



WE MAGNETISE THE WORLD



Trendsetting. Intelligent. Efficient.



# Clutches

for modern drive technologies



COMMERCIAL VEHICLES

In cooperation with



## Dual Electric Drive

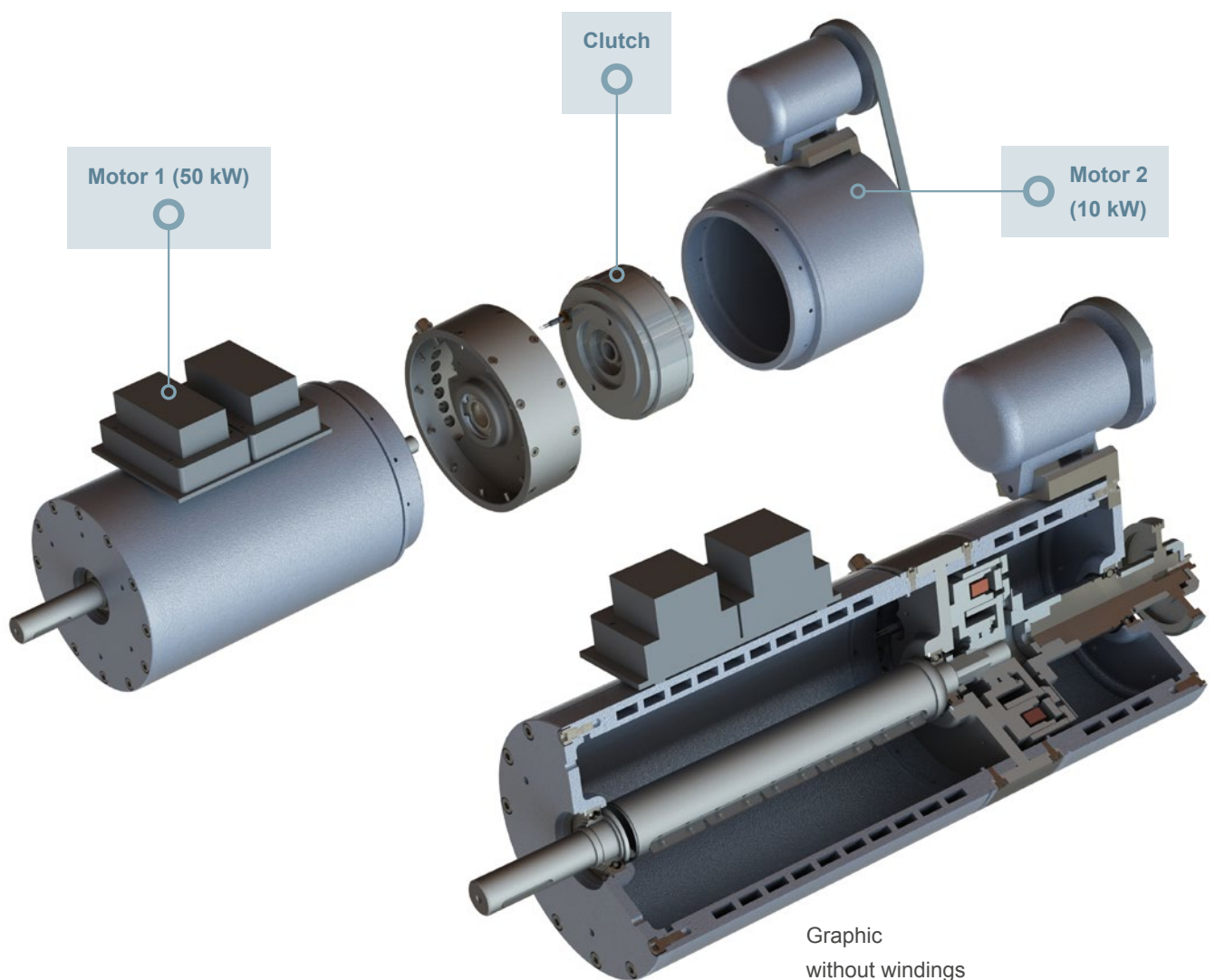
The Dual Electric Drive is an electric drive unit that comprises two differently-sized electric motors in one housing. With the reduced number of parts, this concept cuts the costs of the electric drives.

In the application shown, the electric motor for the A/C compressor is also used as the drive and recovery module.

Each drive is operated in its best efficiency range - In combination with the use of the braking energy, this leads to a higher overall efficiency.

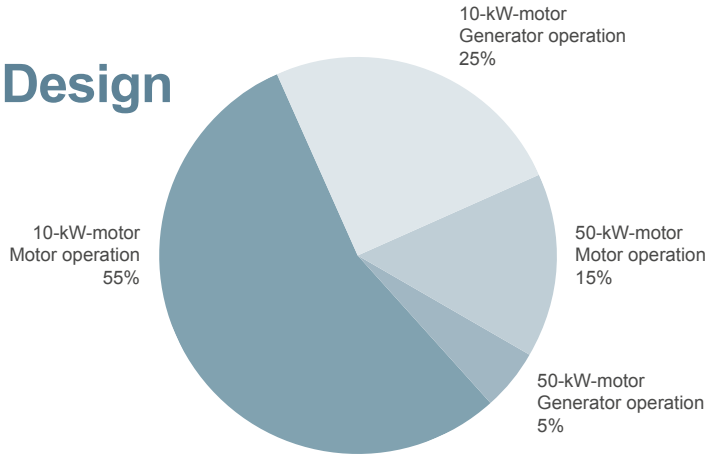
### Advantages of Dual Electric Drive

- Maximum reliability
- Compact design
- Reduced total weight
- Simple integration in the thermal management

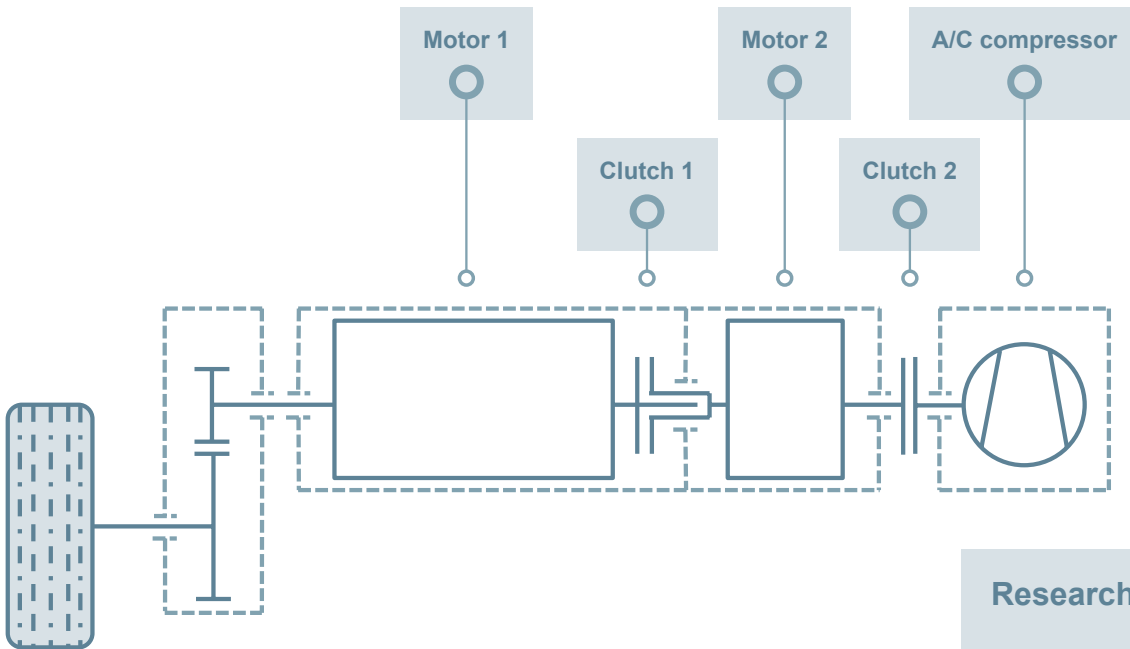


# Driving Strategy and System Design

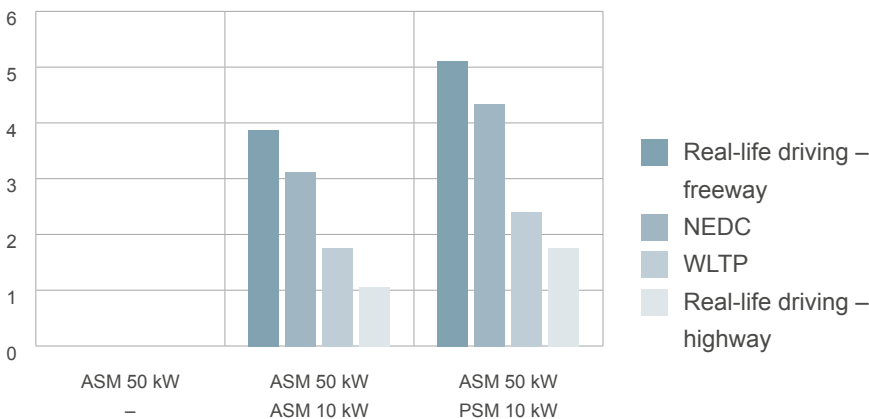
For high driving power requirements, the 50 kW motor directly powers the drive axle with high efficiency. In its high-efficiency range, the 10 kW motor is used for low driving power requirements and to drive the A/C compressor. The A/C compressor can be coupled directly to the drive axle. This enables easier integration in the thermal circuit and an improved EMC performance. The 10 kW motor is sufficient for 80% of the operating periods in the NEDC (New European Driving Cycle), which then operates in its optimum efficiency range.



Operating times in NEDC



## Energy-saving Potential in Comparison with the Single-motor Concept



## Research Objective

In the traffic research program, the DLR Institute of Vehicle Concepts is working on the development of future vehicle concepts.

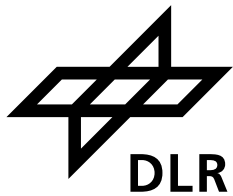
One research objective is to increase efficiency. Select technologies are developed, evaluated and demonstrated with regard to their application in a next-generation car. With our know-how in the development and production of clutch technology for electric



drives, Kendrion CV forms an important cornerstone of DLR's research work.



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