

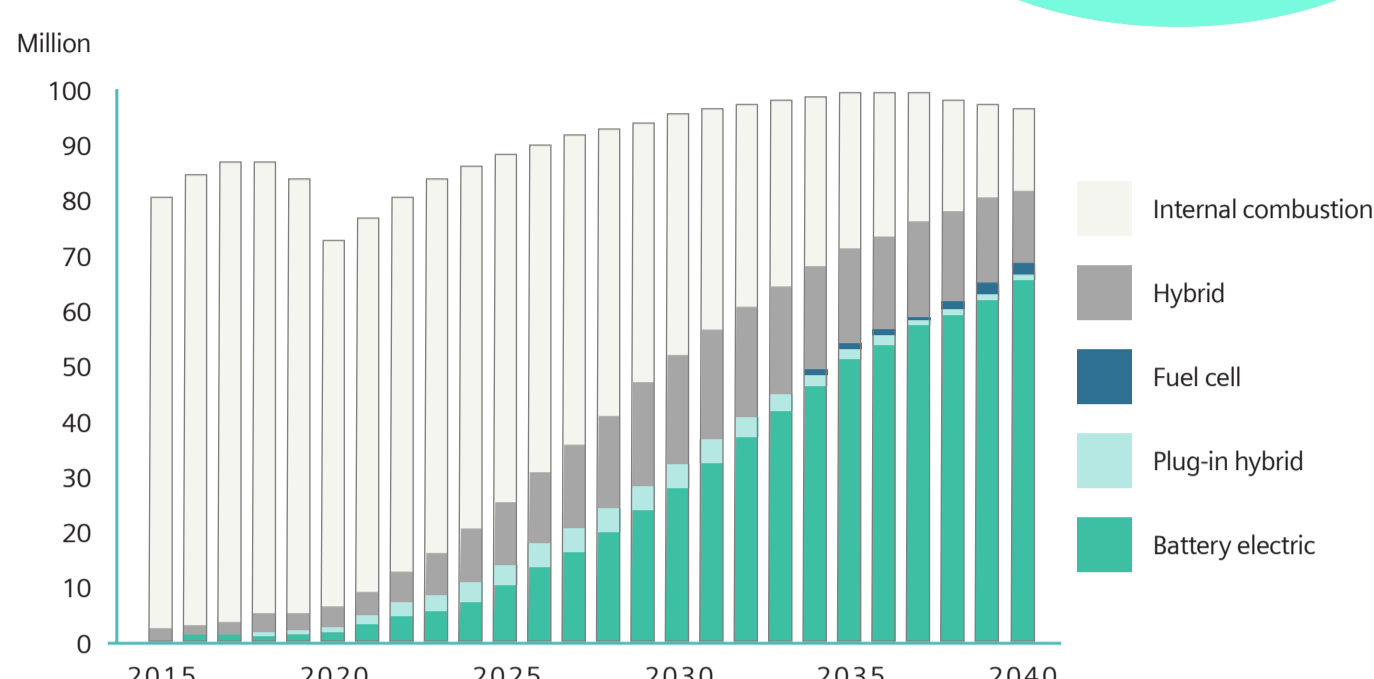
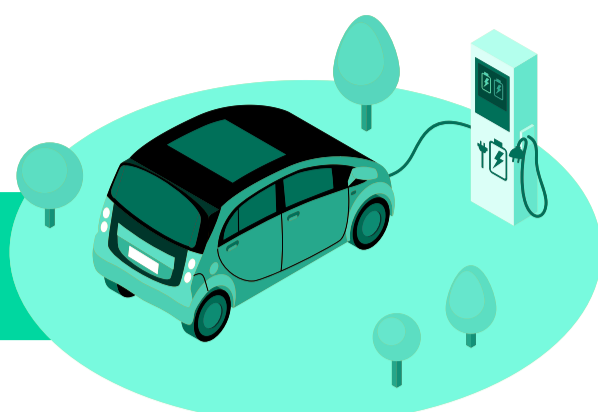
Siemens Digital Industries Software

Vehicle Electrification and E/E System Development

Market Growth

Global passenger vehicle sales outlook by drivetrain

Due to falling battery prices, EV sales will outpace traditional vehicle sales in the next decade.



Source: BNEF

During the pandemic, EV sales grew by 42% while global automotive markets shrank. New-EV sales to rise by 51% worldwide, accounting for around 9% of total new-car sales.

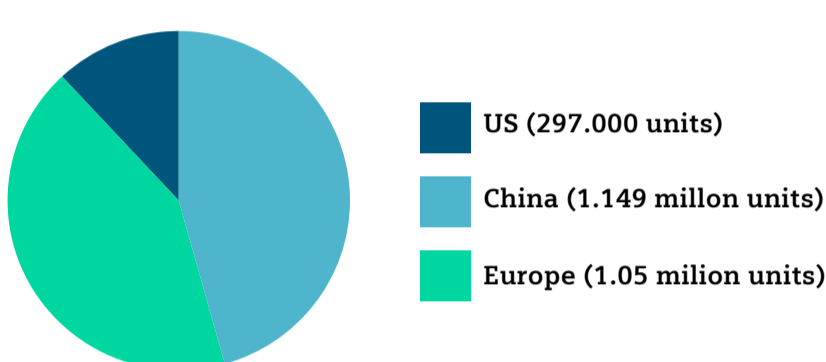
Together, China and Europe account for approximately 80% of the EV market.

By the year 2025, 20% of all new cars sold globally will be electric

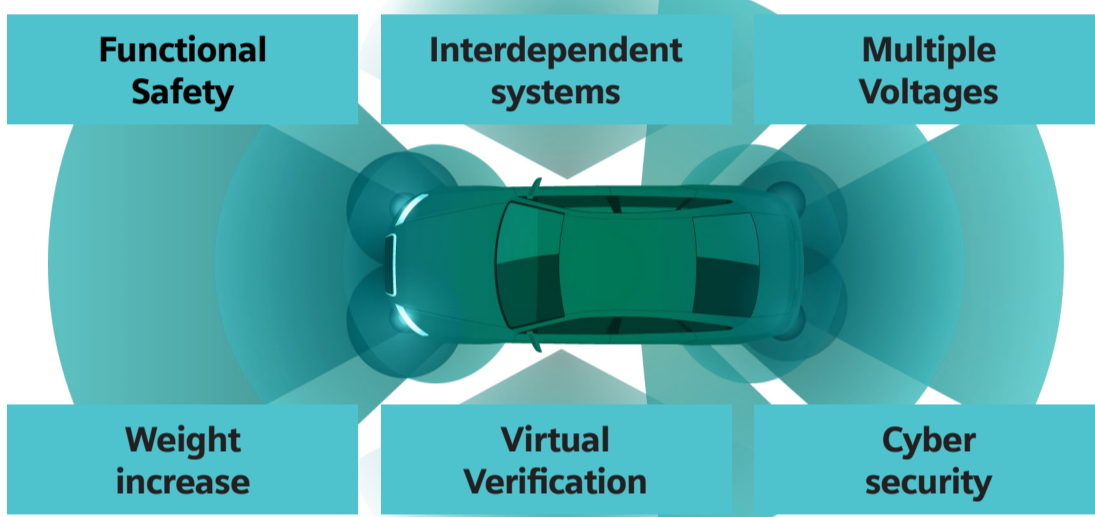
The global electric vehicle market will be worth USD 1,318.22 billion in 2028 at a CAGR of 24.3%

Source: EIU, UBS, EV volumes, Fortune Business Insights

New EV registrations by area for H1 2021:



Electrification drives clean sheet E/E architectures



EV electrical system design integration, safety and verification

Integration	Safety assurance	Simulation and verification
Space reservation and packaging Design change control & release management	Requirements traceability & verification Signal routing & separation; redundancy Diagnostics, maintenance & repair support	Correct-by-construction Electrical simulation

Today's electric vehicles have a huge amount of electrical content:

~60kg
mass

>25 miles
of electrical harnesses

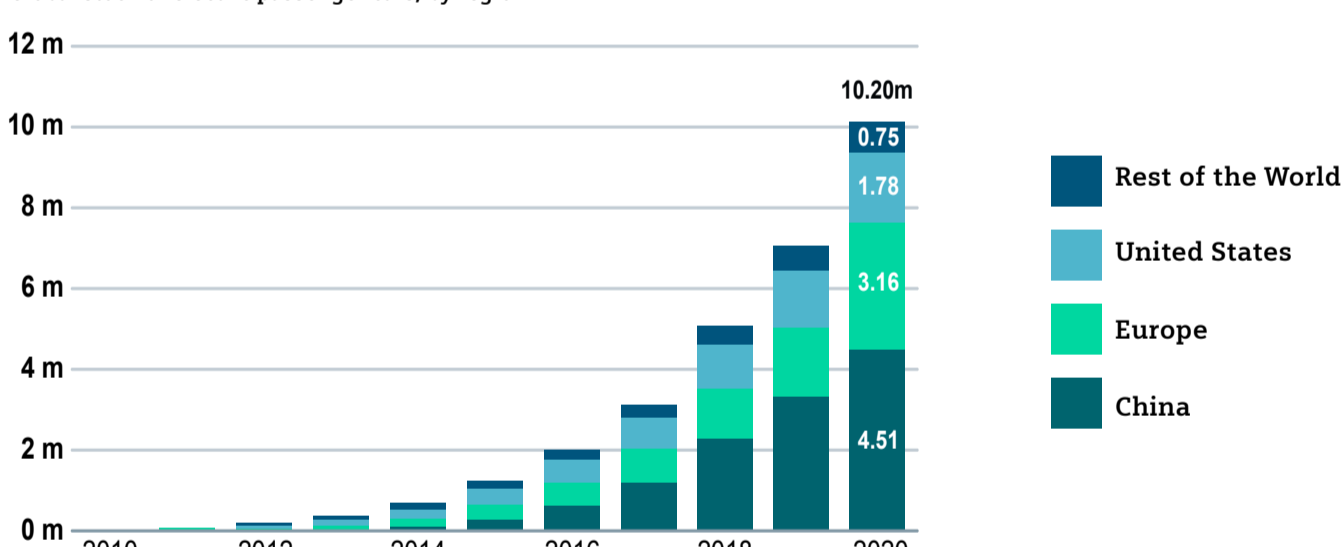
>3000
individual wires

~750
connectors

~30
harnesses

Global Electric Car Stock passes 10-Million Milestone

Global stock of electric passenger cars, by region*



* includes plug-in hybrids
Source: International Energy Agency

Benefits customers have realized using Capital for E/E systems development

- Enhanced Margins
- Increased Range
- Faster to Market
- Competitiveness
- Enhanced Brand Perception
- Increased Customer Satisfaction



REDUCTION

50 US \$ ← 1. Per-vehicle Cost

6.5 Kg ← 2. Per-vehicle Weight

50 % ← 3. Electrical Design Time

30 % ← 4. Quote-to-Production Cycle-time

80 % ← 5. Service Documentation Time

40 % ← 6. Fault Diagnosis Time

Solution

Collaborative approach with the digital twin

- Cost reduction**
Reduce the number of physical prototypes with a digital twin of the product.
- Engineering collaboration**
Drive cross domain engineering integration with a secure digital backbone.
- Manufacturing agility**
Cut changeover time and increase efficiency with a digital twin of manufacturing.
- Predictive maintenance**
Leverage data insights and reduce unplanned downtime with closed loop feedback.
- Quality control**
Update and share specifications and regulations with the entire ecosystem.
- Speed to market**
Incorporate new technologies faster than the competition.