The Road to Electrification – The Magna Powertrain Approach

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Technology Drivers

- Legal Requirements
- End Consumer Expectations
- OEM Brand DNA
- Growing Electrification Rate

OEM Global Product Portfolio
Legal Requirements

**City Level**
- Entry Bans
- Access Restrictions
- Limited Registrations
- Congestion Fees

**Government Level**
- Road Taxes
- Quotas
- Financial Motivations / Penalties
- Tax on Registrations

**Regional Level**
- Emission Norms
- Air Quality and Environmental Laws
- Fleet Consumption
End Consumer Expectations

Performance and Power

Price

Range & Charging Time

Future-proof
OEM Brand DNA

QUALITY  DYNAMICS  DESIGN
COMFORT  EFFICIENCY  TECHNOLOGY
PERFORMANCE  DRIVING PLEASURE
RELIABILITY
Growing Electrification Rate

Internal Combustion Engine (ICE)
Micro Hybrid: ICE with 12V start/stop functionality & regeneration capability
Mild Hybrid: ICE with 48V start/stop functionality, regeneration & boosting capability
PHEV/HEV: ICE with high voltage eMachine, full electric driving, external charging
EV: No ICE; battery or fuel cell electric vehicle
2025: Major Markets Powertrain Penetration Rate

Diverse market frameworks require various powertrain applications.

**USA 2025**
- 17-28%
- 5-8%
- 3-4%
- 2-22%

**EU 2025**
- 64%
- 15-25%
- 3-4%
- 8-17%

**China 2025**
- 26-42%
- 10-12%
- 8-11%
- 40-51%

**Legend**
- Internal Combustion Engine (ICE)
- Micro Hybrid: ICE with 12V start/stop functionality & regeneration capability
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Spread according Magna’s investigations.
Powertrain Evolution

The variety and complexity of the powertrain increases with electrification.

6 Internal Combustion Engine Architectures

42 Electrification Architectures

- Internal Combustion Engine including Stop/Start
- Mild Hybrids # 21
- Hybrid Electric Vehicle/Plug-in Hybrid Electric Vehicle # 17
- Battery Electric Vehicle # 4

Electrification
MPT products support 28 out of 42 electrified powertrain architectures.

Our etelligentDrive portfolio includes highly integrated systems from Mild Hybrid to BEV.
We master the increased complexity with modular and scalable components and systems...
Building Blocks – Applications I

eAxle, single speed

eAxle, two-speed

... that allow electrification units from Mild Hybrid to BEV...
Building Blocks – Applications II

7DCT300 + 7HDT300

... from conventional dual-clutch transmissions to integrated hybrid solutions ...
Building Blocks – Applications III

7HDT300 48V to 7HDT300 HV

... from mild to plug-in hybrid solutions ...
Building Blocks – Applications IV

7DCT300

7DCT302

... to the extension of our torque range with optimized functions that enable a fast adaptation to market needs.
Identify and focus on architectures with highest customer benefit.
We have never seen such a volatile market as today.

The powertrain evolution leads to many new concepts.

What do we need?

- Building Blocks with modular and scalable concepts for market-oriented and affordable electrification
- Flexibility to react to volatile developments and regional preferences
- System competency to design an efficient powertrain architecture with a variety of opportunities

Identify and focus on architectures with highest customer benefit