



# Automotive Industry Weekly Digest

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## [OEM Highlight] Toyota to launch EV with BYD technologies in April 2022

Toyota will unveil a new electric vehicle (EV) developed jointly with Chinese automaker BYD next April, reports Reuters. The new EV will feature BYD's core technologies, including its lithium iron phosphate (LFP) batteries. The report, citing people familiar with the matter, says that the model could be priced at less than CNY200,000 (USD31,396) to aim for a market in China that Tesla could target with a smaller car in the next two years.



### Outlook and implications

Toyota entered into a joint venture (JV) with BYD in April to develop EVs for the Toyota brand. According to the Reuters report, the upcoming new model is likely to be a compact EV similar in size to the Corolla sedan. The news that this new EV will be equipped with BYD's LFP batteries does not come as a surprise. The Chinese automaker has rolled out its self-developed Bland LFP batteries to several of its new launches, including the Han EV and Qin Plus EV. Both of these models are in high demand in China as LFP batteries are less prone to overheating and are more affordable compared with lithium-ion batteries. Such technologies will play a role in helping Toyota lower the price of this jointly developed model. Given the tight launch timeframe, the new model to be introduced by Toyota might be based on a certain exiting EV from BYD's current line-up. From a market point of view, the segment with a price point below CNY200,000 is packed with electric offerings from EV manufacturers, including SAIC Motor, WM Motor, General Motors, and BYD. The new EV backed by BYD's technology will enable Toyota to have a presence in this market, although the model is unlikely to replicate the success of the Corolla.

## [OEM Highlight] Seres launches AITO brand and M5 NEV

Electric vehicle (EV)-maker Seres (formerly SF Motors) launched its new brand AITO, short for Adding Intelligence to Auto, on 2 December. It also showcased the first AITO model, the M5, at the brand's launch event. According to Seres, the M5 is based on its DE-I platform developed for extended range electric vehicles (EREVs). The vehicle will feature Huawei Harmony OS, the operating system Huawei developed for cars. The official launch of the new AITO model is scheduled for 23 December.



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## Outlook and implications

According to Seres, products from the AITO brand will target the premium EV market. This brand positioning will be underpinned by Huawei's technologies; as Huawei intends to widen its business portfolio to tap opportunities in the automotive industry. The partnership with Seres, a struggling EV startup owned by China's Chongqing Sokon Industry Group, gives Huawei a shortcut to bring its products and solutions to market. The two companies have already co-operated in the launch of the SF5 EREV, which features Huawei's electric drivetrain and its HiCar connectivity system. The M5 will further demonstrate Huawei's technology capacity in the field of electrification. The Chinese tech giant is expected to be deeply involved in the development of the M5 which will be the first on the market to feature Huawei's HarmonyOS system.



## [Sales Highlights] BYD reports NEV sales growth of almost 242% y/y in November

Chinese automaker BYD sold 98,340 vehicles in November, marking an increase of 82.3% year on year (y/y). This figure includes new-energy vehicles (NEVs) and traditionally fuelled vehicles. Last month, BYD's sales of NEVs, which consist of battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), totalled 91,219 units, up by 241.9% y/y. Passenger BEVs remained the top-selling category in the automaker's NEV line-up in November, with sales totalling 46,137 units, compared with 18,220 units in November 2020. Sales of passenger PHEVs totalled 43,984 units, compared with 7,333 units in November 2020. Sales of BYD's traditionally fuelled vehicles totalled 7,121 units in November, compared with 27,253 units last November. In the year to date (YTD), BYD's sales rose by 72.9% y/y to 641,019 units.



### Outlook and implications

BYD's monthly sales reached the 100,000-unit mark in November thanks to strong demand for its BEVs and PHEVs. The strong momentum is set to boost the company's sales to reach a new volume level during 2021. By vehicle type, NEVs, including BEVs and PHEVs, accounted for 80% of BYD's sales in the YTD, laying a solid foundation for BYD's phase-out of its internal combustion engine (ICE) vehicles. In November, sales of the Han EV, the automaker's most popular offering in the EV market, rose by 33.9% to 12,841 units. In the PHEV market, its DM-i hybrid models have proven to be a success. Thanks to the technology, BYD is gaining shares in the PHEV market and leading its rivals, Geely Auto and Great Wall Motor, in rolling out hybrid models. The surge in its NEV sales can be attributed to the automaker's swift move to introduce its new-generation battery technology and plug-in hybrid technology to the market. The automaker's Blade battery, which is a type of lithium iron phosphate (LFP) battery, has been widely used across its NEV line-up. The application of the Blade battery has helped it bring down the price of its BEVs. EVs with LFP batteries have also gained acceptance among customers who have been cautious of EVs because of concerns about battery fires caused by battery overheating. Reuters reported on 3 December that Toyota plans to unveil a new EV developed for the Chinese market. The new model under its partnership with BYD will feature BYD's battery technologies.

## [Sales Highlights] GAC Group reports sales growth of 3% in November



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Chinese automaker GAC Group has recorded a 3% year-on-year (y/y) increase in sales to 224,136 units during November, according to a company statement. In the year to date (YTD), GAC's sales increased by 4.1% y/y to 1,910,716 units. Among the group's joint ventures (JVs), sales volume of Guangqi Honda (GAC Honda) reached 77,709 units in November, down by 10% y/y. Sales of GAC Toyota totalled 85,000 units, up 10% y/y. GAC Mitsubishi Motors' sales totalled 7,712 units last month, compared with 9,008 units in November 2020, while those of GAC Fiat Chrysler Automobiles (FCA) totalled 1,829 units, versus 3,655 units in November 2020. Sales of GAC's wholly owned brand managed by GAC Motor, the group's passenger vehicle subsidiary, increased by 7% y/y to 35,572 units in November. GAC AION New Energy, the subsidiary that manages the AION electric vehicle (EV) brand, sold 15,035 vehicles last month, compared with 7,190 units in November 2020.



## Outlook and implications

Toyota's strong November results in China's C-and D-segments enabled the automaker to expand its sales in a turbulent market environment. Under partnership with GAC, Toyota will soon begin deliveries of the Sienna multi-purpose vehicle (MPV) in China. The Sienna, designed to appeal to family-oriented buyers, will further strengthen Toyota's sales in the Chinese market. By contrast, GAC Fiat Chrysler has sold less than 2,000 vehicles in China. The company has been struggling to attract buyers with its limited model range presented by the Jeep brand. AION has been leading the group's charge in the EV market; its sales have doubled in the YTD, reflecting growing consumer acceptance of the brand and its products. To scale up production of its GEP EV architecture, GAC has already reached an agreement with Mitsubishi for the Japanese automaker to launch EVs based on AION's existing models. The Mitsubishi Airtrek, a compact electric SUV based on the AION V, will begin sales in 2022.



## [Technology Highlights] Mazda unveils new technology to bring vehicle to safe place in event of emergency

Mazda has unveiled autonomous vehicle technology that guides a vehicle to a safe place and then brings it to a halt if any sudden change in the driver's physical condition is detected, reports Jiji Press. The system, called Mazda Co-Pilot, is expected to be introduced in vehicles in stages from 2022. The first stage will incorporate a system that can autonomously steer the vehicle to a hard shoulder when travelling on a motorway. Subsequently, starting from 2025, Mazda aims to introduce technology that will enable a vehicle to change lanes autonomously on local streets. The automaker has reportedly already conducted trials with this technology on a Tokyo street. The trial vehicle enabled with the technology started to slow down while indicating danger with a warning tone and hazard lights after the driver pushed an emergency button and took their hands off the steering wheel.



### Outlook and implications

Every year, a number of car accidents take place because of the sudden inability of the driver to control the vehicle owing to a medical condition or because he or she is in a drunken state. This technology unveiled by Mazda could provide a breakthrough in efforts to avert such accidents and help prevent a loss of life.

## [Technology Highlights] Samsung introduces new logic solutions to power next-generation vehicles

Samsung Electronics introduced the Exynos Auto T5123 for 5G connectivity, the Exynos Auto V7 for in-vehicle infotainment systems and the ASIL-B certified S2VPS01 power management integrated circuits (PMICs) for the Exynos Auto V series, according to a company press release. "Smarter and more connected automotive technologies for enriched in-vehicle experiences including entertainment, safety and comfort are becoming critical features on the road," said Jaehong Park, executive vice-president of System LSI Custom SOC Business at Samsung Electronics, adding, "With an advanced 5G modem, an AI-enhanced multi-core processor and a market-proven PMIC solution, Samsung is transfusing its expertise in mobile solutions into its automotive lineup and is positioned to expand its presence within the field".





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## Outlook and implications

The Exynos Auto T5123 is a 3GPP Release 15 telematics control unit designed to perform 5G connectivity in both standalone and non-standalone mode for connected vehicles. Information is delivered in real-time via high-speed download of up to 5.1 Gbps enabling high-definition content streaming and video calls on the go. The Exynos Auto T5123 supports a high speed peripheral component interconnect express interface and a low-power high-performance LPDDR4x mobile DRAM, and comes with two Cortex-A55 CPU cores and a built-in global navigation satellite system (GNSS) to reduce the use of external integrated circuits and thereby reduce product development time. The T5123 meets Automotive Electronics Council-Q100 (AEC-Q100) requirements. The component is currently in mass production and delivering 5G-based vehicle communication capabilities for the first time in the industry. The Exynos Auto V7 is designed for in-vehicle infotainment systems used for powerful processing performance; the V7 integrates eight 1.5-GHz Arm Cortex-A76 CPU cores and 11 Arm Mali G76 GPU cores. The GPU houses three cores in the 'small' domain for cluster display and augmented reality head up display, and eight in the 'big' domain for central information display and others. The V7 is also equipped with a neural processing unit (NPU) for convenient services such as virtual assistance and can process visual and audio data for face, speech, or gesture recognition features. The S2VPS01 is a PMIC designed and developed to support Exynos Auto V9 and V7 and is an ASIL-B certified power management solution. The S2VPS01 helps to regulate power supply allowing for smooth in-vehicle infotainment system performance, comprising triple/dual-phase buck converters and integrates a low-dropout regulator and real-time clock within the package. The S2VPS01 comes with various protection elements including over voltage protection, under voltage protection, short circuit protection, over current protection, thermal shut down, clock monitoring, and output stuck checks.





## [GSP] India/Pakistan Sales and Production Commentary -2021.11

### India/Pakistan sales

**October 2021: -20.3%; 315,847 units vs. 396,431 units**

**YTD 2021: +32.9%; 3,041,684 units vs. 2,288,138 units**

The Indian subcontinent's light-vehicle sales grew by 32.9% from January to October 2021 but declined by 20.3% in October compared with October 2020. Sales in the Indian automotive market in October dropped by 22%, while in Pakistan light-vehicle sales increased by 37%. Semiconductor shortages led to a parts shortage, which led to production halts across OEMs in India. Currently, demand outstrips supply as manufacturers and dealers are fully operational and the festival season coinciding with the harvesting season is pushing demand further. However, price hikes on account of annual inflation and increasing commodity prices are deterrents to growth. OEMs are trying to reorganize models and trim plans to maximize production in India owing to the chip crisis.

The YTD growth spike in India and Pakistan was due to the small base in the second quarter of 2020 because of strict lockdowns last year. The accumulation of savings due to the cut in expenses has boosted consumers' ability to pay the down payment on a vehicle. Lower interest rates are also alluring customers to purchase a new car. However, the chip crisis is creating a mismatch between supply and demand. On the macro side, the Indian economic growth forecast is expected to be strong in 2021, at around 7.7%. Lower interest rates and the tendency to avoid public transportation and to use private cars may be the key drivers that will help the industry grow. In 2021, the market is expected to grow by 21% on a y/y basis.



In Pakistan, automotive sales were strong in October. The incentives announced in budget 2021–22 led to a spike in sales. The reduction in Federal Excise Duty (FED) on vehicles across the board and in the sales tax for below-1,000cc cars led to the rush in the past three months. Also, the entry of new players and growing demand have helped the industry make a strong comeback. The aggressive short-term macroeconomic outlook, lower interest rates, and the recovery in businesses and the economy will remain major drivers of growth. There is a possibility of high short-term demand, but it may be limited by the shortage of parts owing to the chip crisis. However, in the medium term, a deterioration of macroeconomics is likely. In the long term, the momentum is positive for the car industry, and the government is focused on pushing the industry. Changes in private-sector policies will also help drive sales in the country.

### India/Pakistan production

**October 2021: -29%; 311,108 units vs. 439,365 units**

**YTD 2021: +39%; 3.59 million units vs. 2.58 million units**



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The Indian subcontinent's light vehicle production in October 2021 is expected to record 311,108 units, a decline of 29% in production over October 2020 amid low production due to the semiconductor shortage. Its YTD production rose 39%, with over 3.59 million units built, mainly owing to the low base of comparison of last year.

Despite the stronger preference for personal mobility and improved consumer confidence in rural and semi-urban markets, the Indian market declined owing to the semiconductor shortage. Additionally, low dealer inventory rates have extended the waiting period from three months to nine months for best-selling models such as the Hyundai Creta, the Kia Seltos, VW Taigun, Tata Nexon, and the Tata Altroz. The tally surpassed 38 million total COVID-19 cases, but over 98% were discharged after recovery. India reported total deaths of 0.46 million. In June, local state governments, such as Delhi, Haryana, Maharashtra, Uttar Pradesh, and Karnataka, eased statewide lockdowns. Major OEMs, including Honda, Hyundai, Maruti Suzuki, MG, and Toyota, restarted production post lockdown with a gradual ramp-up in July.



## [Partnership Highlights] Iteris partners with Continental to develop V2X-based detection solution for smart mobility

**Vantage Fusion provides critical infrastructure data through V2X communications to connected and automated vehicles**



Source: Getty Images Plus/ metamorworks

Iteris has partnered with Continental to launch Vantage Fusion, a hybrid traffic detection system that enables vehicle-to-everything (V2X) applications and advanced intersection visualization, a press release on 7 December read. Vantage Fusion provides critical infrastructure data through V2X communications to connected and automated vehicles.

“We are thrilled to announce the launch of Vantage Fusion, a future-oriented hybrid traffic detection system that enables real-world V2X applications, while preparing cities and automotive OEMs for advancements in CAV technologies. With the addition of Vantage Fusion to Iteris’ market-leading portfolio of smart sensors, transportation agencies now have access to unmatched detection and tracking accuracy of vehicles, pedestrians and cyclists, as well as truly unique intersection visualization capabilities, to achieve their goals of improving safety, mobility and sustainability throughout complex transportation networks,” said Todd Kreter, SVP and general manager, Advanced Sensor Technologies at Iteris.

### Outlook and implications

The Vantage Fusion hybrid video and radar detection system tracks and classifies accuracy of vehicles, pedestrians, and cyclists with visualization capabilities with top-down viewing of intersections in real time. Vantage Fusion uses information generated by automotive sensors to enable cooperative perception capabilities. Cooperative perception messaging allows vehicle to share what it senses, such as pedestrians or vehicles, with the rest of its connected environment.

“Smart mobility is in our DNA at Continental and we are constantly improving and innovating solutions that help make roadways safer for all who use them. As we look to a future with more CAVs, the infrastructure will play a bigger role, demanding updates in sensing, connectivity and communication capabilities. The launch of Vantage Fusion is a testament to the combination of our long and proven history in safety sensorics with Iteris’ expertise in intelligent infrastructure management to deliver solutions that will contribute to greater environmental awareness and increased road user safety,” said Murali Srinivasan, VP, Passive Safety and Sensorics, Continental North America.



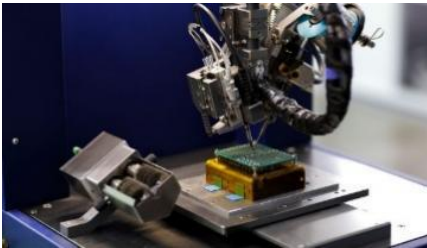
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## [Partnership Highlights] Stellantis partners with Foxconn to design and sell new flexible semiconductors

Adoption and installation of products into Stellantis vehicles targeted by 2024



Source: Getty image/ genkur

Stellantis and Hon Hai Technology Group ("Foxconn") announced the signing of a nonbinding memorandum of understanding to form a partnership with the intent of designing a family of purpose-built semiconductors to support Stellantis and third-party customers on 7 December, according to an official press release.

"Our software-defined transformation will be powered by great partners across industries and expertise," said Carlos Tavares, Stellantis CEO. "With Foxconn, we aim to create four new families of chips that will cover over 80% of our semiconductor needs, helping to significantly modernize our components, reduce complexity, and simplify the supply chain. This will also boost our ability to innovate faster and build products and services at a rapid pace."

### Outlook and implications

The collaboration will help Stellantis' efforts to reduce semiconductor complexity, design an entirely new family of purpose-built semiconductors to support Stellantis vehicles, and provide capabilities and flexibility in this area that is becoming increasingly important as vehicles become more software-defined. The partnership will leverage Foxconn's domain know-how, development capabilities, and supply chain in the semiconductor industry, as well as Stellantis' expansive automotive expertise and significant scale as a lead customer for the enterprise.

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