



# Automotive Industry Weekly Digest

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## [Auto Guangzhou 2021 Highlights] Auto Guangzhou 2021: Xpeng, Aion introduce new EVs; Nissan begins sales of e-Power models

### IHS Markit perspective

#### Implications

Data from China Association of Automobile Manufacturers (CAAM) suggests foreign brands are ceding market share to their local rivals this year. The combined share of Chinese brands reached 47.8% in the first 10 months of 2021, up 6.6 percentage point from the same period last year. This is, in part, thanks to Chinese automakers' swift response to the microchip shortage. In addition, Chinese automakers are making every effort to tap into the premium market with their new brands targeted at EV buyers.

#### Outlook

Chinese automakers are accelerating the pace of their innovation to bring a new generation of EVs to the market. Their efforts to expand into a higher price segment will continue to increase pressure on foreign automakers, including General Motors, Volkswagen, and Daimler.

The Auto Guangzhou 2021 expo, officially known as 19th Guangzhou International Automobile Exhibition, opened on 19 November in the city of Guangzhou in Guangdong province, China. In this article, we offer an overview of the highlights from this year's Auto Guangzhou show, which runs until 28 November. From the announcements during the first three days of the expo, electric vehicles (EVs) continue to be the focus of the exhibition. Chinese automakers such as Xpeng and Aion are accelerating the pace of their innovation to bring a new generation of EVs to the market. Their efforts to expand into a higher price segment will continue to increase pressure on foreign automakers, including Daimler, General Motors (GM), Nissan, and Volkswagen (VW), which are seeing growing competition in both the ICE vehicle and the EV market from their local rivals in China.

### Xpeng G9



*Xpeng G9.*

*Picture courtesy of Xpeng*

EV manufacturer Xpeng has presented its fourth model at this year's Auto Guangzhou expo. The G9 sport utility vehicle (SUV), which Xpeng calls a "smart flagship SUV", features two lidar sensors incorporated into the vehicle's front headlamps. The addition of the lidar sensors will enable Xpeng to roll out its XPilot 4.0 advanced driver-assistance system in the G9. The company says the XPilot 4.0 system marks an important step towards achieving fully autonomous driving. The system on the G9 will enable the vehicle to perform a set of automated driving tasks guided by high-resolution maps of city streets, highways, and parking lots. XPILLOT 4.0 is built on a new-generation hardware platform, with 508 TOPS electronic control unit (ECU) computing power supported by two NVIDIA Drive Orin autonomous-driving System-on-a-Chip (SoC) units, an 8-million-pixel front-view binocular camera, and 2.9-million-pixel side-view cameras covering front, rear, left, and right views, and a highly integrated



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and expandable domain controller. A company statement said, "The enhanced hardware will significantly increase XPilot's perception capability on top of its market-leading multiple-perception fusion platform."

At this stage, Xpeng has not announced the G9's powertrain configurations and dimensions. The focus of the unveiling of the G9 is on the vehicle's software capabilities. The G9 will be China's first model to implement a Gigabit Ethernet communications architecture, supporting multiple communication protocols, allowing vehicles to transmit and receive big data faster. This boosts significantly its capabilities on over-the-air (OTA) upgrades of advanced driver-assistance systems, smart cockpit, and firmware. The new model also has Xpeng's new-generation XPower 3.0 powertrain system with China's first 800-volt, high-voltage mass-production SiC platform, which is able to charge up to 200 kilometres of range in just 5 minutes. Xpeng has yet to announce the delivery timeline of the G9.

### **Aion LX Plus**

Guangzhou Automobile Group Co (GAC) has introduced the Aion brand's 2022 model-year Aion LX Plus, which, it says, will have a driving range of 1,000 km. The new Aion LX Plus, a mid-size SUV, is equipped with a 1,444.4-kilowatt-hour (kWh) battery pack, the largest currently available in a production passenger EV in the Chinese market, says the company. The energy density of the vehicle's battery system is estimated at 205 Wh/kg. The energy consumption of the model is estimated at 15.8 kWh per 100 km. Market views on this new model are divided. Some believe that super-long-range EVs such as the Aion LX Plus speed up the market's transition to EVs, while others argue that EVs with a range of 500–600 km should meet the needs of most consumers. GAC did not announce the pricing of the 1000-km version of the Aion LX Plus, although it will be the highest-priced version in the model's line-up.

### **BYD Ocean**

BYD has introduced its 'Ocean' sales network. The automaker's future EVs based on the e platform, including the Dolphin EA1, and a new product line featuring its DM-i plug-in hybrid technologies are to be sold through the Ocean sales network. The first DM-i model from this sales network has been unveiled at the auto show. The model is a compact sedan of similar size to the BYD Qin Plus. The new model will also have the same hybrid system, consisting of a 1.5-litre engine with the Qin Plus DM-i hybrid system.

### **BMW iX**

BMW has announced the price of the iX in China. The automaker's flagship electric SUV is priced at CNY846,900 (USD132,720). The model available for order in China will be a dual-motor all-wheel-drive version with a 111.5-kWh battery. The iX will have a range of 630 km. The launch of the BMW iX will strengthen BMW's presence in the premium EV market, although the price tag of the iX is unlikely to boost BMW's sales volumes in the EV space.

### **Dongfeng Voyah MPV**

Voyah, the EV brand introduced by Dongfeng Motor Group, has unveiled a premium multi-purpose vehicle (MPV) at the Auto Guangzhou 2021 expo. The new MPV is 5,315 millimetres long, 1,980 mm wide, and 1,810 mm high. The model has a wheelbase of 3,200 mm. The model will be offered with two powertrain options, an extended-



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range EV and a battery EV. According to the automaker, sales of the model will begin in mid-2022. The main competitors to this new MPV will be GM's Buick GL8, the VW Viloran, and the GAC GM8.

### **Nissan Sylphy e-Power**

Nissan has announced the pricing of the Sylphy e-Power model in China. Three model variants featuring the e-Power technology are available in China, with prices ranging from CNY138,900 (USD21,750) to CNY155,900. All three variants come as standard with a 1.2-litre engine and a 136-PS electric drive motor. According to Nissan, thanks to the e-Power technology, the average fuel consumption of the Sylphy can go as low as 3.9 litres per 100 km. Deliveries of the Sylphy e-Power are due to begin in December.

## **Outlook and implications**

The Auto Guangzhou expo is the closing event for auto exhibitions in China each year and the regional auto show provides automakers with opportunities to engage with consumers over their new models. The new models mentioned in this article are just a few among a crowd on display, which consist of both ICE vehicles and new energy vehicles. Chinese brands are the main force behind China's EV push and they will continue to stir up the market with their new brands and seek a bigger presence in the market.

Data from China Association of Automobile Manufacturers (CAAM) suggests foreign brands are ceding market share to their local rivals this year. The combined share of Chinese brands reached 47.8% in the first 10 months of 2021, up 6.6 percentage point from the same period last year. This is, in part, thanks to Chinese automakers' swift response to the microchip shortage. In addition, Chinese automakers are making every effort to tap into the premium market with their new brands targeted at EV buyers. In response, foreign automakers such as Nissan are bringing their new technologies to China. Nissan's e-Power technology, which the automaker plans to roll out in several of its high-volume models in China, has the potential to boost its sales in the market. IHS Markit currently expects sales of the Nissan brand in mainland China to increase to 1.25 million units in 2023, compared to 1.17 million units in 2020.

## **[Auto Guangzhou 2021 Highlights] Auto Guangzhou 2021: Buick unveils Smart Pod and GL8 Flagship concept cars**

Buick is showcasing two concept vehicles, the Smart Pod and GL8 Flagship, at the Auto Guangzhou 2021, which started on 19 November. The Smart Pod is a futurist-looking van-like electric vehicle (EV) designed to provide "hub-to-hub transportation" to users. The vehicle is developed leveraging General Motors's (GM)'s autonomous vehicle (AV) technology and its Ultium platform, according to a company statement. Featuring a 50-inch retractable retina LED screen, the automaker said that the virtual cockpit system of the Smart Pod will provide a highly intuitive artificial intelligence (AI)-enabled experience for in-car virtual assistance and seamless connectivity with the outside world. The Buick GL8 Flagship Concept Vehicle gave a glimpse of what to expect from the next-generation GL8 multi-purpose vehicle (MPV). The former features a massive front grille that has been further accented by wing-shaped LED headlights. Inside the vehicle, the most prominent changes include a 30-inch driver-centric freeform display, an integrated touchscreen on the steering wheel, and an advanced full-



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width heads-up display. The front passenger seat features a rotating system that allows the passenger to enjoy seamless communications during the journey.

## Outlook and implications

The two new concepts are created by Buick to demonstrate its technology capacities leveraging its latest battery and AV technologies. It is reasonable to expect some of the features showcased on these concept models to be realised in Buick's production models. The next-generation GL8 is unlikely to come with a pure electric powertrain. However, the model will still benefit from the launch of GM's Vehicle Intelligence Platform (VIP) architecture, an electric architecture that GM said will be able to deliver greater bandwidth and connectivity to its future vehicles to support the launch its Super Cruise driver assistance system and other AI-backed connectivity features.



*The Buick GL8 Flagship Concept Vehicle*

*Image courtesy: Buick*



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## [Sales Highlights] Xpeng reports strong revenue growth in Q3

### IHS Markit perspective

<b>Implications</b>	Xpeng has reported consistent growth in vehicle deliveries during 2021 thanks to strong demand for its P7 electric sedan. The model's sales have been helped by Xpeng's efforts to open new sales points and expand its self-owned supercharging network.
<b>Outlook</b>	An increase in R&D expenses will put pressure on Xpeng's margin growth; however, in the long term, new models such as the P5 and G9 will help the brand to expand its customer base.

Chinese electric vehicle (EV) maker Xpeng has announced its financial results for the third quarter. The company's total revenues were CNY5,719.9 million (USD887.7 million) in the third quarter, representing an increase of 187.4% year on year (y/y) and 52.1% quarter on quarter (q/q). Xpeng's revenues from vehicle sales were CNY5,460.1 million in the third quarter, an increase of 187.7% y/y and 52.3% q/q.

In the third quarter, the company's gross margin stood at 14.4%, compared with 4.6% in the same period of 2020 and 11.9% in the second quarter of 2021. Xpeng's vehicle margin was 13.6% in the third quarter, compared with 3.2% in the corresponding period of 2020 and 11.0% in the second quarter of 2021. The company's net loss was CNY1,594.8 million in the third quarter, compared with CNY1,148.8 million during the same period of 2020 and CNY1,194.6 million in the second quarter of 2021. Cash and cash equivalents, restricted cash, short-term deposits, short-term investments, and long-term deposits amounted to CNY45,357.9 million as of 30 September 2021, compared with CNY35,342.1 million as of 31 December 2020 and CNY32,871.2 million as of 30 June 2021. The company's research-and-development (R&D) expenses were CNY1,264.2 million in the third quarter, an increase of 46.4% from CNY863.5 million in the second quarter. According to Xpeng, the increase was mainly due to the increase in compensation to employees as a result of an expanded R&D workforce, and higher expenses relating to the development of new models, namely the G9 and the P5, and related software technologies to support future growth.



In the third quarter, Xpeng's vehicle deliveries increased 199.2% y/y to 25,666 units, setting a new quarterly record. Of this total, deliveries of the P7 increased 71.2% y/y to 19,731 units. According to Xpeng, 99% of the P7 units delivered in the third quarter featured its XPilot 2.5 or XPilot 3.0 advanced driver-assistance system (ADAS). As of the end of September, Xpeng has 439 super-charging stations in China covering 121 cities.

### Outlook and implications

Xpeng has reported consistent growth in vehicle deliveries during 2021 thanks to strong demand for its P7 electric sedan. The model's sales have been assisted by Xpeng's efforts to open new sales points and expand its self-owned supercharging network. The company currently operates 438 supercharging stations in China,





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compared with 231 at the end of June. The availability of more charging points helps Xpeng to attract EV buyers who do not have access to home charging. Regarding its financial performance, Xpeng still operated at a loss during the third quarter; however, its sales growth has translated into higher revenues and better vehicle margin. The increase in R&D expenses will put pressure on its margin growth; however, in the long term, new models such as the P5 and G9 will help the brand to expand its customer base, which will lay the foundation for Xpeng to expand its revenue stream and turn a profit.

One main differentiator of Xpeng from its competitors is the company's capability to develop competitive automated driving systems designed specifically for Chinese customers and China's road conditions. The XPilot, Xpeng's evolving ADAS, has a high take-up rate among its customers. According to the automaker, 99% of the P7 vehicles sold to customers are equipped with either the XPilot 2.5 or XPilot 3.0 software. Compared to the XPilot 2.5, the XPilot 3.0 allows the vehicle to perform more-sophisticated tasks such as navigation-guided autopilot. The G9 electric sport utility vehicle (SUV), which Xpeng debuted on 19 November at the Auto Guangzhou expo, will help the brand to compete with rivals such as Tesla and NIO in the premium SUV market. More importantly, the roll-out of the XPilot system will present new revenue streams for Xpeng, which will be driven by new services centred on software subscriptions, rather than vehicle sales and aftermarket services. Xpeng began deliveries of the P5 electric sedan in October. The model has the hardware to support the application of the automaker's latest ADAS, the XPilot 3.5. The P5 with the XPilot 3.5 will be able to perform automated driving on both highways and city streets, making Xpeng the first EV maker in China to bring this technology to production EVs.

## [Sales Highlights] South Korean EV sales almost double in January–September

Electric vehicle (EV) sales in South Korea jumped by around 96% year on year (y/y) during January–September to 71,006 units, reports the Yonhap News Agency, citing data released by the Korea Automotive Technology Institute. South Korea is seventh-largest country in the world in terms of EV sales during the period. China sold the largest number of EVs with 1.76 million units in the nine-month period, followed by the US with 272,554 units, Germany with 243,892 units, Britain with 131,832 units, France with 114,836 units, and Norway with 84,428 units. South Korea's total also represented 5.5% of all new vehicles sold in the country during the time, which was lower than China's 9.4% but greater than 2.3% in the US. In the first nine months of 2021, global EV sales reached 3.01 million units, surpassing the 3 million mark for the first time, highlights the report. Hyundai Motor Group sold 159,558 EVs during the period, a 67% y/y increase and the world's fifth-highest total. Tesla was the best EV seller during the period with 625,624 units sold worldwide, followed by SAIC Motor with 413,037 units, Volkswagen (VW) with 287,852 units, and BYD with 189,751 units.







## Outlook and implications

The surge in EV sales reflects growing demand for such vehicles globally, thanks to introduction of new models as well as favourable policies and infrastructure initiatives. Various governments around the world are preparing to phase out the use of gasoline (petrol)- and diesel-powered vehicles in their fight against pollution and are providing incentives to increase the adoption of alternative-powertrain vehicles. The South Korean government also aims to improve air quality by bringing down particulate levels, fostering alternative-powertrain vehicles as the country's new growth engine, and reducing South Korea's heavy reliance on imported oil. It aims for alternative-powertrain vehicles to account for 30% of the total number of vehicles registered in the country by 2030. IHS Markit expects sales of these vehicles in the country to grow further in the coming years, while sales will also be boosted by government initiatives. We expect annual production of alternative-powertrain vehicles in South Korea to grow to about 1.27 million units by 2025, up from around 485,400 units in 2020. Of the total alternative-powertrain vehicle production in the country, we estimate that EV production will stand at over 617,000 units in 2025, up from around 143,500 units in 2020.



## [Technology Highlights] Powertrain electrification advances in luxury segments – IHS Markit

### IHS Markit perspective

<b>Implications</b>	US consumer appetite for electrified vehicle powertrains has been growing since 2017; IHS Markit light-vehicle registration data illustrates the change, and perhaps challenges as non-luxury electrification is growing more slowly than for luxury brands.
<b>Outlook</b>	Consumers are adopting electrified powertrain solutions at a faster pace – in luxury segments. The results reflect both interest in electrification, and the challenge of going deeper into more affordable segments. Although our review of IHS Markit light-vehicle registration data through September reflects positive momentum for new EVs, Tesla remains the most significant driver of increasing EV market share, as it has the most production capacity at present. In 2021 the EV space remains a luxury proposition. Electrification is increasing, but these results do reflect that it remains a luxury solution today, and far from a mainstream solution.



US consumer appetite for electrified vehicle powertrains has been growing since 2017; IHS Markit light-vehicle registration data illustrates the change, and perhaps challenges as non-luxury electrification is growing more slowly than for luxury brands. IHS Markit identifies Tesla as a luxury brand, on its price and comparatively limited availability. This study is based on the IHS Markit Catalyst for Insight data identifying vehicle registrations by advanced vehicle type, with calendar year-to-date 2021 including January through 30 September.

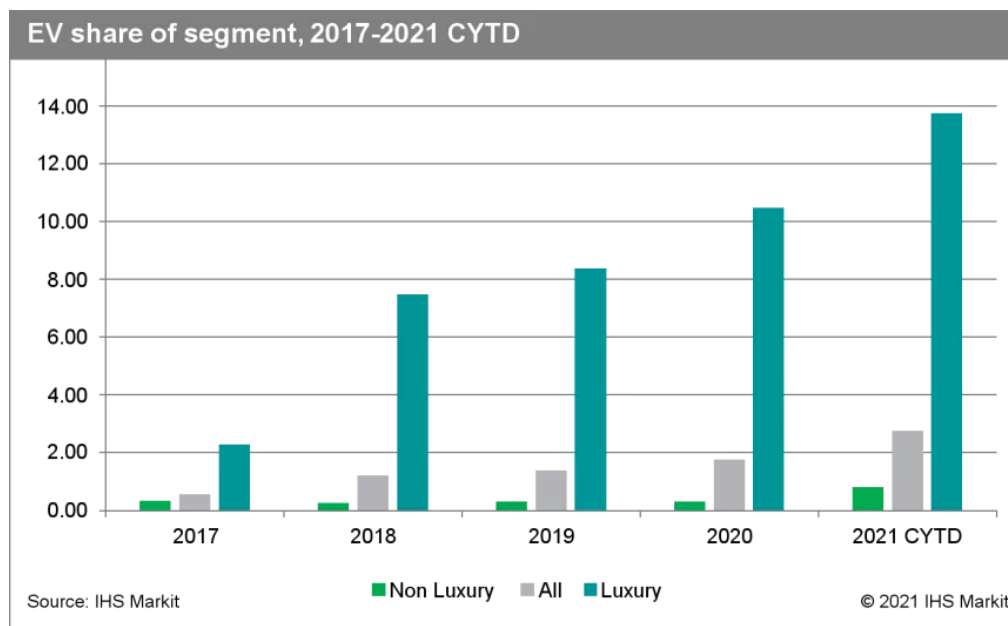
In both luxury and non-luxury segments, the top two powertrain choices remain non-electrified four- or six-cylinder internal combustion engines. However, as electrification gains ground more quickly in the luxury segments, registrations of vehicles with traditional non-electrified four- and six-cylinder engines has dropped from 85% in 2017 to 66.5% through September 2021 – and largely thanks to Tesla, electric has become the third most popular propulsion solution in the luxury segments in through September 2021, with 13.8% of luxury registrations. In non-luxury segments, registrations of vehicles with standard four- and six-cylinder engines has dropped from 81.2% in 2017 to 75.2% through September 2021, and electric vehicle (EV) solutions rank in sixth position, at 0.8% of non-luxury vehicle registrations.

While the jump in EV registrations for luxury segments is dramatic, luxury segments have also recorded a sharp gain in hybrid electric alternatives. In luxury segments, registrations of hybrid powertrain vehicles have jumped from 1.5% in 2017 to 8.9% through September 2021. Non-luxury segments have also noted a significant jump, from 2.2% in 2017 to 5.7% through September 2021. Although there are more plug-in hybrid (PHEV) options in 2021, they are also rising more in the luxury segments. Through September 2021, these accounted for 2.3% of luxury vehicle registrations, up from 1.3% in 2017. Although Toyota and Jeep both report high demand for Toyota



RAV4 Prime and Jeep Wrangler 4xe, plug-in hybrids have not gained as much in non-luxury. Share has nearly doubled since 2017, but non-luxury PHEV registrations remain below 1% through September 2021.

### Increased production volume from Tesla drives EV registration gains



Higher EV registrations do reflect US consumer interest, but in 2021 Tesla is still the main driver of change. Tesla's impact on EV sales gains in the US in 2020 and 2021 cannot be understated, as the EV-only company brought a second plant online in early 2020 and added the ever-popular C-segment utility vehicle in the Model Y. The company's global production reached 510,000 units in 2020. IHS Markit forecasts output will approach 900,000 units in 2021. By comparison, Tesla produced only 101,028 units in 2017. Tesla volume will continue to grow, though share will continue to decline as production capacity and new models at other brands comes online as well. As Tesla is considered a luxury brand, it has accounted for the lion's share of increased sales of EVs in the luxury segments in 2021. In 2017, EVs accounted for 2.3% of luxury light-vehicle registrations. Through September 2021, the powertrain solution reached 13.8% of luxury registrations. However, at a brand level Tesla accounted for 90.5% of luxury EV registrations from January through September 2021 – down from 95% in 2017. Apart from Tesla, Audi had the highest registrations of EVs so far in 2021, at 8,177 units compared with Tesla's 227,389 units.

By comparison, in the non-luxury segments, EV registrations through September 2021 reached only sixth among the available options, less than 1% of registrations, with 83,011 units. The brand mix within non-luxury EVs is also more widely dispersed. Chevrolet remains the top non-luxury EV brand through September 2021, although Ford has succeeded in reaching second place with its first thorough EV effort in the Mustang Mach-E, and with a healthy lead over third-place Volkswagen (VW). Of note, though Nissan, Hyundai and Kia are not new to offering EVs in the US, these three brands occupy third to sixth positions over the first nine months of 2021. For Nissan in particular, this is a stumble compared with 2017 when the Leaf was second behind Chevrolet's Bolt. Combining all EV registrations through September 2021, luxury and non-luxury, Tesla still accounted for 68% of registrations.

### PHEV: Still an outlier



Although registrations of PHEVs have increased in both luxury and non-luxury segments, the increase is smaller than either EV or HEV gains. In the luxury segment, in 2017 there were 19 nameplates with PHEV options. This increased to 28 in 2021. PHEV registrations reached 2.3% of luxury registrations in 2021 compared with about 1.3% of luxury registrations in 2017 and a dip to 1% in 2019. There has been more striking growth in registrations of EVs and HEVs than PHEV; on paper the PHEV solution is a reasonable gap from ICE to EV, although this does not seem to be reflected in its lesser market popularity. In non-luxury segments, PHEV share at 0.9% through September 2021 is notably behind even registrations of non-electrified three-cylinder engines, which reached 3.3% through September 2021. PHEV has a higher take rate in luxury segments in part as the more expensive vehicles can better mask the higher cost, and indirectly as European luxury brands rely more heavily on the solution to assist with global emissions regulations. Lincoln is currently the only US luxury brand offering a PHEV solution, as it does with both the Corsair and the Aviator. Through September 2021, BMW has seen the most registrations of PHEVs, followed by Volvo. These two brands accounted for nearly 71% of luxury PHEV registrations through September 2021. In non-luxury brands, Toyota is far and away the leading PHEV brand with 47% of non-luxury PHEV registrations through September 2021, although Jeep has captured 22% with the Wrangler 4xe. The Wrangler 4xe has also outperformed the Chrysler Pacifica minivan PHEV's 14%. For Jeep, this bodes well as the Grand Cherokee is due to see a 4xe in 2022.

#### US LV registration share, advanced vehicle type, Luxury

	2017	2018	2019	2020	2021 CYTD	Point change vs 2017
EV	2.28	7.49	8.37	10.48	13.75	11.47
HEV	1.49	1.94	4.82	7.30	8.85	7.36
PHEV	1.29	1.44	1.12	1.31	2.34	1.05
ICE	94.95	89.13	85.69	80.91	75.06	-19.89

Source: IHS Markit Catalyst for Insight, data to 30 September 2021

#### HEV still growing

In luxury registrations, the number of HEV options, regardless of engine size, has grown from 16 in 2017 to 39 in 2021. This has contributed to HEV jumping to 8.9% of luxury light-vehicle registrations through September 2021, from 1.5% in 2017. Relative to HEV registrations in the luxury segments, Mercedes-Benz has aggressively added mild hybrid electrification to its powertrain line-up, and the brand now sees more HEV registrations than the traditional lead for electrification that Lexus has enjoyed. For some nameplates at European luxury brands, by 2021 all powertrain options have at least a 48-volt mild-hybrid system. The increased take rate on HEVs in the luxury segment has been advancing more quickly since 2019, when it jumped to 4.8%. For non-luxury brands, traditional HEVs are largely the domain of Toyota, which captured 62% of HEV registrations from January through September 2021. With the 2021 introduction of the Honda CR-V hybrid has led to Honda's HEV registrations doubling since 2019, although still only 13% of non-luxury HEV registrations. As more automakers have shifted to prioritising an eventual (although truly decades away) end of the internal combustion engine and a future for EV as the primary solution, the attractiveness of continuing to fund development of new HEVs has diminished.



### US LV registration share, advanced vehicle type, Non-luxury

	2017	2018	2019	2020	2021 CYTD	Point change vs 2017
EV	0.33	0.27	0.30	0.32	0.80	0.47
HEV	2.22	2.19	3.01	3.41	5.72	3.50
PHEV	0.45	0.64	0.44	0.35	0.87	0.42
FCEV	0.02	0.02	0.01	0.01	0.03	0.01
ICE	96.99	96.88	96.23	95.92	92.58	-4.41

Source: IHS Markit Catalyst for Insight, data to 30 September 2021

## Outlook and implications

Consumers are adopting electrified powertrain solutions at a faster pace – in luxury segments. The results reflect both interest in electrification, and the challenge of going deeper into more affordable segments. Although our review of IHS Markit light-vehicle registration data through September 2021 reflects positive momentum for new EVs, Tesla remains the most significant driver of increasing EV market share, as it currently has the most production capacity. Although there are indicators that consumers are warming to EVs and an increasing number of affordable EVs, in 2021 the EV space remains a luxury proposition. Electrification is increasing, but these results do reflect that it remains a luxury solution today, and far from a mainstream solution.

Some of increase in electrification overall is certainly driven by choice and availability, as electrification has become an embedded part of the powertrain landscape. For now, electrification continues to make inroads into luxury segments more quickly as the technology carries higher cost, although there is a change in non-luxury as well. As more choice becomes available, consumers are adopting electrified powertrain solutions. For non-luxury segments, registrations of HEVs have increased 3.5 percentage points compared with 2017, while registrations of EVs are up only 0.47 percentage point, similar to the change for PHEV registrations. In the luxury segments, EV share of registrations has jumped 11.5 percentage points since 2017, while HEV has jumped 7.4 percentage points, and PHEV a far more modest 1.1 percentage points. As we noted that the increase in registrations of EVs is still a result of Tesla's increased availability, in volume terms, registrations of EVs in the luxury segment over the first nine months of 2021 (251,250 units) are also substantially higher than non-luxury (83,011 units).

## [Technology Highlights] Tesla begins releasing new Full Self-Driving Beta software update 10.5

Electric vehicle (EV) manufacturer Tesla is rolling out its Full Self-Driving Beta (FSD Beta) update 10.5, Electrek reported on 22 November. FSD Beta is an early version of Tesla's self-driving software that allows a vehicle to drive autonomously to a destination entered into the navigation system, but the automaker insists that the driver must be ready to take control at all times. The updates include improved vulnerable road user (VRU) crossing velocity error by 20% from improved quality in auto-labelling; improved static world predictions by up to 13% using a new static world auto-labeller; improved cone and sign detections; improved cut-in detection network by 5.5% to help reduce false slowdowns; enabled 'emergency collision avoidance manoeuvring' in shadow mode; enabled behaviour to lane change away from merges; improved merge object detection recall by using multi-



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modal object prediction at intersections; improved lane changes by allowing a larger deceleration limit in short-deadline situations; improved lateral control for creeping forward to obtain more visibility; improved modelling of road boundaries on high curvature roads; and improved logic to stay on-route and avoid unnecessary detours/rerouting.



## Outlook and implications

In September, Tesla began making a beta version of its self-described fully autonomous system available to select vehicle owners. The previous month, the National Highway Traffic Safety Administration (NHTSA) opened an investigation into Tesla vehicles specific to the company's Autopilot system's ability to recognise emergency vehicle lights in low-light conditions. In October, Tesla rolled back its FSD Beta 10.3 software update, less than a day after its release. This came after users complained of false collision warnings and other issues. Tesla's driver-assistance systems, which it calls Autopilot and FSD, are coming under increasing scrutiny by US regulatory agencies. This is even after the company's launch of an FSD Beta programme promising increased capability, as well as its issuing of updates that may address a situation under investigation by the NHTSA.





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## [GSP] Europe Sales and Production Commentary -2021.11

### Europe sales

**October 2021: -27.9%; 1.153 million units vs. 1.599 million units**

**YTD 2021: +4.8%; 13.903 million units vs. 13.271 million units**

European light-vehicle registrations fell back again during October. According to IHS Markit's latest forecast, registrations in the region declined by 27.9% year on year (y/y) to 1.153 million units. Nevertheless, substantial earlier gains due to the low base caused by COVID-19 measures during the first half of 2020 have helped to keep volumes in positive territory in the year to date (YTD). For the first 10 months of 2021, registrations were up by 4.8% y/y to around 13.903 million units.

We have also published a comparison with 2019 data that underlines the weakness in the market compared with pre-pandemic levels. It fell by 29.1% last month compared with October 2019 and retreated by 19.3% when comparing the YTD 2021 with 2019 figures. The decline in the region last month was partly due to contractions in some of the largest markets, although the majority posted double-digit percentage falls. The falls suffered in Western Europe last month were despite October 2020 already being subdued and slipping back. The recent weakening in registrations during 2021 has been mainly caused by a lack of available vehicles caused by the shortage of semiconductors, which is hitting production. The length of time that this has been overhanging the industry has meant that existing inventory has been depleted, while evidence suggests that the third quarter has taken the biggest hit to production so far, further hampering many OEMs' ability to restock. The supplies of semiconductors are unlikely to normalize until the second half of 2022, not helped by competition from consumer electronics firms, while the first half of 2023 is now seen as the point at which recovery efforts start to take place.

In October, Western European markets performed quite equally, with high losses in all countries, which had been expected because of the ongoing semiconductor shortages that now show a significant impact on sales volumes throughout the region. There were double-digit losses in nearly all markets, with the strongest declines being recorded in markets like the United Kingdom (down by 24.4%), Italy (down by 34.2%), Germany (down by 33.9%), Belgium (down by 33.4%), Finland (down by 13.6%), Sweden (down by 28.9%), France (down by 29.3%), Austria (down by 41.8%), Portugal (down by 20.0%), and Denmark (down by 17.3%). Unlike other markets, one market showed a slight growth in October, with Ireland up by 0.2%, followed by Greece, down by 8.7%. Moreover, the implemented car stimulus programs directly affect the recovery of the different markets. The Western European market was down by 24.5% y/y in 2020. It started solidly into the first quarter of 2020, but with the COVID-19 virus outbreak, the trend significantly changed and pushed the market into a deep recession, with sales volumes falling massively in the second quarter of 2020. With lower infection numbers and government support, sales volumes improved in the third quarter, until the second wave of the pandemic arrived and dragged down sales volumes again. On a positive note, governments around the world are working toward sustainable ways to manage the COVID-19 virus pandemic. Recovery cycles will be largely determined by the path of the pandemic, including progress on vaccination programs. All parts of Western Europe again face a winter of stubbornly high COVID-19 infection rates and ongoing restrictions, which could further dent automotive demand prospects. The crisis intensifies operational and economic pressures on an already-stressed global automotive industry, especially as OEMs and suppliers finetune strategies toward coping with "new normal" vehicle demand levels.



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Trends in new COVID-19 cases remain a concern in some member states. The restraining effects on economic activity across the eurozone have diminished markedly, reflecting various factors. These include divergent national trends in COVID-19 cases. High vaccination rates, resulting in relatively fewer hospitalisations and fatalities and fewer stringent containment measures, reduced risk aversion. The adaptation of business models to the post-pandemic environment has also shifted the relationship between COVID-19 restrictions and short-term growth dynamics. The stronger-than-expected 2.2% quarter-on-quarter (q/q) gain in the second quarter will likely be followed by a progressive slowdown in the rate of growth from the second half of the year onward. While the rebound in household consumption of services will again boost GDP growth in the third quarter, ongoing supply-side disruptions are likely to hinder industrial and trade-related activity. As the catch-up in consumption fades into 2022, q/q growth rates will slow markedly. Growth rates will continue to vary across member states. This reflects differences in a range of factors, including COVID-19 trends, approaches to restrictions, the economic structure, and available policy space. The more manufacturing and trade-orientated economies, such as Germany, are generally returning to their preCOVID-19 levels of GDP sooner than the more indebted, services-sensitive economies of southern Europe. However, the former are also being impacted in the short term by the global effects of supply-chain disruptions.

The European Central Bank (ECB) will look through the currently high inflation rates. The bank is reducing the pace of its asset purchases but will retain a highly accommodative stance. The short-term evolution of its policy will remain sensitive to any risk of tighter financial conditions. Underlying consumer price inflation rates have risen less rapidly than headline rates, and the risk of second-round effects via higher wage growth remains low given the output gap and persistently low inflation expectations. Base effects and easing supply-side bottlenecks will see inflation rates fall sharply in 2022.

GDP growth will reach 5% in 2021 but is already past its peak. The second-quarter q/q rebound in GDP was subsequently revised upward to 2.2%—a much stronger increase than initially expected. Weakness in private consumption, especially of services, has been the main drag on economic activity during the pandemic, but it is strongly rebounding as COVID-19-related restrictions diminish, labour market conditions improve, and the 2020 surge in household savings rates unwinds. With the consumer-led rebound to continue in the third quarter, q/q GDP growth should remain elevated, although a moderation is expected relative to the second quarter given supply-side disruption in some sectors. Growth rotation from manufacturing to services will continue. Industrial production and trade drove the initial phase of the eurozone's recovery, with the rebounds following the COVID-19 virus shock much earlier and stronger than those following the Global Financial Crisis. However, supply-chain problems are now restraining industrial production, with the acute disruptions still evident in the extreme lengthening of suppliers' delivery times within the IHS Markit manufacturing Purchasing Managers' Index (PMI) data. The switch from manufacturing to services-led growth is also evident in the PMI data, with business activity in services soaring to its highest level for two decades.



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Longer-term growth prospects remain challenging. Eurozone GDP was still 2.5% below its pre-pandemic level following the second quarter's strong rebound, and the ongoing bounce in household consumption due to the relaxation of COVID-19-related restrictions is supportive of well above-potential growth rates in the coming quarters. Looking beyond these temporary effects, however, growth rates will be restrained by structural factors. Demographic trends are unfavourable in many member states, while productivity growth has been on a long-term downward trend. Large, multi-year fiscal adjustments will also be needed in many member states given elevated debt burdens. We estimate a long-term potential growth rate for the eurozone of a little over 1%.



Compared with the development in Western Europe, demand in Central Europe was slightly better and recorded a 22.6% drop in October with 91,225 units, which still means 8.8% growth when comparing the two YTD figures. After more than one year of steep falls, the Central European market started a recovery process from March onward, with strong growth rates during the second quarter, which was a bit higher than the performance of the Western European region. Decreases and volume drops in October were seen in nearly all Central European markets, such as Croatia (down by 59.0%), Czechia (down by 24.0%), Poland (down by 21.4%), Hungary (down by 22.2%), Lithuania (down by 27.5%), Slovakia (down by 40.7%), and Slovenia (down by 8.8%). In addition, Eastern Europe showed a similar result compared with the other two markets in the European region again. Demand in Eastern Europe during the month fell by 24.4% compared with the same period last year. The main reason for this weak volume was the strong loss in the Turkish market (down by 40.1%), which is related to the strong base level in the country's car market that showed a strong recovery one year ago. Moreover, the Russian market showed a double-digit loss (down by 19.4%) compared with the same month one year ago.

For full-year 2020, the European light-vehicle market posted a significant loss of 20.4%, with sales of 16,417,367 units, mainly because of the outbreak of the COVID-19 virus in spring 2020. The results were affected by losses in Western Europe (down by 23.7%) and similar losses in Central Europe (down by 23.8%). The Eastern European region was dragging up the sales level of the whole European region with a gain of 2.1% for full-year 2020. Despite the good news that effective vaccines will be widely available by the third quarter of 2021, expectations for the third quarter of 2021 lean toward the cautious side. The global spread of the COVID-19 virus will still have a fundamental impact on the short-term economic outlook. Moreover, the semiconductor shortages will affect the short-term development.

Other than the COVID-19 virus outbreak that will have a massive effect for a longer period, there are further downside risks. Protectionism is a prominent source of concern. The threat of an all-out trade war could be enough to defer some expenditure, especially investment. Emerging-market turbulence is an additional headwind to growth and a source of uncertainty. Political developments in Italy, the potential effect on sovereign yields and spreads, and contagion to other member states also merit attention.



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## [Supplier Trends and Highlights] BlackBerry, L-SPARK announce third phase of accelerator program for Canadian connected car firms

**The accelerator will provide access to BlackBerry IVY for companies to develop solutions using in-vehicle data**



Source: Getty Images

BlackBerry has partnered with software-as-a-service accelerator L-SPARK for the third phase of the joint accelerator program, for companies developing connected vehicle solutions in Canada, it said in a 23 November press release.

This year, the accelerator will provide selected companies with access to BlackBerry's Intelligent Vehicle Data Platform—BlackBerry IVY, for companies to develop solutions using in-vehicle data to improve driver and passenger experiences.

“After two successful cohorts with L-SPARK we look forward to going to back to the deep talent pool that exists within the Canadian start-up scene to help identify those companies that share our vision: a transportation industry—and in-vehicle experience—transformed by data. As we continue to build out a robust ecosystem of services and automotive applications to leverage the rich data insights that BlackBerry IVY provides, we can't wait to see the ideas and use cases that will emerge to help automakers unlock the vast potential of next generation intelligent connected vehicles,” said Peter Virk, VP of IVY Product and Ecosystem, BlackBerry.

### Outlook and implications

This is the third cohort following the successes in 2019 and 2020. The cohort helps small and medium-sized technology enterprises grow their businesses and develop new products using BlackBerry QNX technology. Companies can apply till 7 March 2022 after which BlackBerry and L-SPARK choose up to six companies to join the third cohort of the program.

“Imagine the possibilities when we combine the Canadian SME community's imagination with the technological depth and market reach of BlackBerry. The breadth of applications, the depth of innovation, and market traction when combined through this accelerator program will be ground-breaking. I look forward to seeing the transformative services demonstrated for use in the transportation industry and the in-vehicle experience of the drivers using these applications driven by BlackBerry IVY,” said Leo Lax, executive managing director of L-SPARK.



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## [Supplier Trends and Highlights] Startup Cybellum partners with HCL Tech for automotive cybersecurity solution

**Solution to meet UNECE WP. 29 regulations and ISO/SAE 21434 policies**



Source: Getty image/metamorworks

Cybellum has tied up with HCL Technologies, it said in a press release dated 16 November. HCL will deploy a delivery model of the Cybellum Cyber Digital Twins platform with associated services to automotive OEMs and suppliers. The model will comprise of a solution for risk assessment, automated vulnerability management, compliance to regulatory requirements and continual monitoring of emerging cyberthreats.

“In HCL, we found a strong partner who brings to the table vast experience and knowledge of the automotive and transportation industries along with proven capabilities in executing large scale projects for leading OEMs and their suppliers. Cybellum is dedicated to powering product security teams in developing, producing and maintaining secured connected vehicles. We are excited to pair our technology with HCL's strategic expertise to accelerate the adoption of the Cyber Digital Twins platform across the globe,” said Colin Blou, CRO of Cybellum.

### Outlook and implications

Cybellum helps automakers and suppliers identify and remediate security risks throughout the entire vehicle life cycle. Its solution scans embedded software components without needing access to their source code. HCL's cybersecurity team will look to ensure the solution meets the needs UNECE WP. 29 regulations and ISO/SAE 21434 policies.

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