



Automotive Industry Weekly Digest

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[OEM Highlights] Huawei and BAIC sign agreement on co-development

Arcfox, BAIC Motor's premium brand, has announced that it has signed a framework agreement with Huawei to deepen their ongoing strategic co-operation for building vehicles equipped with Huawei's HI solution, reports Pandaily. The new agreement is a supplement to the pact that both parties signed in January 2019. Under the current agreement, Huawei and BAIC will strengthen the R&D of all Arcfox models, as well as build an operation mechanism for the product development. The two companies will also increase co-operation on intelligent-connected vehicle business, while conducting product development, testing and validation together. The two companies will also jointly formulate and implement marketing channel planning.



Outlook and implications

According to BAIC, the Alpha-S, an all-electric full-size crossover sedan, is equipped with a range of new technologies provided by Huawei, and the two have been working collaboratively on the Alpha-S HBT over the past two years. The arrival of the Alpha-S HBT will broaden Arcfox's product line-up in the electric vehicle (EV) market, although the model is unlikely to deliver volumes for the brand in the short term. Arcfox launched its first premium model, the Arcfox Alpha-T electric sport utility vehicle (SUV), in October 2020. In April 2021, Huawei announced plans to invest USD1 billion this year in research and development (R&D) of components for smart cars. The telecoms company has also partnered with three automakers – BAIC BJEV, Changan Automobile, and GAC Group – to jointly introduce autonomous car brands from the end of 2021. Huawei is seeking to expand its presence in the automotive industry, and it established its intelligent vehicle business unit in May 2019. The business focuses on five aspects: smart driving, smart cockpit, intelligent connectivity, smart electrification, and cloud service. In May, Huawei reiterated that it does not plan to build cars and would continue to support automakers building vehicles using its ICT capabilities.

[OEM Highlights] Geely aims to set up 5,000 battery-swapping stations globally by 2025

Chinese automaker Geely has announced plans to have 5,000 battery-swapping stations globally by 2025 through E-ENERGEE, the battery-swapping service platform under Geely Technology Group, reports Gasgoo. E-ENERGEE offers an open platform that is compatible with multiple types of vehicles with wheelbases between 2,700mm and 3,100mm, and enables a battery swap to be completed within 60 seconds, according to Zhejiang Geely Holding Group.



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Outlook and implications

Battery-swapping technology enables the driver to replace a vehicle's battery pack at a service station when the battery is running low. The benefit of the technology is significantly shorter recharging time and the possibility of opting for a high-capacity battery in the future. The challenge is the high upfront investment costs faced by OEMs to build and operate such facilities. Geely Technology Group started R&D into battery swapping technology platforms and battery-swappable car architectures in 2017, and has already invested several billion yuan into it. The company has obtained more than 1,000 patents related to battery-swapping technologies, and built a full-chain open platform integrating vehicles, battery-swapping stations, and electricity, highlights the report. E-ENERGEE launched first battery-swapping station in Chongqing in September 2020, and in just one year it has deployed battery-swapping stations in more than 10 provinces and cities in China, including Tianjin, Chongqing, Zhejiang, Shandong, Jiangsu, Hunan, Hainan, and Anhui. The Chinese government is promoting electric vehicle (EV)-related infrastructure facilities, including charging stations and battery-swapping stations. In July 2021, Chinese EV-maker NIO has also announced plans to have 4,000 battery-swapping stations globally by 2025.



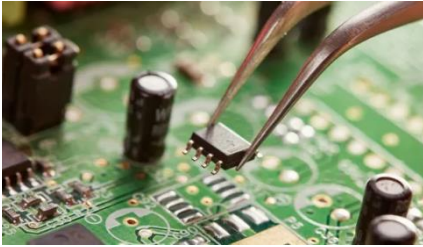
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[Supplier Trends and Highlights] Toshiba ships pre-driver ICs for safety applications

Toshiba to start mass production in December 2022



Source: Getty image/silverjohn

Toshiba has begun shipping TB9083FTG test sample, a pre-driver IC for automotive applications like brushless motors used in electric power steering systems and electric brakes, it said in a press release on 28 September. The company will provide final samples in January 2022 and will start mass production in December 2022.

Outlook and implications

The TB9083FTG is a three-phase pre-driver controlling and driving external MOSFETs for driving a three-phase brushless DC motor. It supports ASIL-D functional safety for highly safety-critical automotive systems. The new IC has a built-in three-channel pre-driver for the safety relays that control and drive the relays for motors and power supply. This helps with not adding external components and reducing parts count. The IC is housed in a 7.0mm x 7.0mm package with a wettable flank structure.

[Supplier Trends and Highlights] Startup Wejo unveils SaaS platform to analyze connected car data

Platform to offer real-time traffic and journey insights



Source: Getty image/ metamorworks



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Automotive data startup Wejo has unveiled Wejo Studio, it said in a press release on 28 September. Wejo Studio is a web-based SaaS platform analyzing connected car data for real-time traffic and journey insights. It offers standardized traffic and journey visualizations across several industries.

“We heard loud and clear from customers in many sectors that they saw the tremendous value in CVD but didn’t have a cost-effective and efficient way to harness its power. We’re thrilled to offer a solution, Wejo Studio, so CVD is democratized to all our customers. Wejo is leading the mobility revolution, transforming the way we live, work and travel,” said Richard Barlow, founder and CEO, Wejo.

Outlook and implications

Insights include Intersection Performance, which helps traffic planners understand how drivers move through intersections and visualize turning movement counts; Origin/Destination is used to determine travel patterns of drivers by visualizing journeys from start to finish to understand journey trends by time and location; Insights on Points of Interest to understand where drivers’ travel from, how long they stay at the POI and where they go when they leave; Waypoints which uses select roads, billboards or other waypoints that vehicles pass by to make decisions on road management, traffic planning; and Historical Traffic Patterns help identify congestion bottlenecks, get average driving speeds, and travel times.



[Partner Highlights] VinFast partners with US-based Cerence to provide AI solution on its EVs

Vietnamese automaker VinFast has agreed a partnership with US-based Cerence, according to which the latter will provide voice-controlled artificial intelligence (AI) solutions for its smart electric vehicles (EVs), reports the Yonhap News Agency. Under the partnership, Cerence will supply VinFast with some core technologies, such as automatic speech recognition, natural language understanding (NLU), text-to-speech, and natural language generation (NLG), as well as enhancing voice signals to give the virtual assistant the ability to communicate like a human. The virtual assistant will be able to understand users' commands and questions in six languages, including English, German, French, Spanish, and Dutch, highlights the report. The automaker is also working with VinBigData JSC to develop ViVi, a multi-regional Vietnamese-language assistant.



Outlook and implications

VinFast has been developing and preparing to start mass production of three smart EVs – the VF e34 mid-size sport utility vehicle (C-segment SUV), the VF e35 mid-size SUV (D-segment SUV), and the VF e36 full-size SUV (E-segment SUV) – adding that two of the models will be sold in the US, Canadian, and European markets from 2022. The automaker has already started accepting bookings for the VF e34 in Vietnam, with plans to start deliveries of the vehicle in November. It also plans to launch three more EVs in 2023.

[Partner Highlights] Energy trader Vitol collaborates with China's BYD on EV infrastructure

Energy trader Vitol has formed a USD250-million joint venture (JV) with Chinese automaker BYD, reports Bloomberg. The JV will offer electric-car fleet services and charging infrastructure in selected markets.



Outlook and implications

Global energy players are looking to diversify their businesses and react to lower demand for fossil fuels that greater electric vehicle (EV) demand will bring. Vitol has invested over USD1 billion in solar and wind energy and other, cleaner fuels. The company has already deployed over 300 electric buses in Bogota (Colombia) and is looking for more opportunities in South America. BYD is currently among the largest manufacturers of battery



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electric vehicles (EVs) in China. The automaker recently announced plans to build a major plant in China's eastern province of Anhui, which is to have a capacity to assemble 400,000 EVs annually, to help cater to the growing demand for BYD vehicles. The new facility will also produce electric motors, electric control systems, and other key components of EVs.



[GSP] Global Sales and Production Commentary -2021.09

Global sales

August 2021: -11.7%; 5.70 million units vs. 6.45 million units

YTD 2021: +16.7%; 53.34 million units vs. 45.69 million units

Evolving pandemic-related supply chain bottlenecks are bearing down on the recovery profile, intensifying operational pressures on the global automotive industry. Semiconductor shortages are a major issue, but IHS Markit analysts also acknowledge acute pressures on other key components, logistics, commodity prices, and workforces, alongside further COVID-19 effects. OEMs and suppliers have been forced to abandon previous production schedules and demand projections. The path of the COVID-19 pandemic remains an important driver of the auto demand cycle, especially the “race” between vaccine and variants (especially the Delta variant). Effective vaccination programs should continue to improve population immunity levels through 2021 for key markets, including the US, the UK, mainland China, and Europe. This is especially important as winter looms for the northern hemisphere.

IHS Markit analysts have adapted the latest forecasts for global production and sales to reflect this unprecedented set of circumstances—a “perfect storm” clouding the outlook. Vaccine rollouts and reducing restrictions were helping to power an auto demand recovery—albeit patchy and uneven depending on local market conditions. Some markets were even approaching pre-pandemic demand levels, supported by improving economic fundamentals. However, through the summer months, vehicle supply and inventory pressures kept building, and recovery prospects appear to be fading fast, especially as vehicle output levels struggle to rebound to pre-pandemic levels. August 2021 demand fell 12%, highlighting rising concerns, although comparative base effects complicate the comparison.

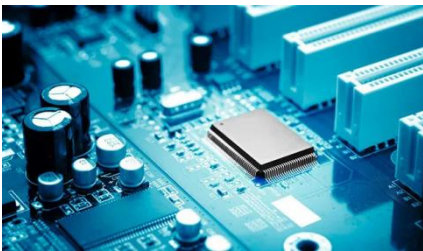


Ultra-low vehicle output levels are expected to hurt vehicle lead times, with carmakers simply unable to rebuild depleted inventory levels and fulfill prevailing order levels for some time. IHS Markit analysts have downgraded 2021 global demand to 80.5 million units, around 4 million units lower than the July forecast, as vehicle build hits the buffers. Following just 4.6% year-on-year (y/y) growth for 2021, the recovery cycle has been further reprofiled, with lower momentum for 2022 (+3.1%) and 2023 (+9.9%), as supply chain traumas play out. As a result, the forecast for 2024–25 has been reset higher, effectively recycling some delayed demand, although there will likely be some “lost” or “destroyed” demand, reflecting fading pent-up demand and a reduced market push. Expressed in volume terms, the 2022 forecast has been cut by 6.5 million units to 82.97 million units. That for 2023 has been reduced by 560,000 units to 91.2 million units, with the 2024 forecast boosted by 3.3 million units to 97.1 million units and the 2025 forecast increased by 2.5 million units to 98 million units.



After a 3.4% contraction in 2020, world real GDP is set at 5.6% in 2021, 4.5% in 2022, and 3.4% in 2023 (upward revisions for 2022–23). The global economic expansion is losing momentum, likely reflecting supply chain pressures. In August, the JPMorgan Global Composite Output Index (compiled by IHS Markit) fell 3.2 points to a seven-month low of 52.6, as growth slowed across service and manufacturing industries. The price of Dated Brent crude oil is expected to average USD68 per barrel (/barrel) in 2021 and USD66/barrel in 2022 (USD42/barrel in 2020).

Mainland Chinese—growing pains—demand in the year to August 2021 posted 15 million units (+10.4% y/y), with concerns for recovery prospects. Auto sales remain 3.4% below 2019 levels. For 2021, IHS Markit analysts foresee 23.7 million units, up just 0.2% y/y—a significant downgrade on supply chain shortages. This effectively stretches the expected real demand recovery into 2023–25. Effective pandemic containment limited 2020 losses to just 4.6%, to 23.7 million units.



In the US—running on fumes—auto demand enjoyed robust growth recovery, driven by jobs and consumer spending. However, constrained domestic production cannot be ignored and prevailing supply chain issues, especially chips and worker shortages, mean already-tight dealer inventories are running dangerously low. Therefore, the 2021 outlook has been slashed to 15.6 million units for 2021 (up 6.6% y/y). The forecast of 2022 demand has also been reset much lower, to 15.75 million units, up by just 1.3% y/y. For reference, 2020 US auto demand posted 14.6 million units, down 14.6% y/y.

In Europe—proceed with caution—vaccination programs and easing restrictions were helping demand recover, but supply chain and Delta virus concerns are seriously depressing vehicle output levels. The 2021 Western and Central European demand forecast has been downgraded to 14.4 million units, up 4.2%. IHS Markit analysts forecast lackluster demand for 2022–23, with the market not rebounding above 17 million units until 2024. Automotive demand for 2020 posted 13.8 million units (down 23.6% y/y).

Global production

August 2021: -11.4%; 5.30 million units vs. 5.98 million units

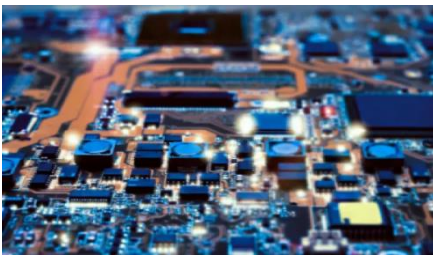
YTD 2021: +17.2%; 50.52 million units vs. 43.12 million units

The year-on-year (y/y) comparison of the forecast for August remains complex; 12 months ago, following the experience of mainland China, many markets were starting to open back up after short, sharp periods of lockdown. The latest estimate shows that output of 5.30 million units declined by 11.4%, which is consistent with the headwinds of the third quarter 2021, where supply chain disruption is still very much to the fore. In the first eight months of 2021, the year-to-date (YTD) output is estimated to have reached 50.52 million units, which is up by 17.2% over the same period in 2020.



[Semiconductor Highlights] Samsung in talks with Tesla to make next-generation autonomous chips

Samsung is reportedly in talks with Tesla to produce next-generation autonomous chips based on Samsung's 7-nanometer chip production process, reports The Korea Economic Daily. Both companies have discussed chip design and exchanged chip prototypes for Tesla's upcoming hardware 4 (HW.40) autonomous system. Samsung intends to mass produce the Tesla HW 4.0 chip at its main Hwasung plant in South Korea using 7-nanometer processing technology as early as the fourth quarter of 2021. HW 4.0, dubbed the FSD Computer 2, is the successor to the HW 3.0 chip used in Tesla's current vehicles. The HW 3.0 chip was manufactured by Samsung, highlights the report.



Outlook and implications

Samsung is currently the world's second-largest contract chip manufacturer, accounting for 17.3% of the market, while Taiwan Semiconductor Manufacturing Co. (TSMC) dominates with a massive 52.9% market share. Tesla is expected to deliver 1.3 million vehicles by 2022. Previously, a report claimed that the automaker planned to use a 7-nanometer process developed by TSMC for its next-generation autonomous chips.

[Semiconductor Highlights] Hyundai plans to develop alternative elements to automotive chips

Hyundai plans to develop alternative elements to automotive chips in preparation for a prolonged supply crisis that is hindering its operations, reports the Korea Economic Daily. The automaker is considering co-operation with major suppliers such as STMicroelectronics and Renesas Electronics, while seeking long-term contracts to buy chip elements. It has already ordered the components for the next year. As the global semiconductor supply issue continues, Hyundai has decided to suspend overtime works at Ulsan plant in South Korea in the coming weekend. The move will affect all of its five production lines at the plant on 2 October. The Ulsan plant has annual capacity for 1.4 million units and produces the all-electric IONIQ 5, Santa Fe and premium Genesis brand models, among others.





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Outlook and implications

Hyundai has been forced to disrupt production at a number of its South Korean and overseas facilities in relation to the ongoing semiconductor shortage, which is hitting OEMs around the world. It suspended operations at its another South Korean plant in Asan twice in September, which resulted in a production loss of 5,000 vehicles. IHS Markit's latest impact assessment of the supply shortage indicates that the third-quarter 2021 outlook has been severely affected and levels of disruption have surpassed those in the second quarter. As of 27 September, we estimated a global production volume loss of about 1.44 million units in the first quarter and 2.60 million units in the second quarter. Another 3.31 million units are at risk in the third quarter of the year and 424,000 units in the fourth quarter. Globally, the outlook is dominated by the situation in Malaysia where many 'back-end' operations are performed, such as packaging and chip testing. As this is more labour-intensive than the wafer fabrication processes, activity is more easily affected by measures that affect workforce participation. A gradual improvement in operational capacity in Malaysia is the most obvious upside opportunity, although we do not expect to see anything like 100% operational capacity until late October. IHS Markit expects that vehicle production in the fourth quarter of 2021 will be exposed to disruption, and this is expected to spill over into the first half of 2022. We also assess that the second half of 2022 may be the point at which we look for stabilisation of supply, with lost production recovery efforts now starting only in the first half of 2023.



[VIP ASSET] Semiconductor supply issue: Asia production tracker

Key findings

- After production shutdowns during the first half of 2020 as a result of the coronavirus disease 2019 (COVID-19) pandemic, vehicle output in Asia resumed slowly initially, affected by new safety protocols and training in those measures, as well as managing the supply chain.
- By the end of 2020, reports had begun to emerge of disruptions to the supply of semiconductor chips to the automotive sector.
- Light-vehicle manufacturers faced increased disruption to the supply of systems using semiconductors in the first half of 2021.
- Our latest intelligence indicates that the third-quarter-2021 outlook has weakened severely and levels of disruption now surpass those seen in the second quarter.
- Furthermore, new waves of COVID-19 infections have been hitting Asian countries since early April, which is also affecting vehicle production in the region.
- This report provides a current snapshot of the impact of these issues on light-vehicle production in Asia, comparing known impacts against our December 2020 forecast.

After production shutdowns during the first half of 2020 as a result of the COVID-19 pandemic, vehicle output in Asia resumed slowly initially, affected by new safety protocols and training in those measures, as well as managing the supply chain. By the beginning of the fourth quarter of 2020, production had largely normalised. However, by the end of 2020, reports had begun to emerge of disruptions to the supply of semiconductor chips to the automotive sector, as the needs of the recovering automotive industry clashed with those of the wider consumer electronics sector, which was itself recovering strongly and late in the year, building stocks for the holiday season. The situation was exacerbated by other factors, including a fire at Renesas's Naka (Japan) facility on 19 March and disruption following the severe weather that hit the southwest United States in February.

Our latest assessment of the supply shortage indicates that following a difficult first half of 2021 for the OEMs captured in our assessment, the latest intelligence indicates that the third-quarter-2021 outlook has weakened severely and levels of disruption now surpass those seen in the second quarter. The situation in the third quarter is undermined by some delays at Renesas, where having restored manufacturing capacity, the ability to fulfil shipments may not be possible until late September. There is also a much greater exposure to the ramifications of the situation in Malaysia, where many 'back-end' operations are performed, such as packaging and chip testing. As this is more labour-intensive than the wafer fabrication processes, activity is more easily affected by measures that affect workforce participation. In view of these developments, IHS Markit expects that vehicle production in the fourth quarter of 2021 will be exposed to disruption, and this is expected to spill over into the first half of 2022. We also believe that the second half of 2022 may be the point at which we look for the stabilisation of supply, with lost production recovery efforts now starting only in the first half of 2023. As of 13



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September, we estimated a global production volume loss of about 1.44 million units in the first quarter and 2.60 million units in the second quarter. Another 3.11 million units are at risk in the third quarter of the year.

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