



elaphe



WINTER TESTING 2026

In-wheel motor AWD advanced controls with ground sensing and slip vectoring

February 23th – March 13th, 2026 – COLMIS Proving Ground (Arjeplog, Sweden)

B2B demonstrations will be held twice daily (morning slot, afternoon slot).
Get in touch to reserve a spot!



Testing highlights beyond state-of-the-art vehicle functions enabled by distributed-drive In-Wheel Motor (IWM) architecture.

OEM: Stock IONIQ5 AWD 77kWh with e-axle.

Elaphe IWM: Stock IONIQ5 AWD 77kWh with 4 in-wheel motors.

Ducato Maxi OEM donor van with removed FWD ICE powertrain and added Superbear RWD wheel drive.



In-wheel motors as enablers of software-defined experience

Advanced control features for superior performance, safety, precision handling and stability for high-performance vehicles.

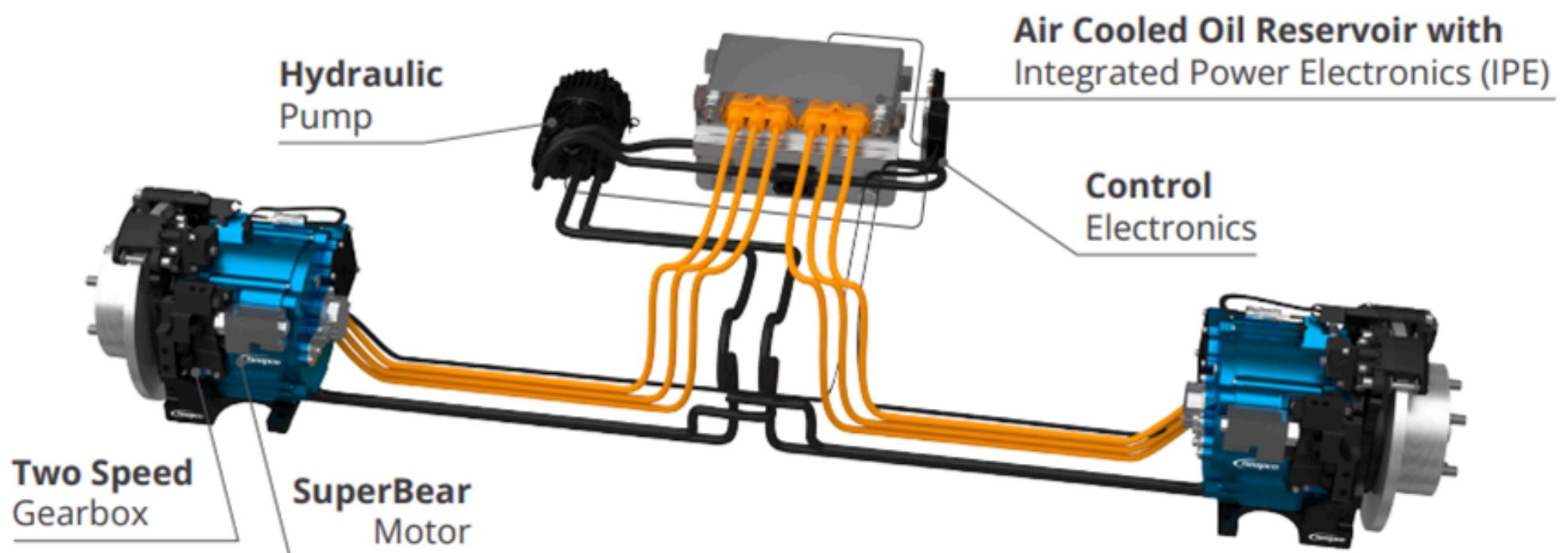
Direct-drive architecture for innovative design, simplified architecture and lower vehicle costs through control.



- **20x faster torque control**, full torque in 4ms
- **finely controllable vertical force** with pitch, roll & corner vertical control
- **100x data bandwidth**: position, speed, torque @ 10 kHz
- **ground sensing**, ultra-fast surface condition feedback

In-wheel motors as enablers of software-defined utility

Achieves fast and accurate wheel control through high-frequency bi-directional sensing and software-optimized torque control directly at the tire-road contact patch, enhancing traction, regenerative braking, stability, and overall vehicle dynamics in critical scenarios.



- **fast and accurate torque control**
- **finely controllable slip and torque**
- **100x higher bandwidth data**



High bandwidth slip control

AWD independent wheel control on split- μ surfaces



SLIP CONTROL COMPARISON

Wheel-specific slip vectoring with dynamic slip targets based on under-wheel grip during acceleration & braking

Real-time ground-feedback-based high-bandwidth torque vectoring

Demonstration of torque vectoring modes and their impact on vehicle behaviour in changing μ conditions.



Vibroacoustic technology

Elaphe Vibroacoustic technology controls motor vibrations via proprietary software, enabling authentic acoustics, vibrations and haptic feedback.

