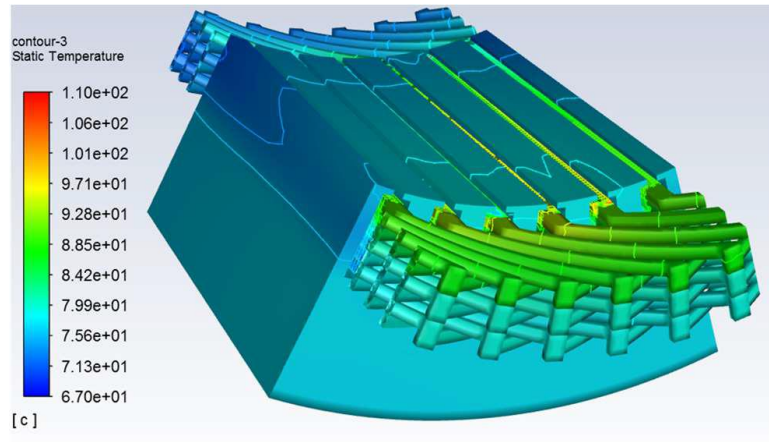
- > Nominal layer thicknesses could be reduced to 60 - 80µm
- > Improved cross section and higher thermal conductivity
- > New materials available such as PFA PDIV free insulation

Superior cooling

- **Optimized housings, oil cooling, improved winding geometries**
- **Innovative sealing concept and insulation materials**

Comparison

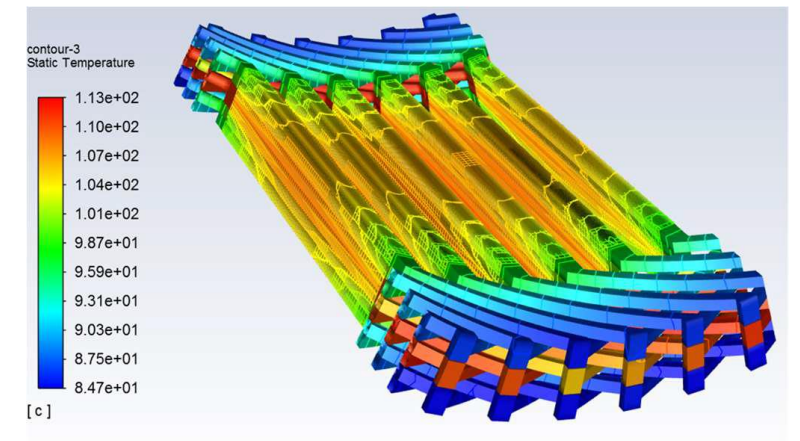
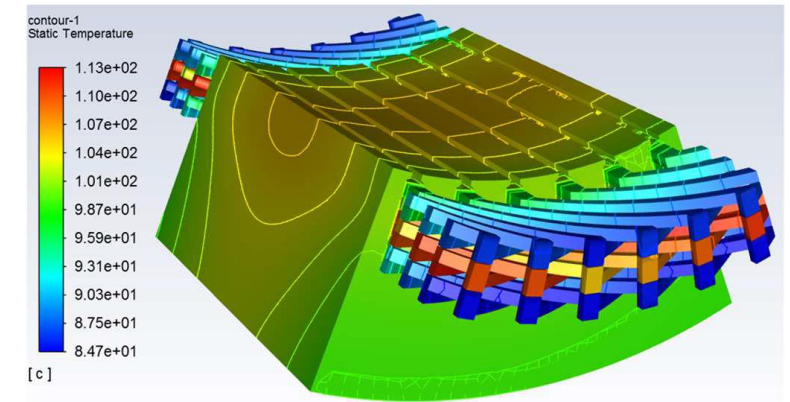
Direct slot cooling

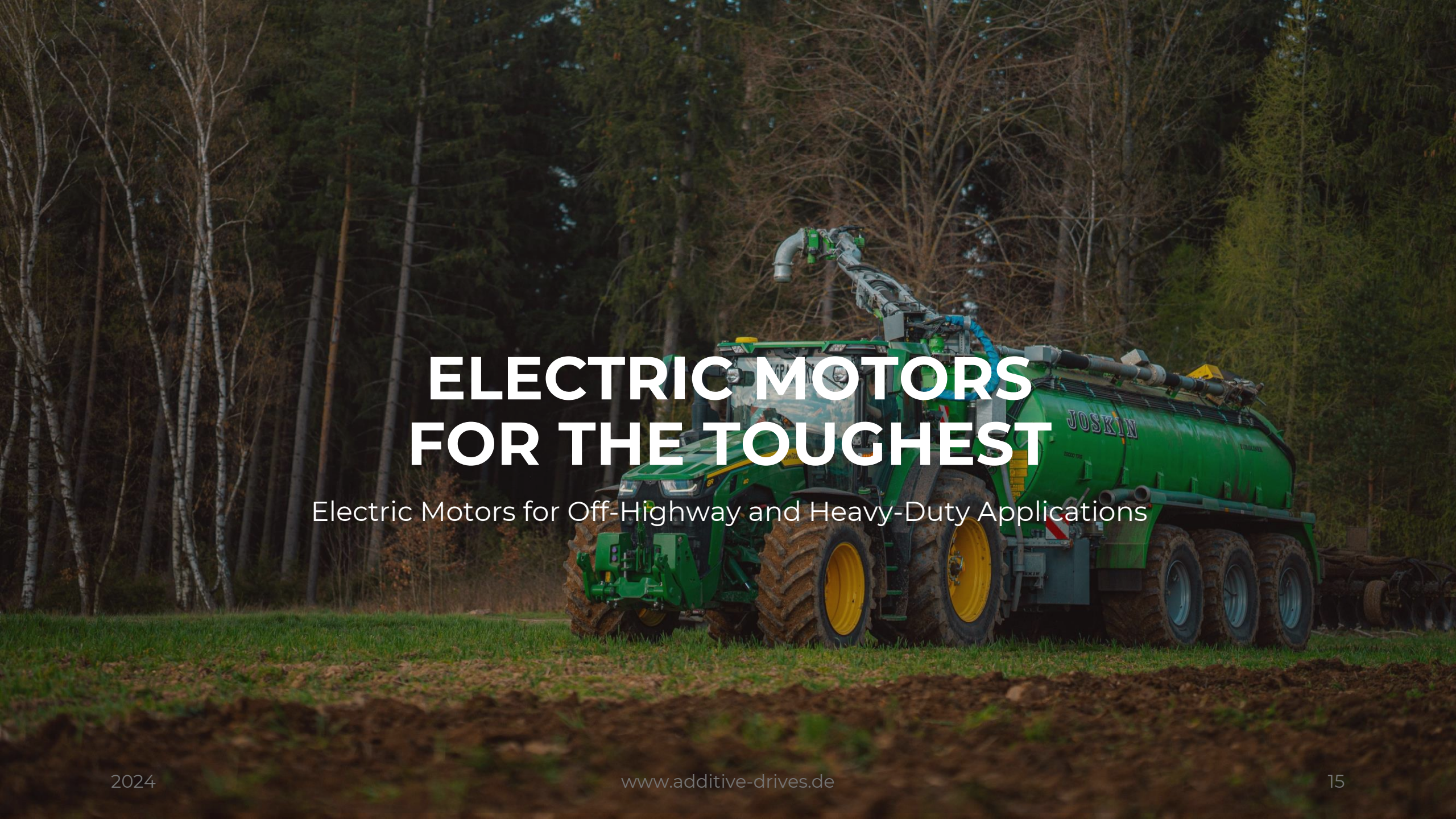


FORD example - IEEE

The in-slot cooled machine has a lower temperature (20°C lower) and reduced power loss (6.6% lower at 100 Nm 2500 rpm) than that of the drip-cooled machine.

Direct slot cooling





ELECTRIC MOTORS FOR THE TOUGHEST

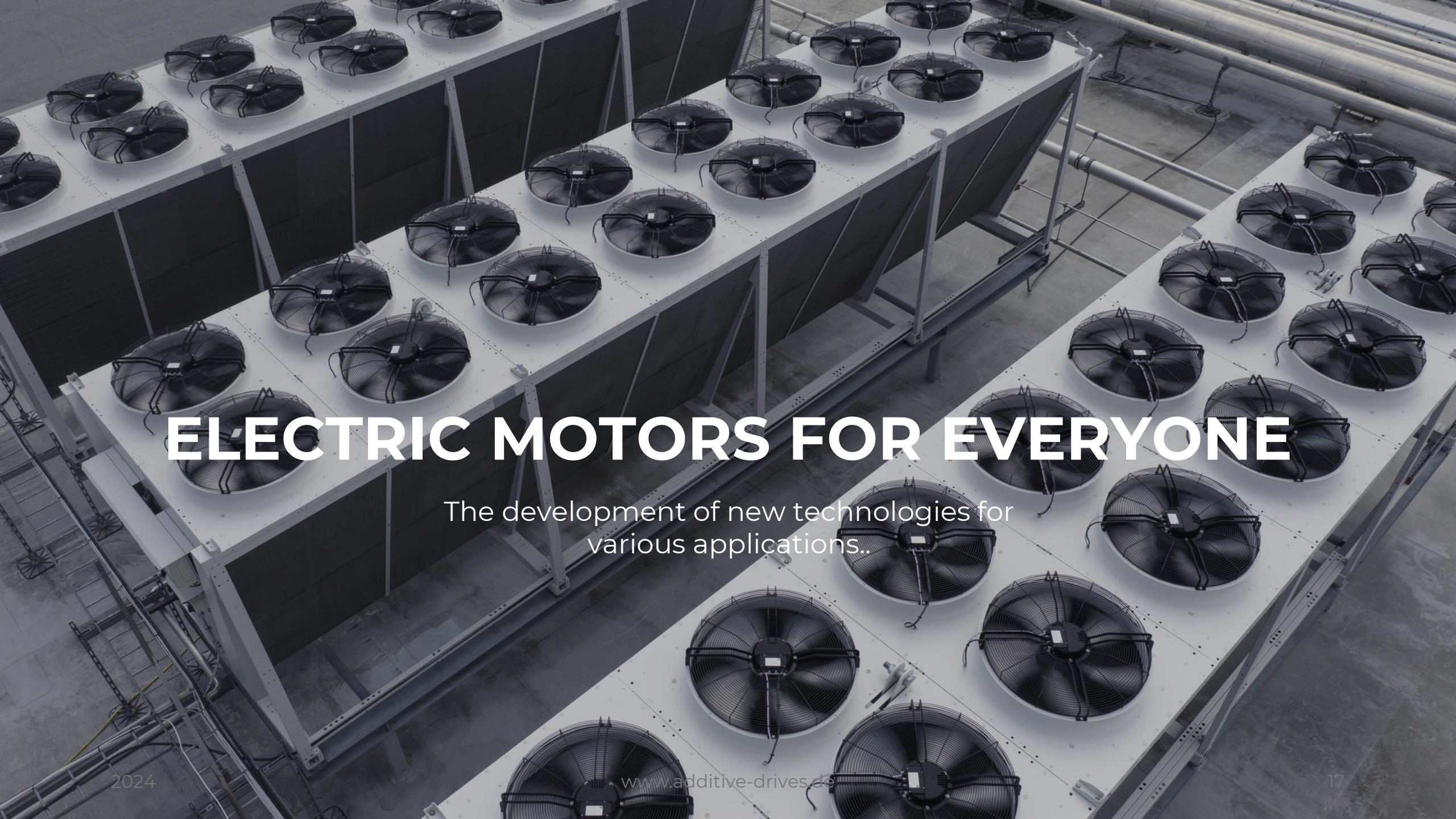
Electric Motors for Off-Highway and Heavy-Duty Applications

Electric Motors for the toughest



- > High Power Density for Traction Drives
- > Electrification of auxiliary drives
 - Power take-offs and boost solutions
- > Power supply for trailer
- > Available in small quantities
 - Up to 60.000 units per year



An aerial, high-angle photograph of a large industrial building, likely a data center or manufacturing plant. The roof is covered with a dense array of large, black, circular fans or ventilation units, arranged in a grid-like pattern. The building's structure is made of metal, and various pipes and conduits are visible on the roof surface. The overall tone is industrial and technical.

ELECTRIC MOTORS FOR EVERYONE

The development of new technologies for
various applications..

High Efficient Industrial Motors

> Industrial motors above the catalog

The highly efficient industrial motors from Additive Drives offer **45%** higher power density and twice the efficiency of conventional models.

> Direct Benefits

- immediate energy savings >6%
- Plug & Play
- Intelligent interconnection



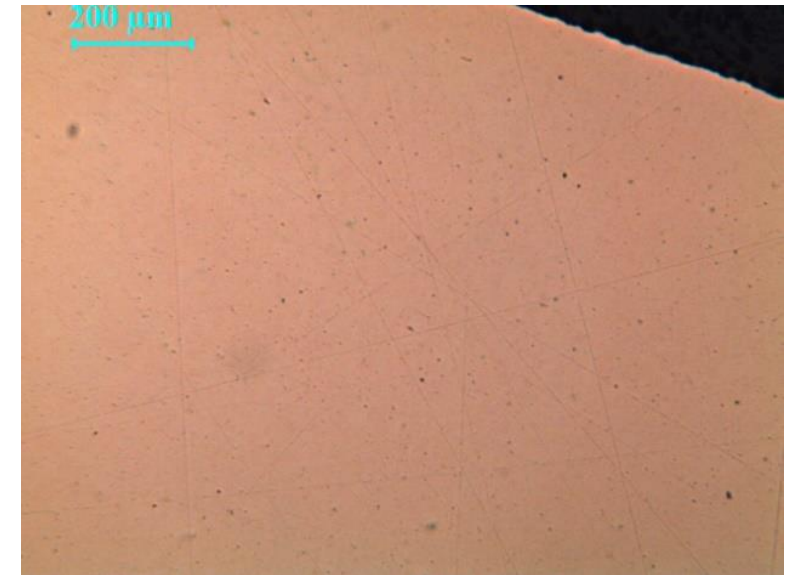
Moulded Coil – Insights

Validation of process with bus-bar designs



Moulded Coil – Insights

- **Validation of process with bus-bar designs**
- Next step: Validation with coil geometry
- Very low porosity
- **Conductivity 101% IACS**
- **Scalable up to 1.000.000 pcs. P.a.**



Customer Project



Ford Motor Company

Optimized Hairpin Stator for the Automotive Sector

- Avoiding partial discharge
- Reducing the length by 25% and the resistance by 18%



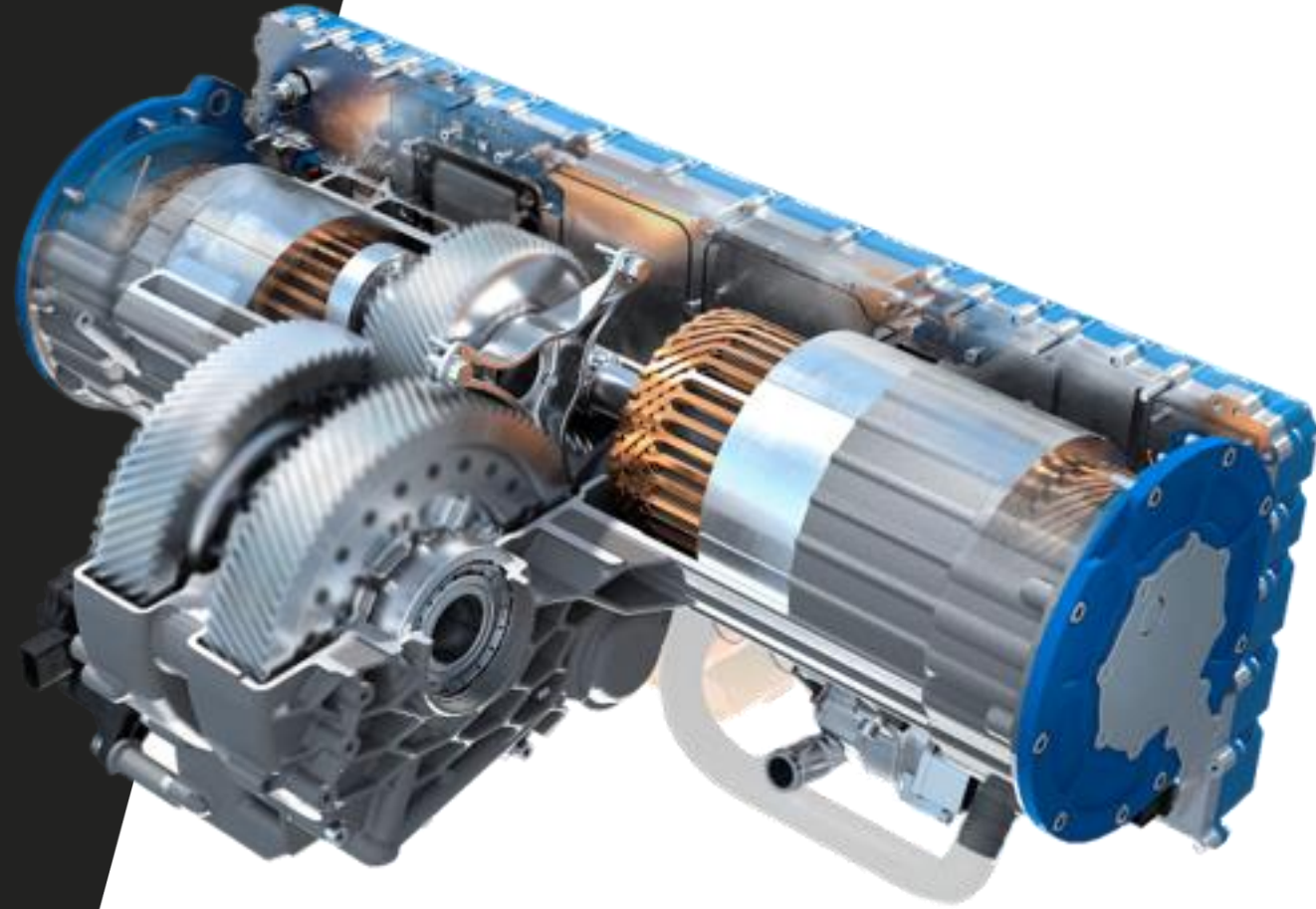
Customer Project



AVL Software & Functions GmbH

High performance eAxle manufacturing
with advanced cooling concept

- Power > 500 kW
- Active slot cooling for highest power density
- Outstanding package for high performance cars



Customer Project



Alvier Mechatronics

Optimized SMC Hairpin Stator for the Automotive Sector

- Power 150 kW / Torque 238NM
- Max speed 16.000rpm
- Outer diameter SMC stator: 170mm
Active length: 165mm



Stay in Touch



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