

The Winter Test 2022 logo, featuring a stylized white 'S' shape inside a white circle, followed by the text 'WINTER TEST 2022' in a bold, sans-serif font.

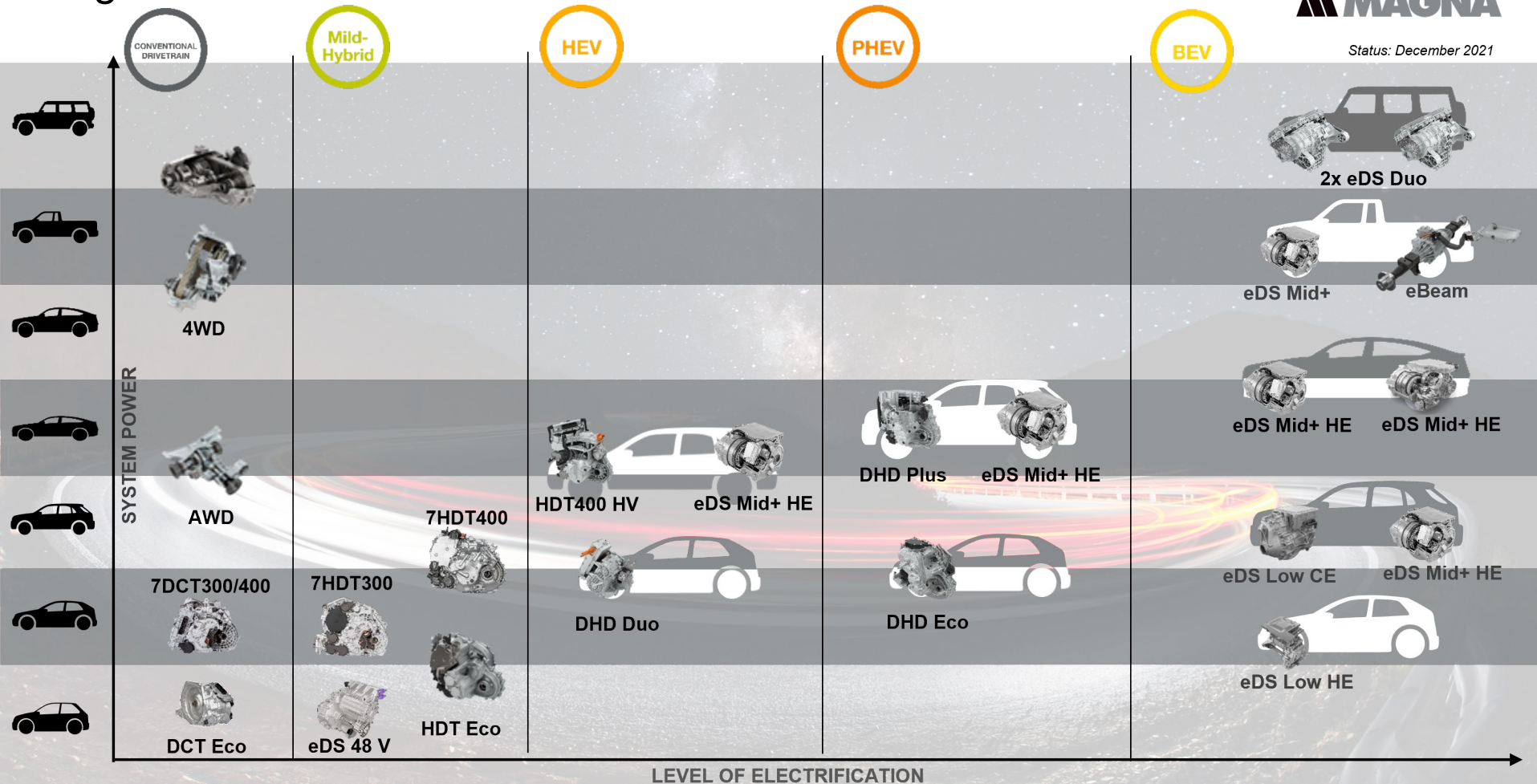
WINTER TEST 2022

Vehicles & Technologies
Media Demonstration

Magna Powertrain Product Portfolio



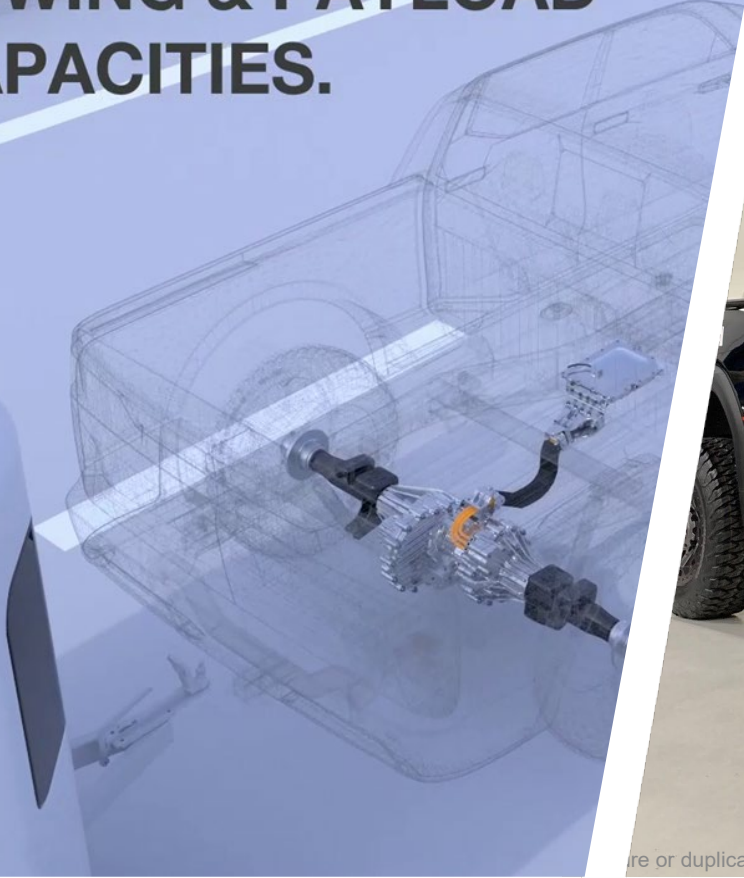
Status: December 2021





EtelligentForce

UNCOMPROMISED TOWING & PAYLOAD CAPACITIES.

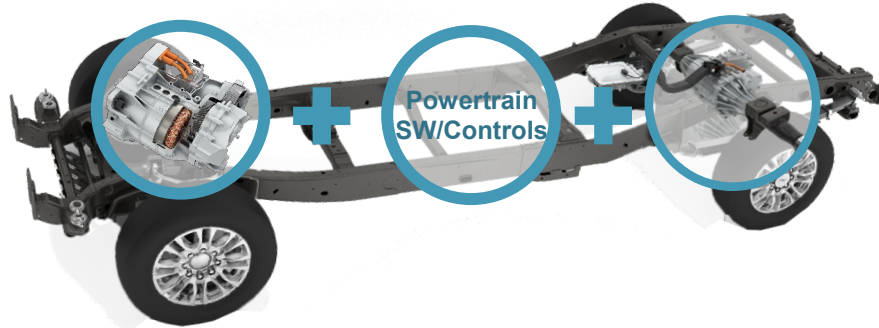


EtelligentForce: Uncompromised Payload and Towing Capacity



BEV

Magna EtelligentForce is a battery electric 4WD powertrain system for passenger trucks and light commercial vehicles, designed to maintain the full capabilities of these vehicles with uncompromised payload and towing.



Front Electric Drive System

- eDS Mid+ w/ Decoupling

Software/Controls

- Drive controller
- Operation strategy
- Optional decoupling strategy

Rear Electric Drive System

- eBeam High

EtelligentForce

BEV pickup and light commercial vehicle solution

Efficiency

Decoupling capability of front axle

Safety

Robust coaxial beam axle design

Convenience

Uncompromised 14,500 pounds towing capability

Dynamics

Up to 430 kW peak power

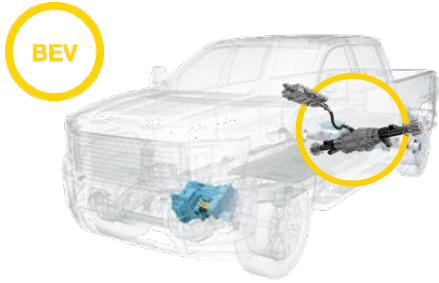
Vehicle Integration

Totally customizable w/o need for architectural changes

Pre-Development Released for Acquisition Serial Development Serial Production

eBeam

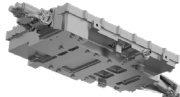
Primary Axle (Rear)



eBeam, the electric axle drive system, offers a structure-oriented design to support high payload vehicles with matching power for continuous duty usage. It supports light commercial vehicles, SUVs, and pickups classes 1, 2a, 2b and 3.¹⁾

Inverter

- Si or SiC power electronics
- Remote and on-unit mounting available
- 400 & 800 V variants



E-motor

- PSM hairpin winding motor to enhance cooling for continuous usage
- Dual media (oil/coolant) cooling



Features

- Optional locking differential
- ePark-lock
- Direct integration to current vehicle suspension
- Coaxial design for optimum ride & handling

Reduction Unit

- High contact ratio for quiet operation
- Optional ratios via final drive gearset change
- Coaxial arrangement for reduced space claim

Pre-Development Released for Acquisition Serial Development Serial Production

Magna eBeam

Safety

Robust design for safe towing and hauling

Dynamics

Scalable power to 250 kW with up to 10,000 Nm axle torque

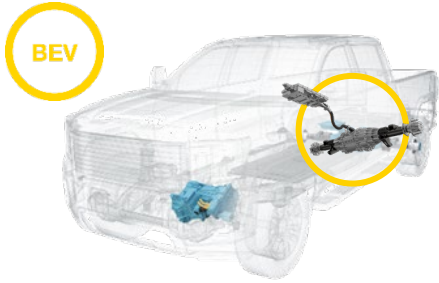
Vehicle Integration

Adaptable to current suspension, achieves required clearances during full suspension movement

¹⁾ according to commercial motor vehicle classification FHWA

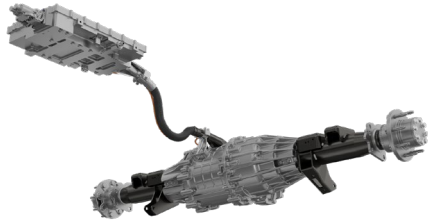
eBeam

Primary Axle (Rear)



eBeam, the electric axle drive system, offers a structure-oriented design to support high payload vehicles with matching power for continuous duty usage. It supports light commercial vehicles, SUVs, and pickups classes 1, 2a, 2b and 3.¹⁾

eBeam High



Peak axle power:	up to 250 kW for 30 s ²⁾
Peak axle torque:	up to 10,000 Nm ³⁾
Output speed:	1,400 rpm
GRWR:	3,400 kg
Feature:	electric locking differential

¹⁾ according to commercial motor vehicle classification FHWA

²⁾ A-sample application limitation to 220 kW for 30 s for protection reasons

³⁾ A-sample application limitation to 7,500 Nm for protection reasons

Magna eBeam

Safety

Robust design for safe towing and hauling

Dynamics

Scalable power to 250 kW with up to 10,000 Nm axle torque

Vehicle Integration

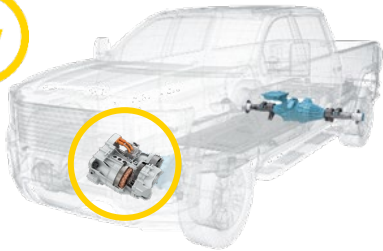
Adaptable to current suspension, achieves required clearances during full suspension movement

eDS Mid+ with Next-Gen Technologies

Secondary Axle (Front)



BEV



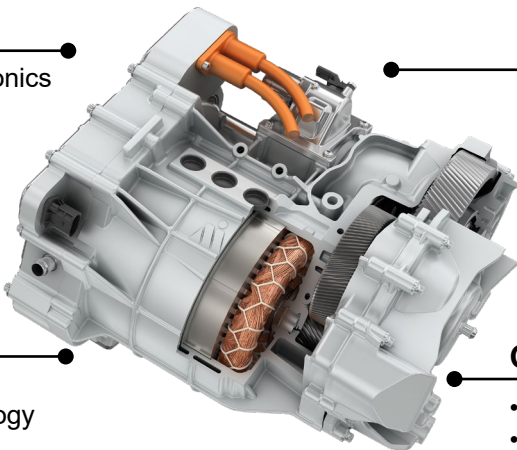
Magna's eDrive system on the front provides up to 170 kW. It can be applied to both hybrid and battery electric vehicles. Next-gen technologies support best-in-class efficiency, safety, convenience and dynamics.

Inverter

- Si or SiC power electronics
- Boost option for higher torque & power
- Native speed interface for fast interaction w/ vehicle controls

E-motor

- PSM e-motor with highly efficient winding technology



Decoupling+

Proven AWD technology combined with new controls strategy leading to improved efficiency (2WD) while maintaining performance and safety

Gearset

- Rotor shaft with 2 bearings
- Ball bearing or roller bearing w/o preload
- Low loss gears applied for 2nd gearset

Magna eDS Mid+

Efficiency

Low parasitic losses < 35 W (50 kph)

Safety

< 200 ms fast reconnect time

Convenience

1 ms control loop of native speed interface

Dynamics

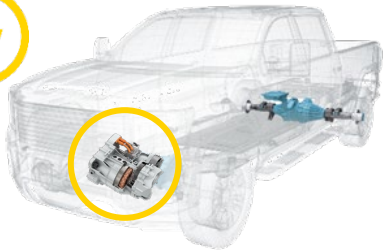
- + 8 % torque boost (7 sec.)
- + 22 % power boost (7 sec.)

Sustainability

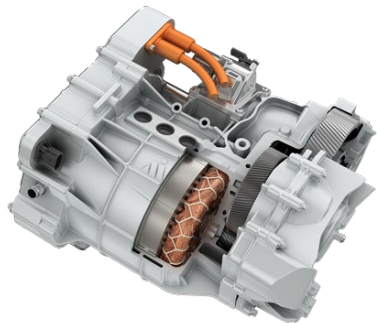
Optional ASM rare earth free dedicated secondary drive available

eDS Mid+ with Next-Gen Technologies

Secondary Axle (Front)



Magna's eDrive system on the front provides up to 180 kW. It can be applied to both hybrid and battery electric vehicles. Next-gen technologies support best-in-class efficiency, safety, convenience and dynamics.



eDS Mid+ w/ Decoupling

Peak axle power: 170 kW for 10 s
Peak axle torque: 3,770 Nm
Output speed: 1,400 rpm
Feature: Decoupling

Magna eDS Mid+

Efficiency

Low parasitic losses < 35 W (50 kph)

Safety

< 200 ms fast reconnect time

Convenience

1 ms control loop of native speed interface

Dynamics

+ 8 % torque boost (7 sec.)
+ 22 % power boost (7 sec.)

Sustainability

Optional ASM dedicated secondary drive available

EtelligentForce: Uncompromised Payload and Towing Capacity



BEV

Magna EtelligentForce is a battery electric 4WD powertrain system for passenger trucks and light commercial vehicles, designed to maintain the full capabilities of these vehicles with uncompromised payload and towing.



Features/Specifications

Rear Axle Electric Drive Unit Magna eBeam

Peak axle power up to 250 kW ¹⁾

Peak axle torque 10,000 Nm ²⁾

Ratio rear axle 12,67

Front Electric Drive Unit Magna eDS Mid+ w/ Decoupling

Peak axle power up to 170 kW

Peak axle torque 3,770 Nm

Ratio front axle 11,720

Magna Operating Control Software

Pre-Development Released for Acquisition Serial Development Serial Production

¹⁾ A-sample application limitation to 220 kW for 30 s for protection reasons

²⁾ A-sample application limitation to 7,500 Nm for protection reasons

Volkswagen ID.4 AWD Pro S



Magna eDS Low CE for VW MEB Platform



Compact secondary boost drive for midsize EVs with best-in-class drag torque and compact design. Dedicated design for EV platforms.



Features/Specifications

Audi Q4 50 e-tron quattro

System power: 220 kWp

Primary drive: 150 kWp

Secondary drive: 80 kWp

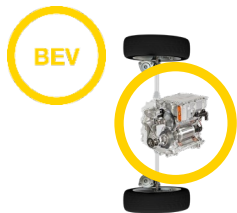
Magna Technology

eDS Low CE Front Axle Drive:

Compact secondary boost
drive

Pre-Development Released for Acquisition Serial Development **Serial Production**

Magna eDS Low CE for VW MEB Platform



Compact secondary boost drive for midsize EVs with best-in-class drag torque and compact design. Dedicated design for EV platforms.

Package & Weight

- Compact coaxial design, especially in critical x-direction enabling maximum interior space

E-motor

- ASM w/ OD 200 mm



Vehicle Integration

- NVH jacket prevented

System Efficiency

- Best-in-class drag torque

Magna eDS Low CE

Efficiency

150 W @ 600 rpm best-in-class drag loss

Safety

1,570 Nm front axle torque

Convenience

Preventing secondary NVH measures

Dynamics

80 kW peak power on front axle up to maximum speed

Sustainability

Dedicated secondary ASM rare earth free

Pre-Development

Released for Acquisition

Serial Development

Serial Production

Magna eDS Low CE for VW MEB Platform



Compact secondary boost drive for midsize EVs with best-in-class drag torque and compact design. Dedicated design for EV platforms.



Front Axle Secondary Drive eDS Low CE

Peak axle power:	80 kW for 30 s
Peak axle torque:	1,570 Nm
Cont. axle torque:	400 Nm
Output speed:	1,350 rpm
x-direction w/o mountings	250 mm

Magna eDS Low CE

Efficiency

150 W @ 600 rpm best-in-class drag loss

Safety

1,570 Nm front axle torque

Convenience

Preventing secondary NVH measures

Dynamics

80 kW peak power on front axle up to maximum speed

Sustainability

Dedicated secondary ASM rare earth free

Pre-Development Released for Acquisition Serial Development Serial Production

