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[CES 2022 Highlights] Panasonic unveils AR HUD 2.0 with eye-tracking-system

The system can adjust according to the driver's height and head movement



Source: Getty Images

Panasonic Automotive Systems Company of America has unveiled a vehicle-installed augmented reality (AR) HUD 2.0 with proprietary eye tracking technology, it said in a press release on 4 January. The system is integrated with an IR camera that customizes roadway data into the field of view of the driver. The system is able to adjust according to the driver's height and head movement, before aligning the visuals.

"The Panasonic AR HUD 2.0 leverages the trend of up-integration of display domains, such as Cluster and HUD into the central infotainment compute module and later leveraging these rendering blocks into the Software Defined Car. By implementing our proprietary eye tracking technology into the HUD we can improve fidelity of images in driver's field of view, focusing, measuring and tracking to the real world precisely by knowing exactly where the driver is looking," said Andrew Poliak, CTO, Panasonic Automotive Systems Company of America.

Outlook and implications

The system uses advanced optics technology with parallax alignment and dynamic autofocus. The AR HUD 2.0 is powered by eCockpit infotainment controller, Skip Gen 2. The optical design and offers high-resolution AR icons powered by AI navigation software for greater awareness of a vehicle's changing environment.

The AR HUD also include Dynamic auto focus, High resolution DLP, 3D AR icons, AI mapping intelligence, tilted image plane (dual image plane), simulating 3D presentation and is cost effective.

[CES 2022 Highlights] OpenSynergy to showcase its automotive virtualization platform

The SDK is based on the 4th Generation Snapdragon Cockpit Platforms



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Source: Getty Images/Jackie Niam

OpenSynergy has announced that its automotive virtualization platform the COQOS Hypervisor Software Development Kit (SDK) will be demonstrated at the CES 2022 at Las Vegas, it said in a press release on 4 January.

The SDK is based on the 4th Generation Snapdragon Cockpit Platforms, the Snapdragon ADP with OpenSynergy's virtualization technology. It will show premium user experiences, features for safety, comfort, and reliability.

"At CES we will show our newest version of the automotive virtual platform COQOS Hypervisor SDK on the latest Snapdragon Cockpit Platform. We believe carmakers will get countless opportunities for innovations by porting integrated applications from existing hardware systems to this powerful cockpit solution provided by Qualcomm Technologies and OpenSynergy," said Isaac Trefz, product manager, OpenSynergy.

Outlook and implications

The company will showcase a cockpit domain controller using Linux and an Android Operating System (OS) running on top of COQOS virtualization platform and Snapdragon ADP, showcasing two operating systems sharing devices, such as a graphics processing unit (GPU), block device and touch input, using the open standard, Virtual I/O (VIRTIO). Linux will host the Instrument Cluster, while Android will host the in-vehicle infotainment.

"The cooperation with Qualcomm Technologies has grown stronger in the past several years. The 4th generation Snapdragon Cockpit Platform has become one of our most important references to develop the standards-based automotive virtual platform for the next generation of cars," said Regis Adjamah, CEO, OpenSynergy.



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[GSP] South America sales and Production Commentary -2021.12

South America sales

November 2021: -12.9%; 306,000 units vs. 351,000 units

YTD 2021: +14.0%; 3,314,000 units vs. 2,907,000 units

November topped sales of 306,000 units in South America, with Andean nations leading a double-digit expansion. On the other hand, Brazil and Argentina experienced quite the opposite, with double-digit contractions. One of the reasons behind this asymmetry within the region is that most of Mercosur is dependent on local production, in which there have been major production cutbacks, whereas Andean nations are reliant on Asian sourcing. Sales are likely to start leveling off in Andean nations, thus flattening the pace of growth throughout 2022.

The region experienced a double-digit expansion in the year to date, with nearly 3.3 million units sold. We will closely monitor the situation in Argentina, as the government is likely to have less maneuvering room after losing majority in congress and as it tries to accommodate for its negotiations with the International Monetary Fund (IMF). Currently, there is a fading effect owing to the gap between the blue dollar and the official exchange rate. Consumers are swapping their dollars in the black market at a rate of ARS200/USD1, but cars are sold at the official exchange rate of ARS100/USD1, which makes the operation more than one-third cheaper.

The macroeconomic model for Brazil signals toward sales of 2.2 million units in 2022. The affordability model suggests a market around 2.0 million units given vehicle prices and inflation. Sales will remain largely unchanged next year, given higher financing rates and the dearth of product. The good news is there is plenty of room for the upside if component availability improves.

Sales within the region in 2019 were at 4.5 million units. This figure was not an all-time high, but it is the benchmark being used globally for how long it will take to recover from COVID-19. Year 2020 likely closed with sales of 3.2 million units, and these will climb toward 3.7 million units in 2021. The long-term outlook projects sales to approach 5.0 million units by 2026 as the region recovers.

South America production

November 2021: -7.7%; 246,589 units vs. 267,180 units

YTD 2021: +17.4%; 2,360,503 units vs. 2,010,098 units

Following in the steps of recent months, volumes suffered another decline in November 2021 in South America, with fewer than 250,000 units built, a 7.7% drop over the November 2020 reading. The main culprit for this decrease remained the ongoing semiconductor supply crisis that is affecting manufacturers throughout the globe. Still, on a year-to-date (YTD) basis, South American volumes kept trending upward by 17.4% year on year (y/y), over 2.3 million units. Unfortunately, the difficulties within the supply chain will likely linger (if they do not worsen) in the coming few months and continue suppressing performance well into 2022.

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[Policy Highlights] China to fully open auto sector to foreign investment, scraps foreign-ownership limits on auto companies

Implications China is to allow full foreign ownership of passenger vehicle manufacturing ventures in the country, starting from 1 January 2022.

Outlook China's plan to lift the cap on foreign ownership of auto ventures was announced in 2018. Since then, automakers have made moves to capitalize on the regulatory changes, with the resulting 'equity tug-of-war' hinging on each party's contribution to a JV.

China's authorities are to allow full foreign ownership of passenger vehicle manufacturing ventures in the country, starting from 1 January 2022. The regulation that requires foreign automakers to enter into 50:50 joint ventures (JVs) with local companies has been removed by China's top industry regulator, the National Development and Reform Commission (NDRC), in the 2021 edition of the "Special Administrative Measures for Foreign Investment", also known as the Negative List. The Negative List published on 27 December has not only removed regulations that limit foreign ownership of automotive JVs to a maximum of 50%, it has also scrapped regulations that only allow foreign companies to have a maximum of two JVs engaged in auto manufacturing in China. In a statement, the NEDC says that by removing such restrictions, China will deepen the reform of its manufacturing industry and further open up its market to global investors. In 2020, China scrapped regulations that limited foreign ownership of commercial vehicle JVs to a maximum of 50%.



Commenting on the imminent regulatory change, US business publication Forbes stated that "the announcement frees up newer brands like Rivian and Lucid to gain access to the world's biggest passenger car market without buying in to a Chinese brand, and it also allows early-adopting foreign brands like Volkswagen, Ford, GM and Mercedes-Benz to take over their joint ventures". Chinese state-backed media outlet Global Times said it approached Toyota for a comment on the regulatory change, and a spokesperson for the Japanese automaker said the company currently has no plans to explore new relationships with local partners or to seek to establish a solely owned facility in China.

Outlook and implications

China's plan to lift the cap on foreign ownership of auto ventures was announced by the top industry regulators in 2018. The country's authorities have followed through on the plan over the past three years, which helps to set a stable and predictable policy environment for global investors. The relaxed regulatory environment should help China lure an increasing number of foreign investors to the country and boost the confidence of automakers that already have a major manufacturing footprint in the market. Since 2018, automakers have made moves to capitalize on the regulatory changes, with the 'equity tug-of-war' hinging on each party's contribution to a JV.



BMW, for instance, is in the process of gaining a majority stake in its JV with Brilliance Auto. The German automaker reached a deal with Brilliance Auto Group in 2018 to increase its stake in the BMW Brilliance JV from 50% to 75%. Encouraged by the prospect of securing a bigger share of the JV's profits, BMW plans to shift more production to China. The automaker is to begin production of its high-margin X5 sport utility vehicle (SUV) in China next year. The battery electric version of the 3 Series sedan is also to be made in China next year.

In addition, in some cases, foreign automakers are reducing their equity holdings in Chinese JVs. BYD, for instance, announced on 26 December that it has entered into an equity transfer agreement with Daimler regarding their JV. Under the agreement, Daimler is to reduce its share in the Shenzhen Denza New Energy Company JV to 10%. Accordingly, BYD is to increase its equity in the JV to 90%. Denza was set up in 2012 by the two automakers to explore opportunities in the premium electric vehicle market. Local media reports indicate that the equity transfer will pave the way for BYD to better incorporate Denza into its brand portfolio and revive the brand by introducing its core electric technologies to the struggling JV. Reportedly, although both partners remain committed to the JV, the change puts BYD in charge from an operational viewpoint and reduces Daimler's direct role.

[Policy Highlights] China to introduce exclusive insurance policies for NEVs

The Insurance Association of China (IAC) has launched new insurance guidelines specifically for new energy vehicles (NEVs) in the country, reports FutureCar. The new clauses for electrified vehicles were issued by the IAC on 14 December and the dedicated commercial insurance for NEVs was officially launched for sale in China on 27 December. In China, NEVs are categorised as battery electric vehicles, fuel-cell vehicles (FCVs), plug-in hybrid electric vehicles (PHEVs), and range-extended electric vehicles (REEVs). The new insurance policies will cover the components of NEVs, including batteries, energy storage systems, electric motors, and electric control systems of electrified vehicles. According to the IAC, under the new insurance policies, NEV buyers will be compensated for accidents (including spontaneous combustion) happening when their cars are running, parked or being charged.



Outlook and implications

Several insurance providers in China, including PICC Property & Casualty, Ping An Property & Casualty, and CPIC Property & Casualty, have already launched NEV insurance policies on 27 December. The dedicated insurance policies for NEVs are designed to better protect NEV owners in the face of accidents such as a battery fire or certain damage to vehicles during charging. However, many insurance firms are reported to have hiked premiums for NEV models due to the costs of batteries and related electrical components, which are said to be costly to replace if damaged in an accident.



[EV Highlights] Evergrande begins mass production of first NEV model

Evergrande New Energy Vehicle Group (Evergrande), the new energy vehicle (NEV) division of China's property giant Evergrande Group, began production of its first model on 30 December. According to Cailian, production for the Hengchi 5, has already begun at Evergrand's Tianjin plant. Hengchi 5 is a battery electric sport utility vehicle. The model is 4,725 mm long with a wheelbase of 2,780 mm.



Outlook and implications

Evergrande has hit a new milestone in its effort to tap into China's booming NEV sector with the start of production of the Hengchi 5. The arrival of this new model, however, is unlikely to immediately help Evergrande to regain lost confidence among investors as its parent company, Evergrande Group, has been grappling with severe debt issues in the past few months. Evergrande announced in 2019 a series of costly projects to construct its own vehicle manufacturing facilities, including an investment of CNY160 billion (USD25 billion) to build a manufacturing base in Guangzhou and CNY120 billion for a manufacturing site in Shenyang. These projects helped the company to acquire a vast amount of land from local governments for the construction of manufacturing facilities as well as residential buildings. In a company filing to the Hong Kong Stock Exchange published on 26 November, Evergrande said it has returned the undeveloped lands of approximately 2,663,300 square metres designated for living projects and industrial use and involving seven projects at a total amount of CNY1.284 billion. The proceeds are primarily used for project construction and payment of wages for migrant workers, and land payment for the remaining land plots.

[EV Highlights] VW's ID-series EV deliveries reach over 70,000 units in China during 2021

Volkswagen (VW) China has announced the delivery results for its ID-series electric vehicles (EVs) in the Chinese market. The automaker said that combined deliveries of the ID-series vehicles, including the ID.3, ID.4 X, ID.4 Crozz, ID.6 X, and ID.6 Crozz, reached 13,787 units in December 2021, taking the ID series' full-year 2021 deliveries to 70,625 in China.



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Outlook and implications

The year 2021 does not count as a full sales year for the ID-series EV in China as deliveries for the ID series' first models, the ID.4 X and the ID.4 Crozz, only began in March in China. With five models on the market, the ID series began to gain traction in the third quarter with 10,125 units, 12,736 units, and 14,167 units in deliveries for September, October, and November, respectively. Deliveries of the ID series surpassed the 10,000-unit mark again in the final month of 2021, although the automaker still missed its original sales target of 80,000 ID vehicles in China in 2021. In 2022, VW will continue to ramp up production for its MEB-based models to compete with local EV makers. IHS Markit currently expects the automaker to launch three new MEB-based EVs under the VW brand in 2023, which will complete VW's EV production line to cover segments C to E. VW Group's presence in China's EV market will be strengthened in 2024 with the start of local production of PPE-based electric models under the Audi brand.



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[OEM Highlights] BYD's vehicle sales rise 172% y1y in December

Chinese automaker BYD sold 99,112 vehicles in December, marking an increase of 172.0% year on year (y/y). This figure includes new-energy vehicles (NEVs) and traditionally fuelled vehicles. BYD's sales of NEVs, which consist of battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), totalled 93,945 units, compared with 28,841 units in December 2020. Passenger BEVs remained the top-selling category in the automaker's NEV line-up in December, with sales totalling 48,317 units, compared with 19,482 units in December 2020. Sales of passenger PHEVs totalled 44,406 units, compared with 8,112 units in December 2020. Sales of BYD's traditionally fuelled vehicles totalled 5,167 units in December 2021, compared with 27,481 units in the same month of 2020. For full-year 2021, BYD's sales totalled 740,131 units, up by 73.3% from 426,972 units in 2020.



Outlook and implications

BYD's strong December results have taken the company's full-year sales volume to 740,131 units, a new sales record for the automaker. By vehicle type, NEVs accounted for 82% of BYD's sales in 2021. In comparison, the percentage of NEVs in the automaker's total sales was only at 42% in 2020. The strong market performance of BYD's NEV product line will accelerate its transition to become a NEV brand. For full-year 2021, BYD's BEV sales soared by 231.6% from a year ago to 593,745 units. This is despite new models such as the Dolphin yet to gain full traction in the market. Sub-compact electric vehicles (EVs) is likely to help BYD gain volumes in the entry-level EV segment where automakers such as Great Wall Motor (GWM) and Changan have seen rising demand for their new models. In the PHEV market, BYD's DM- hybrid models have proven to be a success. Thanks to the DM-i plug-in hybrid technology, BYD is gaining shares in the PHEV market and leading its rivals, Geely Auto and GWM, in rolling out hybrid models. With sales of the Song Pro DM-i beginning in December 2021, BYD has introduced its latest plug-in hybrid technology to four models of its Dynasty product line. The arrival of the Han DM-i this year will further boost the company's sales in the PHEV market. In the BEV market, BYD's new Ocean series including the Dolphin will continue to expand to cover both EVs and PHEVs. The company will also roll out another all-new PHEV positioned above the Qin Plus PHEV to tap into rising demand for its hybrid models.

[OEM Highlights] NIO, Xpeng and Li Auto report record delivery results for 2021



Implications NIO, Xpeng and Li Auto, the three high-profile Chinese NEV startups, have recorded annual deliveries approaching the 100,000-unit mark in 2021 despite semiconductor shortages and uncertainties brought by the COVID-19 pandemic.

Outlook The year of 2022 will be another important one for China's startup companies as they will have a more diverse portfolio to help scale up production and grow market shares. We currently forecast production volumes of BEVs in China to reach around 3.2 million units in 2022 and further grow to 4.4 million units in 2023.

NIO, Xpeng and Li Auto, the three leading startups in China's new energy vehicle (NEV) sector, have all reported strong delivery results for December 2021. Xpeng outsold NIO and Li Auto with 16,000 vehicles delivered, up 181% year on year (y/y). Deliveries in December consisted of 7,459 units of the P7 electric sedan, 5,030 units of the P5 electric sedan and 3,511 units of the G3 and G3i electric sport utility vehicles (SUVs). For the full year 2021, Xpeng's deliveries surged by 263% from a year ago to 98,155 units. Of the total volumes for 2021, 41,751 units were delivered in the fourth quarter of 2021. The P7 was Xpeng's best-selling model in the fourth quarter with a total of 21,342 P7s delivered and for the full-year 2021, cumulative P7 deliveries totalled 60,569 units, accounting for 62% of Xpeng's total deliveries. In a separate statement, NIO announced that it delivered 10,489 vehicles in December, up 49.7% y/y. For the full year 2021, the premium electric vehicle (EV) maker delivered 91,429 vehicles, compared with 43,728 units delivered in 2020. Faced with supply chain constraints, NIO's deliveries still broke records in the fourth quarter of 2021, with 25,034 vehicles delivered in the period, up 44.3% y/y. Li Auto said its deliveries in December 2021 soared 130% y/y to 14,087 units, setting a new monthly record. The strong result in December took Li Auto's fourth-quarter deliveries to 35,221 units, up 143.5% y/y. For the full-year 2021, the company delivered 90,491 vehicles, up 177.4% from a year ago.



Outlook and implications

Despite semiconductor shortages and other supply chain constraints, NIO, Xpeng and Li Auto, the three highest-profile startups in China's NEV market, still managed to end 2021 with record number of vehicles delivered. The three startups are poised to break their own records in 2022 with new products coming to the market. Xpeng's product line will continue to expand this year to cover the higher end of the EV market. The G7, Xpeng's flagship electric SUV, will enable the automaker to capitalise on the growth of the electric SUV segment when the model enters the market this year. Thanks to the P7, Xpeng has already become one of the top sellers in the mid-size electric sedan market. In the fourth quarter, P7 deliveries reached 21,342 units, an improvement of 1,608 units compared to the third quarter. The P5 which has just begun sales in September will help Xpeng to carry its momentum through 2022. NIO will begin sales of several new models to the market this year as well. The ET7 electric sedan will begin deliveries in March, while volume production for the smaller ET5 will also begin in the third quarter to meet the model's delivery timeline of September 2022. These two new models will complete NIO's premium EV product line, which is solely centred on SUVs at the moment. In comparison, Li Auto's product line is



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much thinner – it currently only has the Li One. The fact that Li Auto has been growing its sales relying on just one model has impressed many market observers. Li Auto is expected to launch its second model, a fullsize SUV featuring its range-extending technology this year, although its focus will still be on the family SUV market. The success of the Li One has encouraged Li Auto to lure some other automakers to the extended-range EV market. Voyah, the new brand under Dongfeng Motor Group, have begun deliveries of its Voyah Free SUV last year while Seres and Huawei have jointly introduced the M5 SUV under a new brand, AITO. Both models have adopted range-extending technologies.



[VIP ASSET] US automakers face more stringent GHG standards with less flexibility than expected



20 December 2021 Amena Saiyid

Automakers will be required to meet increasingly stringent GHG standards for passenger cars and pickup trucks spanning model years (MY) 2023 through 2026 that the US Environmental Protection Agency revised 20 December after recognizing the development and availability of emissions reduction technologies for meeting them.

The final rule revises current GHG standards beginning in MY 2023 and increases in stringency year over year through MY 2026, but with less flexibility than was originally proposed.

Signing the rule at EPA headquarters, Administrator Michael Regan said "we followed the science, we listened to stakeholders, and we are setting robust and rigorous standards that will aggressively reduce the pollution that is harming people and our planet—and save families money at the same time."

The EPA final rule stepped up stringency in GHG standards for MYs 2025 and 2026, while retaining the standards it proposed in August for model years 2023 and 2024. It also retained compliance flexibility for MYs 2023 and 2024 "in consideration of lead time for manufacturers and to help them manage the transition to more stringent standards."

Describing the regulations as "the most ambitious" in US history, Regan said the rule is achievable and affordable. He cited EPA analysis that said the program would achieve up to \$420 billion in fuel costs for gasoline that "you won't have to put in the tank."

Replace SAFE rule

The final vehicles GHG rule replaces standards imposed for MY 2020 through 2025 under President Donald Trump's 2020 Safer Affordable Fuel-Efficient (SAFE) rule, which significantly relaxed targets set in 2012.

Regan said the EPA has delivered on its promise to President Joe Biden, who directed the agency and the US Department of Transportation upon taking office in January to revisit the SAFE rule as part of his government-wide strategy to tackle the climate crisis.

"Today's final standards are expected to result in average fuel economy label values of 40 [miles per gallon], while the standards they replace (the SAFE rule standards) would achieve only 32 mpg in MY 2026," the EPA said.



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The transportation sector remains the largest contributor of GHGs in the US, adding 1.876 billion mt of GHG emissions in 2019, or 29% of the total. Light vehicles (passenger cars and light trucks including sports-utility vehicles) were responsible for 58% of the GHGs emitted by the transportation sector, and 17% of total US GHG emissions.

"EPA projects that the final standards will result in a reduction of 3.1 billion mt of GHG emissions by 2050, which are 50% greater emission reductions than the standards it proposed in August," the agency said.

Moreover, EPA said, cumulative GHG emissions that will be avoided through 2050 are roughly equal to over half of the net total CO₂ emissions in the US in 2019.

Stringent GHG cuts

According to the EPA, the final rule, as was proposed in August, will be responsible for an average 9.8% decrease compared with the 224 CO₂ grams per mile (g/mile) that the SAFE rule set for model year 2022. After MY 2023, the agency said those standards will tighten by an average 5.1% for MY 2024. In contrast to the proposal though, the final rule steps up the stringency with an average 6.6% for MY 2025, and an average 10.3% increase for the subsequent year, reaching a CO₂ emissions limit of 161 g/mile in MY 2026.

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