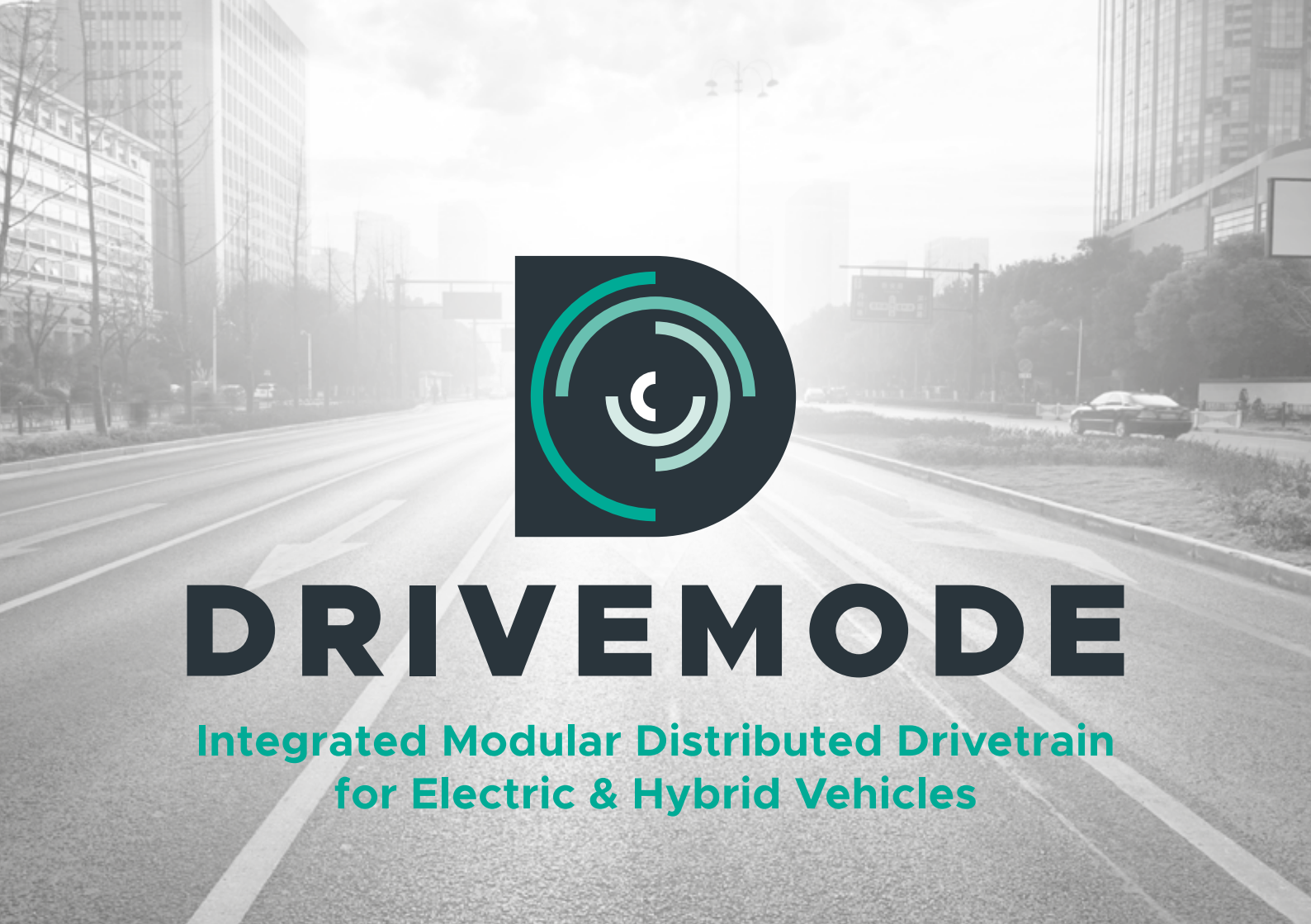


DRIVEMODE

Integrated Modular Distributed Drivetrain for Electric & Hybrid Vehicles

Pushing for the next generation electric drivetrains

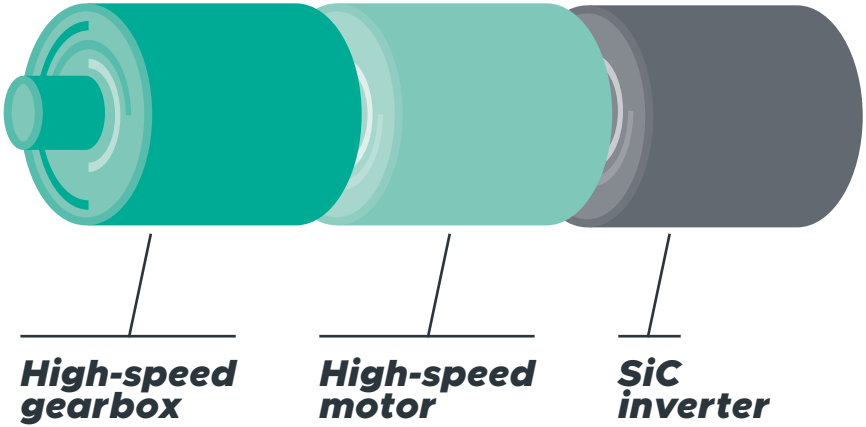
Witnessing the breakthrough of electric vehicles, DRIVEMODE aims to develop a **distributed and integrated drivetrain module** (IDM) that will fit in all types of mass produced electric and hybrid cars, from light and C & D passenger vehicles, to high performance and light duty vehicles.

Economic feasibility of **mass-manufacturing** of different electric machine topologies will be studied to choose the best trade-off between performance, manufacturing cost and efficiency in the selected performance range.

The drivetrain module will be:

- **Energy efficient**, based on systems integration and optimised design
- **Compact**, by integrating drivetrain module components in a single frame
- **Modular**, enabling incremental changes between neighbouring vehicles' classes without major changes in design and manufacturing
- **Cost-effective**, through optimised design for manufacturing
- **Scalable**, to cover demand variation of vehicles in the same category
- **Light-weight**, by using a high-speed motor with reduced mass and usage of raw materials.

Exploring the DRIVEMODE concept



The integrated drivetrain in its humble size can provide 1350 Nm starting torque with the maximum power up to 80 kW. The top rotational speed on wheel is around 1425 rev/min. The main components are joined together to form a compact and integrated drivetrain module together with a cooling unit.
The power for the module comes from a high-voltage battery.
This concept will be tested and validated in a demonstration vehicle with top speed on a flat road up to 180km/h.

ADVANTAGES

- The high-frequency power inverter and the high-speed electrical motor will reduce the materials usage and footprint.
- The SiC semiconductor will dramatically decrease the switching losses and improve the efficiency significantly while enabling drivetrain to operate at higher frequencies.
- The usage of high-voltage (600-900V) battery will decrease the required copper weight, thus, simplifying the operation of the motor at high speeds and improving the efficiency of the SiC drive and reducing the charging times
- The module will increase by 50% the maximum operating speed, leading to a 30% increase in specific torque and power of electric motors, whilst reducing by half motor losses.
- Modularity provides the advantage of mass manufacturing reducing the final price of the unit

DRIVEMODE

Learn more about our project and its latest development on

drivemode-h2020.eu

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