



Automotive Industry Weekly Digest

20December – 24December 2021





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[OEM Highlight] GAC new-generation GS8 SUV hits the market

Guangzhou Automobile Group (GAC Group) has officially launched the new-generation GS8 sport utility vehicle (SUV) in China. The E-segment SUV measures 4,965 mm long, 1,930 mm wide and 1,750 mm tall with a wheelbase of 2,850 mm. The all-new GS8 comes with the option of a conventional powertrain and a full-hybrid model. Both powertrain versions offer the option of a two-wheel drive or a four-wheel drive. The gasoline (petrol) engine version is fitted with a 2.0-litre turbocharged engine which produces maximum power of 252 hp and peak torque of 400 N.m. The engine is paired with an eight-speed transmission from AISIN AW. The full hybrid model has adopted Toyota's hybrid technologies. The system consists of a 190-hp 2.0-litre turbocharged engine and a 182-hp electric motor. The GS8 also offers flexible seating configurations with three-row six-seat or three-row seven-seat. The base model is equipped with rich features, including a 12.3-inch digital instrument display, 14.6-inch digital centre screen, LED headlights, dual-zone climate control, keyless entry, leather steering wheel and heated front seats. Adaptive cruise control and lane keeping assist are also standard on the base model.



Outlook and implications

The GS8 is the biggest model from GAC's SUV product line. According to GAC, the new-generation GS8 is the first of its self-developed models to benefit from its cooperation with Toyota on the development of hybrid systems. The two companies have reached agreements in 2020 to introduce Toyota's hybrid technology to GAC's product line. The partnership will give GAC an edge in the traditional vehicle market where Chinese automakers, like Geely and Great Wall, are planning to increase the number of full hybrid models in their line-ups. In the larger SUV market, the GS8 will compete with the likes of the Toyota Highlander and Lynk & Co 09.



[OEM Highlight] Toyota reveals BEV strategy

IHS Markit perspective

Implications	Announcements along the same line have been coming from many automakers throughout 2020 and 2021. Toyota has accelerated its push to further electrify its line-up in recent months.
Outlook	Toyota's approach to electrification is going to continue to be regional as energy sources, the size of cars, and customer use are different across regions. The automaker's position remains on track with earlier statements, although the company expects BEVs to take on a larger role. Compared with the targets set by Toyota, according to IHS Markit's alternative propulsion production forecast, Toyota will have total production volume of around 1.78 BEVs globally by 2030, while Lexus will have total production volume of 110,000 units only.

Toyota has unveiled its battery electric vehicle (BEV) strategy aimed at achieving carbon neutrality on 14 December (today). The automaker revealed 16 Toyota and Lexus BEV models that it is readying for market launch, including the all-new Toyota bZ4X due next year. Talking about Toyota's strategy, Toyota's president, Akio Toyoda, announced that the company plans to introduce 30 BEV models and is expecting sales of 3.5 million BEVs globally by 2030. The Lexus brand aims to have BEVs account for 100% of total sales in Europe, North America, and China by 2030. It also aims for BEVs to make up 100% of its global vehicle sales in 2035.



Toyota BEV models

Toyota

The president highlighted the difference between “carbon-reducing” and “carbon-neutral” vehicles, and that Toyota is focused on developing and producing carbon-neutral vehicles that run on clean energy and achieve zero emissions in the whole lifecycle. Working in this direction, the company has kept a target to achieve carbon neutrality at its manufacturing plants by 2035 by expanding the use of innovative production engineering technology.

In the field of battery manufacturing, Toyota has invested around JPY1 trillion (USD8.8 billion) over the past 26 years to produce over 19 million batteries. It further plans to increase its future investment in batteries from JPY1.5 trillion announced in September to JPY2 trillion to realise high-quality and affordable batteries.

During the presentation, Toyoda unveiled a range of new sport utility vehicles (SUVs), commercial vehicles (CVs), off-roaders, and a supercar. There were also concepts based on bZ-badged EVs that will follow its new bZ4X SUV. The range includes a compact SUV designed especially for Europe and Japan and a midsize SUV. Furthermore, the automaker plans to introduce a full line-up of affordable mass-production models in the future to meet the needs of a wide range of customers.

Outlook and implications



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Toyota has accelerated its push to further electrify its line-up in recent months. In May, it announced that it intends for battery and fuel-cell electric vehicles (BEVs and FCEVs) to make up 15% of its US sales by 2030, and for electrified vehicles to make up 70% of US sales by 2030. Earlier this month, Toyota outlined its European strategy at an event and announced products that will support its expansion in the region.

In September, the automaker presented an update to the company's carbon neutrality targets in the context of battery development and expectations for electrified vehicles. Toyota will invest JPY1.5 trillion into battery development and production through to 2030 and is considering developing 200 GWh of capacity by 2030 globally and developing three battery types to support BEVs, FCEVs, plug-in hybrid electric vehicles (PHEVs), and hybrid electric vehicles. Along with BEVs, the company also plans to focus on HEVs. In areas where renewable energy will be widely used going forward, the company sees its ability to provide HEVs at an affordable price point as an effective way for CO2 emission reduction. By the company's calculations, one HEV can reduce the same amount of CO2 emissions as three BEVs. In areas where renewable energy is not yet abundant and cost sensitivity is high, HEVs can have a strong impact on reducing CO2 emissions through broader deployment.

Toyota's approach to electrification is going to continue to be regional as energy sources, the size of cars, and customer use are different across regions. The automaker's position remains on track with earlier statements, although the company expects BEVs to take on a larger role. Compared with the targets set by Toyota, according to IHS Markit's alternative propulsion production forecast, Toyota will have total production volume of around 1.78 BEVs globally by 2030, while Lexus will have total production volume of 110,000 units only.



[Sales Highlights] Chinese NEV sales increase in November; local OEMs and Tesla lead EV volumes

IHS Markit perspective

Implications The new energy vehicle (NEV) segment has been showing substantial growth in sales in China despite the impact of the COVID-19 virus pandemic and supply-chain constraints. The expansion is being led by Tesla and Chinese OEMs, including startup manufacturers.

Outlook IHS Markit forecasts annual production of BEVs in China to reach around 7.2 million units in 2025. In comparison, production volumes of BEVs in 2020 were only 1.08 million units.



China's new energy vehicle (NEV) market continued to display strong growth in November. According to data from China Passenger Car Association (CPCA), wholesale delivery volumes of passenger NEVs, consisting of passenger battery electric vehicles (BEVs) and passenger plug-in hybrid vehicles, reached 429,000 units in China in November, up 131.7% year on year (y/y) and 17.9% month on month. Unlike data compiled by the China Association of Automobile Manufacturers (CAAM), which includes commercial vehicles, the CPCA's sales data for NEVs only includes sport utility vehicles (SUVs), sedans, and multipurpose vehicles (MPVs). The strong results on passenger NEV sales in November are stark contrast to the sluggish broader passenger vehicle market in China, which is still contracting owing to disruptions from the coronavirus disease 2019 (COVID-19) pandemic and the ongoing semiconductor shortage. In the first 11 months of the year, China's passenger NEV wholesale volumes reached 2.807 million units, up 190% y/y.

By vehicle type, wholesale volumes of passenger BEVs increased 121.1% y/y to 343,000 units last month, while sales of passenger plug-in hybrid vehicles increased 187.2% y/y to 85,000 units. In November, NEVs accounted for 19.9% of passenger vehicle sales. In the year to date (YTD; January to November), NEVs account for 15% of China's passenger vehicle sales, according to the CPCA data.

The penetration rate of NEVs for Chinese brands was notably high at 33.2% in November, while in the premium vehicle segment, NEVs accounted for nearly 25% of sales. In comparison, joint ventures (JVs) of international OEMs are lagging behind in the transition to electrification. The CPCA data indicates that NEV sales only accounted for 3.9% of JV brands' wholesale volumes in November, owing to lack of competitive models. The top-10 NEV sellers in China in November were BYD (90,546 units), Tesla (53,859 units), SAIC-General Motors-Wuling (50,141 units), Great Wall Motor (16,136 units), Xpeng Motor (15,613 units), AION (15,035 units), Chery Auto (14,482 units), Li Auto (13,485 units), Geely Auto (13,090 units), and SAIC Passenger Vehicle Company (12,225 units). SAIC's two JVs, SAIC Volkswagen (VW) and FAW VW, contributed a total of 22,691 units to the automaker's wholesale volumes in November.



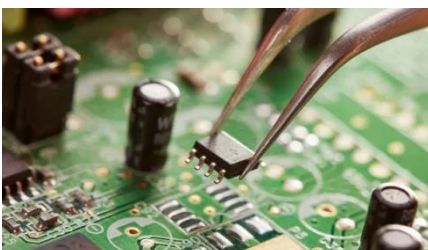
Outlook and implications

The NEV segment has been showing substantial growth in sales in China despite the impact of the COVID-19 virus pandemic and supply-chain constraints. The expansion is being led by Tesla and Chinese OEMs, including startup manufacturers. EV manufacturer Tesla's production in China is set to exceed 450,000 units this year thanks to robust demand for the Model 3 and Y. Given the strong performance of China's top EV sellers, many industry observers have expressed optimistic views recently on the NEV sector's growth potential next year and beyond. Indeed, Tesla's radical approach to driving down the selling price of its EVs is paying off in China. Chinese EV buyers are being offered the cheapest Tesla EVs on the market, which has boosted significantly Tesla's appeal for first-time car buyers. Given that Tesla is shipping a significant volume of its Chinese-made vehicles outside China, there are many local orders that the company will only deliver in the first quarter of 2022. Among startup car makers, NIO, Xpeng, and Li Auto are investing heavily in new showrooms, service centres, and charging infrastructure. In the premium EV segment, where NIO has a dominant share, international OEMs including General Motors (GM), Ford, and Mercedes-Benz are pulling out all the stops to prepare new launches. The GM's Cadillac brand has already begun pre-sales of the Lyriq in China, with deliveries due to begin in mid-2022. The Lyriq offers GM a fresh opportunity to reposition the Cadillac brand in China's premium vehicle market, although the automaker has to start afresh mapping out dedicated sales and charging networks for the Lyriq and future IQ series EVs from the Cadillac brand.

In the mini-EV segment, the success of the Hongguang Mini EV from Wuling will lure more automakers to this segment. Fully electrified models will become the most popular offerings in the mini-EV segment thanks to benefits such as low cost of ownership and ease of parking. However, we do not expect the segment to become a key driver of the Chinese EV market. According to IHS Markit's forecasts on China's NEV market, we expect the C-and D- segments to remain the highest-sales-volume segments in the Chinese BEV market until 2025. IHS Markit forecasts production of BEVs in China to reach around 7.2 million units in 2025. In comparison, production volumes of BEVs in 2020 were only 1.086 million units.

[Sales Highlights] China's automobile sales to jump 5.4% to 27.5 mil. in 2022

China's vehicle sales are expected to grow 5.4% year on year (y/y) in 2022 to 27.5 million units, according to deputy secretary-general of the China Association of Automobile Manufacturers (CAAM), reports Gasgoo. The total vehicle sales will include 23 million passenger vehicles (PVs), up 8% y/y, and 4.5 million commercial vehicles (CVs), down 6% y/y. In support of the forecast, Chen cited predictions of China's GDP growth, efficient prevention and control of the coronavirus disease 2019 (COVID-19) virus spread, and an improvement in the semiconductor supply situation.





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Outlook and implications

The Chinese market's transition to electrification will further accelerate in 2022. According to CAAM data, new energy vehicle (NEV) sales accounted for 20.5% of total PV sales in November and 15.7% of total PV sales in the year to date (YTD). In addition, the market's shift towards EVs is driven by the increased availability of appealing EV models, rather than government subsidies. In the CV market, sales continued to deteriorate in November. High inventories of China V-compliant trucks remain the biggest drag on the CV market. OEMs' measures last year to clear China V-compliant trucks from inventories to prepare for the transition to the more-stringent China 6 emission standards have led to high volumes of unsold China V-compliant trucks in dealers' networks, which is dragging down sales of China 6-compliant models. Meanwhile, automakers continue to experience disruptions from the ongoing semiconductor shortage. In addition, some EV makers reportedly face shortages of batteries. Xpeng, for instance, has delayed deliveries of the base version of its P7 electric sedan in China, citing tight supplies of lithium iron phosphate (LFP) batteries. According to IHS Markit's sales forecast, light-vehicle sales in China are expected to reach around 24.25 million units in 2022, while sales in China's medium and heavy truck segment are expected to be 1.132 million units.



[Technology Highlights] Polestar offers OTA performance upgrade for Polestar 2 in Europe

Polestar has announced that it is offering the option of an over the air (OTA) performance upgrade for its Polestar 2 model in some European markets. According to a statement, the upgrade will be available for owners of its Polestar 2 Long range Dual motor variant in the UK, Netherlands, Norway, Sweden, Switzerland, Finland, Denmark, Germany, and Austria. The upgrade allows the motors to develop another 50kW, taking power to 476hp, while torque has been lifted by 20Nm to 680Nm. This means the Polestar 2 can accelerate to 100 km/h in 4.6 seconds now. However, the brand notes that the additional power and torque is available as a 'boost' between 70km/h and 130km/h and helps to cut acceleration between 80km/h and 120km/h by 0.5 seconds to just 2.2 seconds. The company said that customers can find the upgrade at the Polestar Extras webshop priced on average at EUR1,000.



Outlook and implications

The upgrade comes in the wake of a development version of the Polestar 2 being revealed at the Goodwood Festival of Speed (UK) earlier this year. As well as a host of hardware changes, this was also said to feature a more powerful powertrain. Although it was initially unclear how this had been achieved, the company has now confirmed that this is possible from the existing 402hp dual motor variant and is little more than a software upgrade. This highlights the potential for an OTA update system beyond aspects such as infotainment. Indeed, Polestar and other OEMs could potentially provide tuning options for any aspects of a vehicle and which are controlled by software, particularly in the area of dynamics. It may also be that customers in future could subscribe to such upgrades, particularly during the course of a lease or subscription for a vehicle.

[Technology Highlights] Hyundai Mobis develops new e-corner module for PBVs

Hyundai Mobis has developed a new 90-degree rotating e-corner module for purpose-built vehicles (PBVs), according to a company press release. The e-corner module, a next-generation vehicle wheel technology regarded as the core technology for future urban mobility, allows 90-degree rotation parking, in-place rotation, and crab (sideways) driving, increasing agility in narrow city streets. The module integrates the steering, braking, suspension, and driving systems into a wheel and uses a mechanical axis to connect the steering wheel. According to the company, while it first unveiled its concept in 2018, it recently redefined it for practical use on a vehicle, developed an electronic control unit (ECU) for control, and completed its functional testing. Once the



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company completes the concept's reliability verification and mass-production feasibility study, it will begin undertaking production orders from global automakers for its application.



Outlook and implications

Hyundai Mobis states that the biggest advantage of the module is that it does not require any mechanical connection between parts, allowing better use of space within the vehicle. According to the company, not only will it make it easier to change the wheelbase, but it will also increase flexibility in designing the direction of doors and the size of the vehicle, essential for PBVs designed to operate in cafés and hospitals. The company says that it plans to develop a skateboard module by 2023 integrating modules on four corners, combined with automatic driving control technology for a new PBV mobility solution.



[GSP] Greater China sales and Production Commentary -2021.11

Greater China sales

October 2021: -10%; 2.2 million units vs. 2.45 million units

YTD 2021: +3.6%; 19.39 million units vs. 18.72 million units

In October 2021, 2.2 million light vehicles were sold in Greater China, down by 10% compared with the same month of 2020. Specifically, light-vehicle sales in mainland China dropped by 10.3% from 2.41 million units in October 2020 to 2.16 million units. Passenger vehicles recorded sales of 1.86 million units, decreasing by 9.2% year on year (y/y), while light commercial vehicle (LCV) sales decreased by 16.3% y/y to 0.3 million units.

On a year-to-date (YTD) basis, light-vehicle sales in mainland China increased by 3.6% to 19 million units from 18.35 million units. Precisely, passenger vehicle sales increased by 4.8% y/y to 15.97 million units, while LCV sales decreased by 2.6% y/y to 3.03 million units. Segment-wise, YTD sedan sales rose by 6.9% y/y to 7.84 million units from 7.33 million units, and the sport utility vehicle (SUV) segment increased by 2.5% y/y to 7.51 million units from 7.33 million units. For multipurpose vehicles (MPVs), YTD sales increased by 8.5% y/y to 0.64 million units.

In October 2021, passenger vehicle sales of domestic OEMs increased by 7.1% y/y, to 0.78 million units, and their market share went up from 35.5% in October 2020 to 41.9%, the highest this year. Domestic OEMs have outperformed the market since June 2021. On one hand, with a quick response to the semiconductor shortage crisis, production of domestic OEMs has been less widely disrupted than its foreign competitors. On the other hand, local brands dominated the new energy vehicle (NEV) market with a stronger product pipeline, while the NEV segment has been experiencing substantial growth in the country.



The latest round of the COVID-19 virus outbreak since mid-October has affected even more provincial-level regions than the July–August round. With gene sequencing and epidemic investigation showing that imported infections were again the cause of domestic cases, health officials are expected to further tighten pandemic control measures. Intermittent outbreaks of the more infectious Delta variant will prevent consumer demand from a full restoration of normalcy. At this stage, we estimate that light-vehicle sales in mainland China would drop by 1.9% in 2021. Specifically, we anticipate passenger vehicle sales to decrease by 1% to 20.8 million units, while LCV sales are forecast to decline by 6.6% to 3.5 million units.

Greater China production

October 2021: -16.6%; 2.01 million units vs. 2.42 million units

YTD 2021: +5.4%; 19.16 million units vs. 18.19 million units



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Greater China's light vehicle production in October recorded 2.01 million units, down 16.6% year on year (y/y). In mainland China, light vehicle production declined 16.7% y/y, to 2.00 million units. With the increasing vaccination rates in Southeast Asia, national containment measures have been eased, so the semiconductor industry capacity has been resumed to 80%. Supported by further improvement of the semiconductor supply chain, along with the consecutive boom of the battery-electric vehicle (BEV) sector on the demand side, October output was better than the former prediction. Therefore, we have upgraded the forecast by 127,000 for October.



[Partnership Highlights] VW, Bosch to collaborate on automotive software

Volkswagen's (VW) software unit Cariad and automotive supplier Bosch are reportedly nearing a deal to collaborate on automotive software. According to a report by Reuters, VW is planning to invest a triple-digit-million euro amount as part of the deal.



Outlook and implications

To create new revenue streams in the future, carmakers are increasingly focusing on software-related services for vehicles. VW has been in pursuit of a digital model for several years, laying the groundwork through a number of initiatives. Recently, it launched the ACCELERATE strategy to transform itself into a software-driven mobility provider. VW has bundled all its software efforts into one unit, Cariad, which will power passenger vehicles that will be "Level 4 ready" by 2025.

[Partnership Highlights] Geely Auto to enter into JV with Lifan Technology

Geely Auto announced on 13 December that it has entered an agreement with Lifan Technology on the formation of a new joint venture (JV) in China. The JV will be engaged in design, development and sales of vehicles as well as development of related software and technologies. Each party will hold a stake of 50%.



Outlook and implications

Geely's subsidiary, Geely Technology, holds 28.98% of Lifan Technology, formerly Lifang Industry (Group). Lifan had been suffering both poor vehicle sales and financial performance before Geely and Chongqing-government-backed Liangjiang investment fund joined forces to invest in it. The announcement of the new JV indicates the two companies are speeding up their plans in the development of battery swappable EVs. In May, Lifan began Chinese production of its first electric model, the 80V, which features a swappable battery. The 80V has a swappable battery and is considered to be a pilot for Geely and Lifan to expand their swappable battery network in Chongqing.



[VIP ASSET] UPDATE: Bringing down battery costs will enable automakers to meet Biden's 50% EV sales goal: GM official

sales goal: GM official



10 December 2021 Amena Saiyid

Lower battery costs will drive consumers to buy more electric vehicles (EVs) and allow US automakers to meet President Joe Biden's goal of 50% light vehicle sales electric by 2030, according to a General Motors (GM) official.

A battery is the single most expensive component of an EV, making up at least 30% of a vehicle's retail price.

"From an automaker perspective, I would say battery costs, battery costs, battery costs," said Michael Maten, senior strategist for GM on EV and energy policy, when asked about the key obstacle to greater EV adoption.

"Right now, battery costs are the significant barrier, but they are coming down. But they need to come down much further," Maten emphasized, as he spoke about the state of EVs in the US during an online panel discussion held 8 December.

The discussion, which was jointly held by the nonpartisan, nonprofit Our Energy Policy and law firm Schiff Hardin, was spurred by Biden's goal to make half of all new passenger cars and light-duty vehicles sold in 2030 zero-emissions vehicles, including battery electric, plug-in hybrid electric, or fuel cell EVs.

Transportation was responsible for 1,875.73 million mt of GHG emissions in 2019, 29% of the US total, with light vehicles (passenger cars and light trucks including sports-utility vehicles) contributing 59% of that total.

The transition to battery-powered EVs offers the greatest opportunity for US automakers to reduce their emissions. The US Bureau of Statistics said new light vehicle sales totaling 14.47 million units in 2020 accounted for 98% of total vehicle sales in 2020, according to Statista.

The Electric Vehicle Charging Action Plan that Vice President Kamala Harris released 13 December is expected to help automakers and battery manufacturers relieve anxiety about battery range and costs. The plan outlines how the administration plans to implement the Bipartisan Infrastructure Law to develop and promote charging stations across the country.

DOE revises target

Given that EVs make up just 3% of all vehicle sales in the US, Maten said cutting the cost of batteries is the single largest barrier facing automakers as they unfold plans to meet Biden's goal.



"As we transition and you reach those 30, 40, 50% penetration numbers then absolutely you will run into some ... potential supply chain bottlenecks. I don't know what those are right now because they are a little further out in the future and we don't know what technologies are out there right now," he said.

The US Department of Energy (DOE) Vehicle Technology Office has a goal of bringing the cost of an EV battery below \$100/kWh to about \$80/kWh by 2030. The threshold of \$100/kWh is the price point at which agency researchers say EVs will be able to compete with internal combustion engine-powered cars.

Maten noted that the \$100/kWh battery cost has a range of about 300 miles. "We feel the 300-mile threshold for US consumers is a big deal," he added.

The cost of a battery for a Chevy Bolt is estimated at \$145/kWh, but GM has said it will lower the cost of this battery by 40% in other EV models using its first-generation Ultium batteries.

However, Steven Boyd, batteries and electrification program manager with DOE's Vehicle Technology Office, said the agency expects the \$100/kWh target will be reached as early as 2025.



Recognizing the need for cheaper batteries, Boyd revealed that DOE has updated its target cost to \$60/kWh.

IHS Markit projections line up with DOE's estimates, with the weighted average cost of major lithium-ion batteries used in EVs—Lithium-ion Phosphate, Lithium Nickel Manganese Oxide, Lithium Cobalt Aluminum Oxide—expected to reach \$110/kWh in 2021, and \$85/kWh in 2025.

Reliable supply chains

Boyd and Maten agreed with other panelists that greater EV penetration will require reliable supply chains for critical minerals such as lithium, nickel, cobalt, and manganese as well as a wide variety of vehicles to meet the needs for personal use as well as transportation of goods. A solid fueling infrastructure will also need to be in place, they said.

Dan Levy, senior equity research analyst with Credit Suisse who moderated the discussion, said the slew of announcements in recent months about battery manufacturing plants being set up in the US points to the underlying concern about supply chains.

The White House in its June report on supply chains acknowledged that China refines 60% of the world's lithium and 80% of the world's cobalt—two core inputs to high-capacity batteries—which presents a critical vulnerability to the future of the US domestic auto industry.



GM said 9 December it is entering into a strategic partnership with MP Materials to develop a fully integrated US supply chain for rare earth magnets used in EV batteries.

MP Materials owns and operates the Mountain Pass rare earth mineral mine and processing facility in California, the only active and scaled rare earth production site in America. From this mine, rare earth materials will be transformed into Neodymium-Iron-Boron magnets at a new production facility that MP Materials said it will build in Fort Worth, Texas, delivering "an end-to-end, US supply chain."

This agreement would ensure that GM receives US-sourced and manufactured rare earth materials, alloys and finished magnets for the electric motors used in the GMC HUMMER EV, Cadillac LYRIQ, and Chevrolet Silverado EV, and other EV models that the company plans to build using its Ultium Platform that will install specially-designed Ultium batteries.

On 1 December, GM also announced it was forming a joint venture with POSCO Chemicals to process critical battery minerals for the fleet of EVs that it plans to roll out in the coming months and years including its GMC Hummer EV.

GM in January pledged to manufacture 100% of EVs by 2035, and Maten said the company is rolling out plans to meet Biden's goal. The goal of all these efforts is to ramp up EV penetration, which Levy said remains low.

Penetration remains low

According to the US Environmental Protection Agency (EPA) 2020 Automotive Trends Report, which was released 19 November, hybrids, plug-in hybrids, and EVs are poised to grow in 2021, "but are currently at low adoption levels."

The EPA said EVs and plug-in hybrid EVs accounted for 2% of all production, and hybrids 5%. In the projected model year 2021 data, those categories are estimated to grow to 4% and 9% of all production.



Reaching Biden's goal will require a significant "shift" in consumer choices and automaker plans, Levy said, but he added, "what will it take to drive this shift?"

Responding to Levy, Colleen Jansen, chief marketing officer for California-based Chargepoint, an operator of charging stations, said automakers need to be prepared to supply a wide variety of vehicles for commercial and



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official use to transport goods and people and for personal use, while state, federal and local planners ought to be thinking about how to place charging stations where people spend most of their time.

Integrating charging with use

Jansen said EV charging will be different from the traditional fueling stations for vehicles running on internal combustion engines located at intersections.

"Charging will have to be integrated to where people spend time. For the majority of us that means where we sleep and where we work," Jansen said, adding that policymakers, whether at the federal, state, or local level, will have to consider setting up stations in multi-dwelling units, homes, places of work, and along highway corridors.

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[VIP ASSET] Electrical steel – Another temporary supply chain shortage or a threat to OEMs electrification plans?

As part of our continuing research and analysis, the Automotive Supply Chain and Technology team at IHS Markit has authored the attached summary report on potential challenges within the electrical steel market. Electrical steel – Another temporary supply chain shortage or a threat to OEMs’ electrification plans? addresses the idea that while major steel producers are investing millions to increase electrical steel production capacity, the rapid growth of the hybrid and electric vehicle segment could potentially cause material demand to outpace supply from 2025.

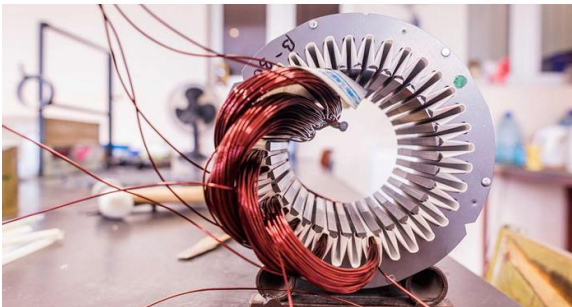
As the automotive industry battles the semiconductor shortages, which have prevented the production of 9.3 million units to date, the rapid expansion in growth of EV sales raises questions about the future availability of sufficient electrical steel needed to produce electric motors to meet the electrification targets set by regulators and OEMs around the globe.



电工钢——另一个短暂的供应链短缺还是对汽车制造商电气化计划的威胁？

虽然主要钢铁生产商正大量投资提高电工钢产能，但混合动力汽车和电动汽车的快速增长可能导致 2025 年以后该材料供不应求。

Matteo Fini | 埃信华迈供应链、技术和售后市场副总裁
Prateek Biswas | 埃信华迈供应链和技术高级分析师
Graham Evans | 埃信华迈供应链和技术总监
Claudio Vittori | 埃信华迈动力总成和电动汽车高级技术研究分析师



哪个地区的供应缺口最大？

具体地区对汽车制造商的影响可能直接取决于国内钢铁供应商的生产能力以及该地区实施的进口关税的幅度。在预计需求增长最快的地区，进口关税会对那些对电动机磁芯需求较高的汽车制造商的运营费用带来严重影响。例如，美国根据第 232 号规定对从 7 个非欧盟国家进口的 NOES 征收接近 200% 的高额关税，并且对从欧盟进口的 NOES 征收基于配额关税。

欧洲是电工钢供应失衡最严重的地区，但到目前为止，北美对于 NOES 电工钢生产认识不足。克利夫兰-克利夫兰公司（前身 AK 钢铁）是唯一本土 NOES 生产商。克利夫兰-克利夫兰在生产 NOES 和 GOES 方面共用生产设备。克利夫兰-克利夫兰最近关注短期转向电工钢的生产，以满足该地区对电力变压器日益增长的需求，从而导致新能源汽车级 NOES 的可用产能减少。

美国钢铁旗下位于美国阿肯色州奥西奥拉的大河钢铁厂将于 2023 年第三季度开始生产 NOES。这将每年增加 18 万吨的 NOES 产能，其中 4.5 万吨将会分配给新能源汽车级 NOES。

考虑到拜登政府基础设施法案设定的车辆电气化激进目标，大河钢铁厂开始生产新能源汽车级 NOES 所需的时间以及提升产能实现满负荷生产所需的时间，该地区的汽车制造商将继续面临当地供应选择有限的问题，这将在短期内推高电动机成本，损害了它们的国际竞争力。

钢铁制造商是否在通过投资以弥补产能缺口？新参与者的进入能否解决这一问题？

钢铁供应商已经宣布投资数亿美元来提高高牌号新能源汽车级 NOES 的产量。然而，即使考虑到这些因素，仍会存在投资缺口。作为参考，到 2028 年，65 万吨的产能缺口可能需要新增大约 6 至 12 家工厂（取决于工厂的规模和位置），才能满足汽车行业增加的需求。

对于一家现有企业来说，新建一家新工厂通常需要 3 年左右的时间，其中设计大约需要 1 年，工程建设则需要 2 年。对于新参与者而言，设计和建造工厂需要 3 年时间，生产高牌号 NOES 或新能源汽车级 NOES 可能还需要 2 至 8 年的时间。

钢铁制造商还能做些什么，解决汽车行业的产能限制？

对钢铁制造商来说，汽车行业是一个战略增长领域，特别是在特种合金方面，而且它通常是一个主要的收入来源。这与半导体芯片短缺的情况截然不同。如果发生潜在的电工钢短缺，汽车行业比芯片短缺的任何时候都要更加谨慎。汽车行业能够从钢铁厂的产能灵活性中受益。大多数制造电工钢的厂都有冷轧机设计。这使得低牌号 NOES、高牌号 NOES 和新能源汽车级 NOES 的生产设备的关键部件可以共用。在一些情况下，钢厂还可以共用新能源汽车级 NOES 和 GOES 的生产设备。

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