

PRESSE RELEASE

April 2016

SuP Light Vehicles Forecast 2050 – Over 70% of vehicles will still incorporate an ICE in 2050. Significant market dynamics will start after 2035.

Schlegel und Partner has analyzed and evaluated not only current powertrain trends and developments, but also legal, demographic and socio-economic influences to forecast the development of global light vehicle production up until the year 2050. Currently, the entire industry is discussing connectivity, digitalization, new energy storage devices and more advanced driver assistance functions culminating in completely autonomously driven vehicles. The resulting key question for the strategic orientation of many suppliers and OEMs is whether the internal combustion engine will still play an important role by 2050.

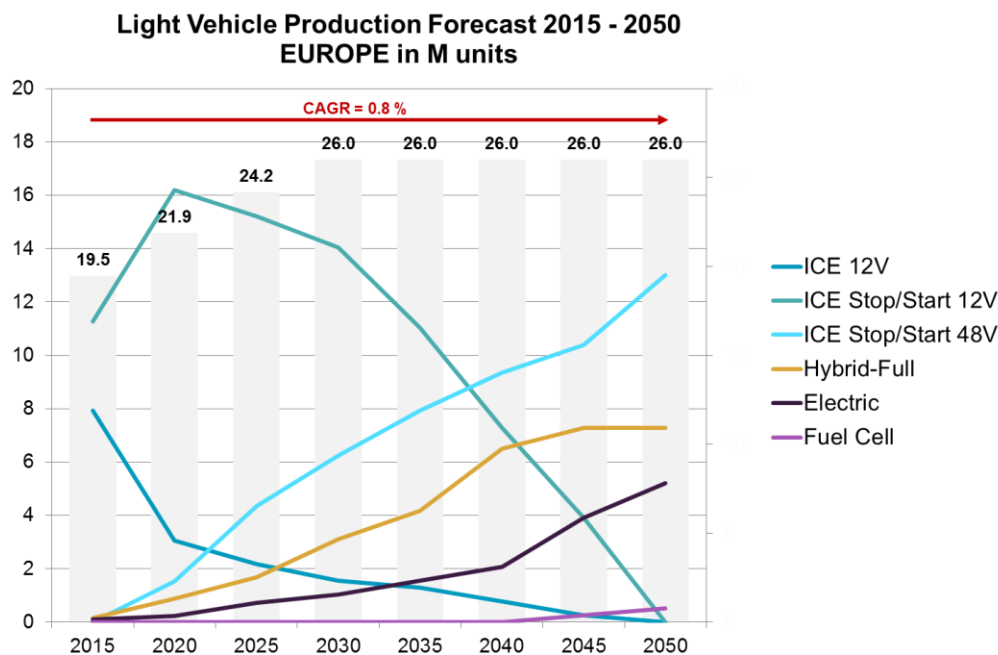
Light Vehicles Forecast 2050 for Europe: Driven by 48V

Total production 2050

Considering recent demographic and socio-economic factors, European light vehicle production will further increase over the coming decade, reaching a volume of 26 M units in 2030. Age structure, agglomerative saturation and increasing wage levels will lead to stagnation of European sales and hence to a production relocation to growth markets by 2050. Therefore, a shift from conventional commodity architectures to low wage regions and a focus on innovative and sustainable designs are the conclusions to be drawn.

With a production of 26 M units in 2050, Europe's global light vehicle production share will have decreased from 23% today to 19%. European production will grow at a CAGR of 0.8% by 2050.





Growth segments

Pure ICE 12V light vehicles with no advanced functions like Stop/Start currently account for 41% of total European production with 7.9 M units, but will completely vanish from European production by 2050. In return, ICE 12V with Stop/Start function will experience a short term peak by 2020, reaching 16 M units and covering 74% of the total 2020 production. At the beginning of the next decade, they will be replaced by higher voltage vehicles and especially by ICE 48V. They will start their above-average growth from 1.5 M units in 2020 to 13 M units in 2050, representing 50% of Europe's overall 2050 production.

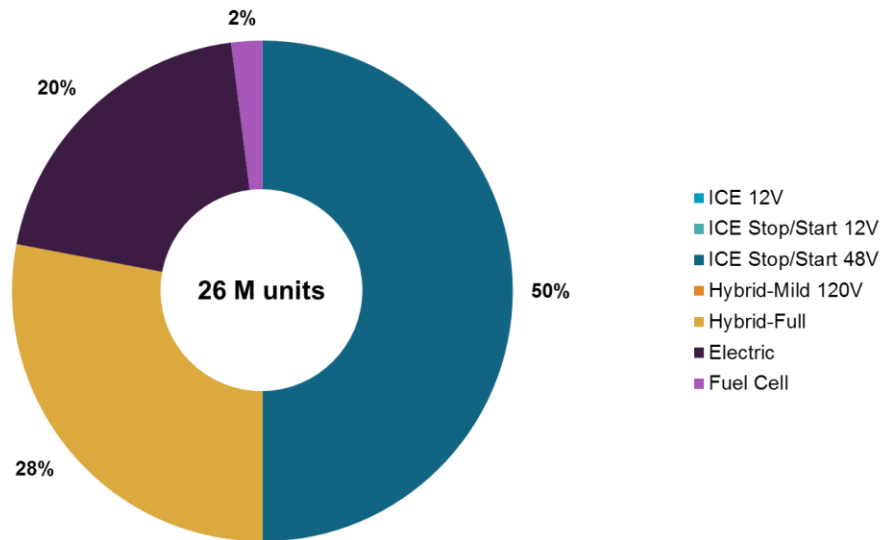
With delayed reaction, Full Hybrids and also Electric Vehicles will start off in the market in 2025 and in 2040, respectively. Mild Hybrids will not have any great significance for European production because ICE 48V vehicles are the preferred solution of European OEMs.

The market growth of Full Hybrids will not affect the growth of ICE 48V, but it will further accelerate the substitution of ICE 12V vehicles. Full Hybrids will reach a market volume of 7.3 M units in 2050, covering 28% of the European market.

Considering these developments, ICE-based light vehicles currently cover over 99% of European production with 19.3 M units. Against all presumptions, this share will "only" decrease to a 78% market share in 2050, with a production volume of 20.3 M units.

European OEMs will not be the first to engage in large scale electric vehicle production. Concluding that the growth will take off only after 2040, up to 5.2 M units can be achieved in 2050, which would represent a European EV market share of 20%. Due to infrastructure bottlenecks and industry concerns, Fuel Cells will play a minor role for European production by 2050.

**Light Vehicle Forecast -
Production shares EUROPE 2050**



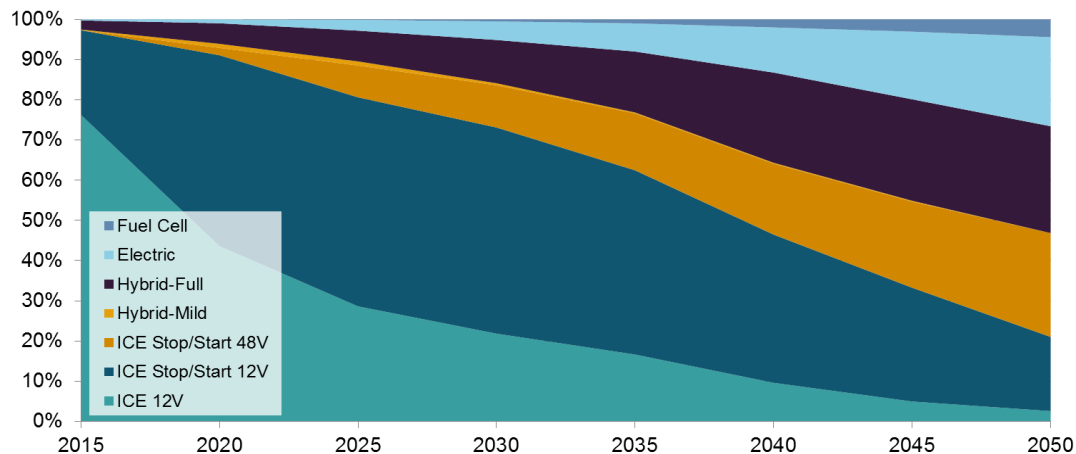
Outlook and conclusions

Europe will be the leading region for ongoing internal combustion engine improvement. By 2050, 78% of light vehicle production will be based on highly efficient ICE traction combined with different stages of electrification. Most other regions will shift their focus earlier to highly or purely electrified vehicles. Therefore, Europe will be the leading region for ICE improvement by 2050, having the highest ICE share among the Top 4 light vehicle regions (Europe, NAFTA, Japan / Korea and China). Suppliers focusing on ICE-based vehicles and components will shift their focus more and more towards Europe and the respective OEMs. The break-even point of low voltage vehicles (<60 V) and high voltage vehicles (>60 V) will be in 2050.

Europe may lose track regarding pure electrification because other regions and OEMs will shift their R&D focus towards EV before 2050. On the other hand, it can be predicted that other OEMs and regions will benchmark European ICE developments to improve their own products.

Background

Schlegel und Partner has analyzed and evaluated not only current powertrain trends and developments, but also legal, demographic and socio-economic influences to forecast the development of global light vehicle production up until the year 2050. Currently, the entire industry is discussing connectivity, digitalization, new energy storage devices and more advanced driver assistance functions culminating in completely autonomously driven vehicles. The resulting key question for the strategic orientation of many suppliers and OEMs is whether the internal combustion engine will still play an important role by 2050.

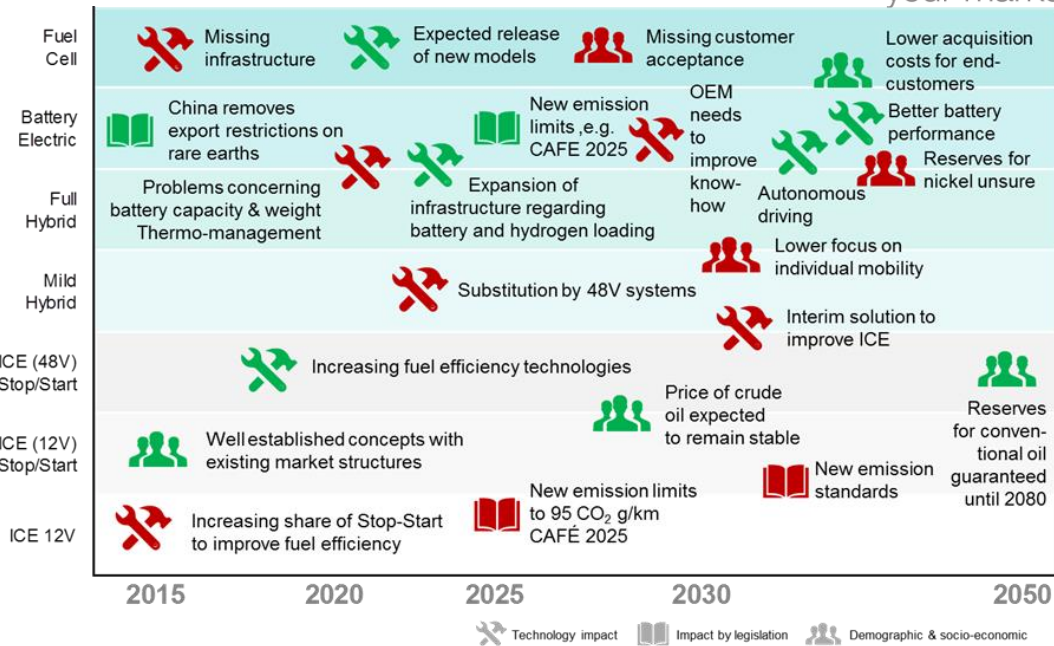


Methodology

SuP is your powerful partner for all types of consulting support, from market exploration to strategy concepts and implementation. Our own vehicle forecasts for the upcoming years as well as light vehicle architecture splits are based on more than 1,000 expert discussions in the automotive market that took place in the past 12 months. The discussions were held with OEMs, Tier 1 / 2 suppliers, universities, research institutes and other market participants. On the basis of various assumptions, opinions and disruptive technology assessments, SuP developed its own forecasting methodology to generate information and translate it into production volumes.

Influencing framework

Schlegel und Partner incorporated a very broad range of influencing elements, clustered in technological, legal, demographic and socio-economic factors. In particular, the availability of resources such as fossil fuels or rare earths, but also the regional development of economies and GDP were important inputs for deriving reliable forecasts on a global level. Discussions along the value chain from system suppliers to raw material suppliers or from technical universities to governmental organizations gave us the necessary feedback for a reliable long-term forecast.



Total production 2015 – 2050

In 2015, global light vehicle production amounted to 85 M units. During the next few decades, improving infrastructure and increasing GDP in many regions will lead to a stable CAGR ('15 – '50) of 3.4 – 3.6%. This growth will lead to a global light vehicle production of 135 M units in 2050. More important than total production is the light vehicle architecture split. Schlegel und Partner is using the established industry definitions ICE 12V, ICE with Stop/Start 12V, ICE with Stop/Start 48V, Mild Hybrid, Full Hybrid, Electric Vehicles and Fuel Cell Vehicles.

Light Vehicle architectures

In 2015, with approximately 85 M units ICE-based light vehicle architectures (ICE 12V, ICE with Stop/Start 12V, ICE with Stop/Start 48V, Mild Hybrids and Full Hybrids) accounted for 99% of global production. These market proportions will change significantly. But to what extent? Other forecasts predict different extreme scenarios such as extinction of the ICE by 2050 or a still insignificant share of electric vehicles. The SuP forecast is not based on potential events, but on expert opinions and realistic assessment of the current and future industry situation.

The internal combustion engine will continue to play an important role. By 2035, ICE-based vehicles will still be dominant with a 93% market share. After 2035, ICE-based light vehicles will further increase to 100 M units, but their share will decrease to 73% of global production. Most volumes will be covered by 48V and Full Hybrids with global production estimated to reach 71 M units in 2050. All non-ICE vehicles (Electric vehicles and Fuel Cell vehicles) currently represent less than 1% of the market. This share will increase to 26%, leading to a production volume of 36 M units in 2050.

Interested in further background, technical and strategic concepts, regional data and more specific splits?

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