



Automotive Industry Weekly Digest

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[OEM Highlights] Mazda restructures Chinese JV with Changan to include FAW

IHS Markit perspective

Implications Mazda has confirmed changes to its JV with Chongqing Changan Automobile under which Mazda's other JV partner in China, FAW, will take a 5% stake in this business.

Outlook The agreement is likely to be seen as an opportunity to optimise Mazda's performance in the Chinese market, which has struggled in recent years. However, while IHS Markit's forecasts see some improvement in the coming years, it is not expected to make huge strides at present.



Mazda has confirmed changes to its joint venture (JV) with Chongqing Changan Automobile under which Mazda's other JV partner in China, FAW Corporation, will take a stake in this business. In a joint statement, the companies said that following FAW "participating in and winning the bid for a capital increase project" undertaken by the JV between Mazda and Changan, Changan Mazda Automobile (CMA), on the China Beijing Equity Exchange, the three companies have now agreed that FAW would invest in CMA. It said that FAW will use the total 60% stake in its sales JV with Mazda, FAW Mazda Motor Sales Co (FMSM), to purchase the new shares.

The automakers added, "Upon completion of the examination procedures by relevant authorities of the Chinese government in accordance with laws and regulations, CMA will become a new joint venture company (New CMA), whose shareholders will be Mazda, Changan and FAW". Under the agreement, Mazda and Changan will both hold a 47.5% stake in New CMA, while FAW will own the remaining 5%.

Following the transaction, New CMA will be responsible for the same operations as the former CMA and "other Mazda-related business". It also noted that the FMSM sales JV will "continue to be engaged in Mazda brand vehicles business", but that the JV will now be jointly owned by New CMA and Mazda.

Outlook and implications

It was announced earlier this year that CMA was looking for an investor to take a 5% stake in the business. Reports at the time said that the aim was for it to raise around USD5.84 million of additional investment. Although it was previously reported that Mazda's JV with FAW could consolidate with CMA, articles in the media subsequently indicated that FAW would be the party investing in CMA.



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On the announcement of the planned deal, the companies have said that with “the change in the investment structure, the three companies aim to utilize every strategic and managerial opportunity in the new joint investment company and strive to make its business and management system optimal to adapt to the needs of the expanding Chinese market.” Although the Chinese passenger car market has fallen back in recent years, Mazda’s performance there has been weakening for even longer. Sales volumes reached a peak of 316,600 units during 2017, and last year dropped to 192,900 units, a decline of around 39%. Products built by the existing CMA JV have contributed most to this fall, as vehicles assembled at its site in Nanjing (Mainland China) have contracted by around 37.5% to 138,000 units between 2017 and 2021. This is despite the compact Mazda3 and the CX-5 crossover being joined by the unpopular larger CX-8 and the CX-30 compact crossover introduced only in 2020 and helping to lift output slightly. Production at Mazda’s JV with FAW in Changchun has fared better in recent years, underpinned by the launch of the latest-generation Atenza mid-size sedan and, more importantly, the CX-4 compact crossover, although volumes have dropped back as the latter has aged.

Through the new agreement, Mazda and its Chinese partners will be hoping to optimise their business strategy, which it could be argued is spread too thinly over two modestly sized JVs, and encourage a stronger rebound as the local market recovers. While IHS Markit expects Mazda’s range in the country to be further bolstered by an additional new compact crossover in 2022 built at CMA’s Nanjing facility, we do not expect a return to the sales levels recorded in 2017. Indeed, IHS Markit currently anticipates that sales in China will reach around 239,900 units, including imported models, by 2025, a gain of just over 24% when compared to 2020 figures.

[OEM Highlights] Changan aims to sell 3 mil. vehicles a year by 2025

Chinese automaker Changan aims to sell 3 million vehicles a year in 2025, reports Reuters, citing Changan chairman Zhu Huarong. Of the total, new energy vehicles (NEVs), including battery electric vehicles (BEVs), plug-in hybrid and fuel-cell electric vehicles, will account for 35% of its sales. By 2030, the automaker aims to sell 4.5 million vehicles annually and NEVs will account for 60% of the total volume. Changan also aims that sales outside China to account for 30% of its business in 2030.



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Outlook and implications

Changan, which operates a joint venture (JV) with Ford and Mazda, is estimated to have sold 2 million units globally in 2020, highlights the report. In a bid to achieve its aim, the automaker plans to roll out new and refreshed vehicles. Furthermore, Changan has been developing BEVs with Huawei Technologies and battery-maker CATL and plans to invest CNY150 billion (USD23.1 billion) in the smart EV industry in the next five years. As the Chinese NEV market gains momentum, automakers are introducing premium EV brands with models featuring advanced safety and autonomous systems. In April, Chinese automaker SAIC Motor Group's (SAIC) Alibaba-backed IM brand announced pre-sales of its first mass-produced sedan, the L7, at the Shanghai Motor Show. Zeekr, the premium EV brand introduced by Geely Auto, also launched its first model, the 001.



[Energy Highlights] VinFast and Gotion High-Tech sign MOU to co-operate on R&D, production of LFP battery cells

Vietnamese automaker VinFast and mainland China's electric vehicle (EV) battery cell supplier Gotion High-Tech have signed a memorandum of understanding (MOU) to co-operate in the research and production of lithium iron phosphate (LFP) battery cells for the automaker, according to a company press release. The two companies will work together to develop the clean energy industry and promote low emission targets in Vietnam, mainland China, and around the world. Gotion High-Tech will use advanced technologies and its experiences in battery manufacturing to support VinFast's electrification strategy, according to Gotion High-Tech president Zhen Li.



Outlook and implications

The study for the construction of an LFP battery plant in Vietnam is one of the efforts to establish a clean energy ecosystem in the country. VinFast has also partnered with several other companies in the past in developed markets such as the United States, Israel, and Taiwan for projects entailing research and development (R&D) and advanced applications of EV battery technologies. Vingroup, the parent of VinFast, has also set up a wholly owned subsidiary named VinES, which will operate in the energy solutions domain, including developing EV batteries. These latest developments are in line with VinFast's aim to become a global leading EV corporation. It recently announced that it had been developing and preparing to start mass production of three smart EVs – the VF e34 mid-size sport utility vehicle (SUV; 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 would be sold in the US, Canadian, and European markets from 2022. The automaker has already started accepting bookings for the VF e34 in Vietnam. VinFast also plans to launch three more EVs – the VF e32, VF e33, and VF e34P, corresponding to the A, B, and C segments – from 2023.



[MHCV Highlights] Volvo Trucks agrees to acquire Chinese truck-maker

IHS Markit perspective

Implications Volvo Trucks has announced that it has reached an agreement to acquire Chinese truck-maker JMC Heavy Duty Vehicle Co., which will lead to the Swedish company building its own-brand trucks in China.

Outlook The agreement is an opportunity for Volvo Trucks to significantly expand its presence in mainland China, where it has been dependent on imports and a relationship with Dongfeng.

Volvo Trucks has announced that it has reached an agreement to acquire Chinese truck-maker JMC Heavy Duty Vehicle Co., a subsidiary of Jiangling Motors Co. According to a statement, Volvo is to pay around CNY800 million (USD123.3 million) for the unit.



Volvo FM, FH and FMX in Mainland China
Source: Volvo Trucks

The Swedish truck-maker said that it aims to begin production of its Volvo FH flagship long-distance haulage vehicle, the FM local and regional haulage truck, and the FMX heavy-duty truck for construction applications, at JMC Heavy Duty Vehicle's site in Taiyuan, Shanxi province (mainland China) for local customers. Manufacture is planned to start in the country from the end of 2022. Operations at this site will include stamping, welding, manufacturing of cabs, painting and the final assembly of Volvo trucks. Volvo added that after investment has taken place, it anticipates that the plant will have the capacity to manufacture up to 15,000 Volvo trucks per annum within the next few years. It also said that this capacity could potentially be increased further in future.

On the announcement, Volvo Trucks President, Roger Alms, said, "With our long-standing presence in China, we are growing our sales, and we are expanding our strong network of sales and service points together with our private dealer partners. Over the last couple of years, we have seen a fast development of the logistics markets and an increasing demand for our premium trucks and services. To meet the demand from Chinese transport operators, the time is right for us to establish a regional value chain with our own heavy-duty truck manufacturing in China."

Volvo has said that the transaction is subject to customary closing conditions, including regulatory approvals.

Outlook and implications

Volvo Trucks will acquire the heavy truck manufacturing assets of Jiangling Motors less than a decade after it acquired them from Changan Automobile Group. Despite working with Ford and its Turkish partnership Ford Otosan to build a variant of its Cargo and F-Max heavy commercial vehicle, volumes have been weak. According to IHS Markit data, production of the Weilong and Weilong HV5 trucks at this site has stood on average at under



2,000 units per annum (upa) at the Taiyuan site between 2019 and 2020 when output of these vehicles came fully up to speed. This seems to have led to Jiangling Motors choosing not to pursue its interests in its business, and according to China Commercial Vehicle Network, its board approved plans to sell off this business for no less than CNY764 million.



For Volvo Trucks, this is an opportunity to expand its reach in China where it has had a presence since 1934, according to the truck-maker's statement. However, while Volvo has a strategic alliance with Dongfeng Motor Group through Dongfeng Trucks since 2015, the KL heavy-duty and KR medium-duty trucks – of which the Swedish company has supported the development – feature Dongfeng branding. By contrast, Volvo Truck sales in the country have been reliant on imports from its sites outside the country. Nevertheless, this did not stop around 4,500 Volvo Trucks being delivered to Chinese customers during 2020, according to the company. While this is still very small compared to the 1.69 million medium and heavy commercial vehicles (MHCVs) registered in the country last year, according to IHS Markit data, it does suggest that there is demand there for a premium brand product, which presents an opportunity for expansion by Volvo. It may also see it as a good time to take this step given, that it has now spun off its UD Trucks business to Isuzu Motors, yet will continue to have a strategic alliance with the Japanese company. At the same time, changes to ownership rules by the Chinese government introduced in 2018 that lifted the ownership cap of 50% that restricted interest by non-domestic truck-makers has also opened the door further to Volvo, as it already has done to Hyundai and Scania.

However, Volvo will enter the market at a time when competition looks set to heat up as demand weakens. After MHCV registrations reached a record level in 2020 as customer raced to replace vehicles before a change in the emissions regulations at the turn of the year, volumes are set to fall by around 40.5% by 2022 to around 1 million units. We also see a further weakening taking place in 2023 to around 923,100 units, and sales will remain below 1 million units until 2026, not helped by the fading out of government stimulus policy in 2022.

[MHCV Highlights] Autonomous truck startup FABU.ai secures CNY100 mil. in funding

Autonomous truck startup FABU.ai has raised CNY100 million (USD15 million) in a Series B+ funding round from Cowin Capital and DYEE Capital. The company plans to use the infused capital to expand the deployment of its car-road-cloud integrated solution into more scenarios such as port transportation and city shuttle service, Gasgoo reported.



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Outlook and implications

The trucking industry is growing rapidly in China. The driverless trucks can be very helpful in big warehouse facilities to move goods from one storage unit to another following fixed and dedicated paths. The Chinese government is heavily backing the use of autonomous technology, having authorised the testing of autonomous cars, taxis, and buses, among other vehicles. FABU.ai was founded in 2017 to focus on developing technology for advanced driver assistance systems and autonomous vehicles (AVs) to support safer roads and intelligent transportation. In 2019, two logistics companies – China Post and Deppon Express – deployed FABU.ai's technologies to automate trucks for commercial deliveries.



[GSP] Middle East/Africa Sales and Production Commentary - 2021.07

Middle East/Africa sales

June 2021: +3.9%; 0.302 million units vs. 0.290 million units

YTD 2021: +27.9%; 1.737 million units vs. 1.358 million units

Light vehicle demand in the Middle East and Africa region posted a solid increase in June compared with the same month of last year at +3.9%, thus confirming the vehicle sales trend of a slowing pace of growth from the high rates registered in March–May. It is important to highlight that March 2020 marked the beginning of the COVID-19 pandemic, and vehicle sales sharply declined in the following months owing to severe lockdown measures. Therefore, the comparison for March–June 2021 versus the unusual circumstances for March through June 2020 should be noted. The following months of July 2021 and August 2021 are also expected to report high growth for the same reason. First quarter 2021 registered 7.7% growth, and the second quarter soared at 62.1% growth. Interesting to note is that new vehicle demand is slightly above par when compared to the first and second quarters of 2019 (pre-pandemic), thus signaling that a recovery is firmly on the way, as consumers begin to look beyond quarantines and economic lockdowns. Overall, in the 12 months of the COVID-19 crisis from March 2020 to February 2021, demand had collapsed 20.5%, with 740,000 fewer vehicles registered. The results of March–June 2021 have now begun to lower this trend, signaling that a sales recovery is underway.

In recent years, regional economies were already very fragile, and the COVID-19 pandemic further deteriorated both business and consumer confidence levels. In addition, record-low crude oil prices in 2020 further depressed countries that heavily depend on oil export revenues, as global supply heavily overshadowed global demand. Key industry sectors in developed countries, such as airlines, cruises, cargo shipping, fuel stations, and manufacturing plants, significantly lowered their demand for oil, resulting from government-imposed lockdowns, forcing consumers to stay at home. As a result, countries heavily dependent on either oil or tourism revenues crashed across the region. However, a more positive turnaround should gather pace in the second half of 2021 as the economic recoveries gain momentum at various speeds, depending on each region and country's specific core sectors. Robust demand for commodities has benefited specific countries; the return of tourism will also kickstart the revival of car rental companies representing an important market share in some countries, which have frozen new registrations since the start of the pandemic and decreased the size of their fleets to readjust to demand levels.

January–December 2020 estimated full-year volumes were down 17.9%. The overall negative trend that has developed in the past few years will likely bottom out in the near term and rebound; however, the need for structural economic reforms to be implemented will continue to overshadow this recovery. The full-year 2021 forecast for the Middle East and Africa is set at 3.394 million units (revised down 21,000 units versus last month), representing a 16.4% year-on-year (y/y) increase, which still holds total regional volumes back to levels reached 16 years ago (in 2005). Moreover, falling demand in six consecutive years highlights the economic instability across the region and consumers' cautiousness to commit to a new vehicle purchase.



As previously forecast, the increasing vehicle demand trend will begin its recovery stage during the second quarter of 2021 and strengthen in the next quarters despite a degree of economic disruption due to post-COVID-19 restrictions to several industries that will continue to linger. The slow recovery of consumer demand for new vehicles also results from the easing of economic restrictions and the chip shortage affecting vehicle production globally. Vehicle sales in June 2021 were affected by the distinct performances across the region, with specific economic developments affecting various markets and subregions in different ways. Vehicle demand during June in the Middle East (excluding Iran) and the Gulf decreased 10.5% compared with the same month of 2020. In similar fashion, vehicle demand in Iran fell by 1.7%, and that in the African continent demand soared 34.8%.

Sales of new vehicles in 2021 should increase 15.7% across the Middle East (excluding Iran) and the Gulf subregion. There may be some volatility in specific months as consumers pull forward vehicle purchases to avoid higher value-added tax (VAT) rates to be introduced in some countries. Oman introduced a 5% VAT to become the fourth Gulf country to do so. Only Kuwait and Qatar are lagging with their implementation process. The Gulf nations of Bahrain, Saudi Arabia, and the United Arab Emirates (UAE) have already introduced a VAT. Recovery will likely be strong and positive in the second quarter of 2021 owing to the comparison with a dreadfully low result during the second quarter of 2020. The remaining third and fourth quarters of 2021 will possibly hit cautiously low growth, as the vaccine is rolled out and the economies reopen with fewer restrictions, allowing for consumer spending levels to begin to rise, in line with more positive confidence indicators.

Unfortunately, the African continent felt the full force of the COVID-19 pandemic in the second half of 2020, and this struggle will continue throughout 2021, as the global epicenter of the virus moved away from Europe and the United States. Unfortunately, this expectation has been confirmed as African leaders struggle to contain the virus from further spreading, and South Africa in particular has recorded a higher number of positive cases.

Demand for new vehicles in Africa increased by an estimated 34.8% in June and 62.1% in YTD 2021, signaling the green shoots of recovery, as substantial pent-up demand has significantly risen over the years. Since 2015, vehicle sales have considerably fallen from the highs of fewer than 2.0 million units to the current lows of fewer than 1.0 million units. The positive momentum during late 2018 and the first half of 2019 was short-lived, and the start of a turnaround is expected for mid-2021. Countries in North Africa, such as Algeria and Morocco, fell into negative territory in 2020, joining South Africa and hurting the region's overall demand levels. As a result of much weaker consumer demand, vehicle demand across Africa likely decreased 26.7% in full-year 2020, despite some relative support from the rise in commodity prices. Demand will also continue to be heavily affected by low levels of global crude oil demand, despite a trending recovery in prices as of late 2020. As a result, vehicle demand is falling back to levels achieved 17 years ago, in 2003. This scenario will lead to more hardship across Sub-Saharan countries, while North African countries also suffer from a slowdown in Western Europe. Sales of new vehicles in the African continent will increase 16.5% in 2021.



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South Africa is the largest vehicle market in Africa, but the economic landscape has been extremely difficult during the past few years and further depressed owing to COVID-19, despite the recent strong demand for natural resources and precious metals. Demand for new vehicles continues to struggle owing to an outdated automotive policy and the political tension within the African National Congress (ANC), which in turn has led to economic policy stagnation. General elections were held in May 2019 and won by the ANC led by Cyril Ramaphosa, whose main task has been to provide greater stability, which is critical and necessary to turn around low consumer confidence levels. Big-ticket purchases, such as new vehicles, have been largely postponed and are expected to recovery at a more solid pace well into the second half of 2021. As a result of the government lockdown measures, which restricted movement and closed businesses over several months in the last year, consumer spending similarly declined sharply. At present, a recovery is unraveling and vehicle sales in the first half of 2021 are up by 39.1%; however, the results continue to lag behind the sales performance experienced in 2019, pre-pandemic, which shows the underlining struggle to renew the vehicle fleet. Furthermore, political unrest has now intensified following the arrest of former president Jacob Zuma that has led to chaos, with looting and violence in the Guateng and Kwa-Zulu Natal provinces. A peaceful solution to this social unrest will be key for supporting a dynamic economic landscape.

The Sub-Saharan region has also struggled in recent years owing to low global oil prices hurting oil revenues for exporting countries and low commodity prices hurting agricultural and mining revenues for other nations. Following the high volumes reached in 2014, vehicle demand has struggled to achieve any consistency trending downward in the past five years, and imports of used vehicles continue to flood the continent despite the government policy. Vehicle sales in 2021 are forecast to remain at the levels achieved 20 years ago. A stronger turnaround is projected for beyond 2022, as more governments implement growth strategies for the automotive sector.

North African countries have also been struggling to put their economies on the right path to economic growth. Demand for new vehicles heavily fell in the three-year period (2015–17) owing to the economic collapse in Algeria, Egypt, and Tunisia. Overall, North African vehicle sales have fallen to levels registered 15 years ago. In 2018, Algeria implemented a vehicle import quota system and has since continued to tank, with sales developments destined to be drastically lower than the normal market demand. In fact, new-vehicle registrations is estimated to have reached an all-time low in 2020 at 27,000 units, an abysmal gap from the highs of 500,000 in both 2012 and 2013 for Algeria. Egypt's vehicle market had been struggling in the recent past and is forecast to continue on the path of a slow recovery throughout 2021. Lastly, Morocco's vehicle market continues to develop in line with its economic growth, despite weaker sales resulting from effects of the COVID-19 virus outbreak on the economy and significant trading partners. The recovery in demand will likely be mild for new vehicles across North Africa in 2021, as more carmakers and many tier suppliers have delayed expanding their manufacturing footprint in the region.

Demand for new vehicles in the Middle East and Gulf region (excluding Iran) fell by an estimated 10.5% in June, slightly slowing the recovery that has begun to form in the region. Across the region, many countries have lifted



the economic restrictions, and business activity has returned. For 2021, the trend should remain slightly positive, and full-year vehicle sales will increase 15.7%. Further at the negative end of the scale, Iranian vehicle sales have collapsed to levels reached over 20 years ago, since the highs registered in 2017 at 1.6 million units, down to 0.8 million units in the present day. The stark double-digit declines are a direct result of the renewed economic sanctions imposed by the US under the Trump administration. The Iranian market in 2021 is forecast to post low growth as poor economic development concerns continue to affect the negative sentiments of Iranians. Across the Gulf region, higher taxation has slowed demand for high-priced goods. Iran and Saudi Arabia are the largest vehicle markets in the Middle East and Gulf region, and their performance will significantly affect overall demand. In recent years, Iran's vehicle demand registered one in every two vehicles sold in the region, thus highlighting the importance of the country.



The high volatility in demand for new vehicles is expected to continue and lies in the political turmoil within the Gulf region, where countries have turned on Iran and previously Qatar, led by Saudi Arabia.

Recent missile strikes within Israel-Gaza will further fuel the political turmoil in the region and may hurt the economic recovery of Israel.

Oil prices have begun to rise from late 2020, supported by a weak recovery, owing to the varied global lockdowns, which have grounded industries, such as airlines, cruises, and road transportation, and led to significantly low oil demand in developed markets. As a result, oil-exporting nations will continue to plan budgets with lower revenues. Vehicle demand in the first half of 2021 will likely post low growth rates in the Middle East and Gulf region (excluding Iran), as a result of lower-than-optimal crude oil prices. Vehicle demand in Iran is expected to begin a recovery in the near term.

In the next few years, consumers will continue to be slightly affected by the VAT introduction in the Gulf countries, and the higher cost of goods will lower disposable income, thus hurting demand for new vehicles. Saudi Arabia went ahead and tripled its VAT starting July 2020 to 15%. The three remaining Gulf countries of Kuwait, Oman, and Qatar have pledged to implement the 5% VAT by April 2021. Only Oman succeeded as Qatar targets late 2021 and Kuwait aims for 2022. The United Arab Emirates and Bahrain have already implemented the VAT since January 2018 and January 2019, respectively. Meanwhile, Gulf leaders will continue to implement projects that are necessary to become less dependent on oil revenues in the longer term. Lastly, as a direct result of the COVID-19 pandemic and low oil prices in comparison with the highs of recent past years, IHS Markit expects a very mild recovery in vehicle demand over the next several quarters. On a positive note, former US president Trump's historic peace deal among Israel, Bahrain, and the UAE shall bring much-needed stability across the region. For 2021, President Joe Biden's administration will have high expectations from Gulf nation leaders to further contribute positively toward the region's peace and economic developments.

Iranian car owners will hold onto their vehicles for a longer period of time, thus driving up the age of the fleet of Iranian vehicles. In turn, this trend will lead to higher demand for new vehicles in the longer term.



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Global crude oil outlook

The 2021–22 Brent price outlook has been raised by about USD5 per barrel (/bbl) relative to the first quarter 2021 outlook. The higher outlook now anticipates Brent averaging USD67/bbl in 2021 and USD66/bbl in 2022, reflecting the anticipation of a tighter near-term market as vaccination successes and massive fiscal stimulus lead to a surge in oil demand. IHS Markit analysts expect world liquids demand will spike by 7 million barrels per day (MMb/d) between the first quarter and third quarter of 2021. US tight oil producers are expected to adhere to capital discipline, generating only modest supply growth through 2022. Meanwhile, OPEC+ will gradually unwind its production cuts and US sanctions on Iran are eventually lifted, allowing a quick recovery in Iranian output and exports.

IHS Markit analysts have reduced the long-term Brent average price environment from USD67/bbl to USD62/bbl, reflecting the updated, lower long-term demand outlook. Fewer high-cost barrels will be needed in the long term compared with the 2020 outlook. Demand for crude oil will peak around 2033 at about 81 MMb/d, which is 5.2 MMb/d lower and four years earlier than the peak expected in the 2020 ASW. As the energy transition accelerates this decade, government policies, alternative fuels and vehicle drivetrains, and technological innovations will restrain petroleum's long-term demand growth potential. The lower supply requirement means that cumulatively about 20% less upstream activity is needed between now and 2050 compared with the prior forecast to meet demand and offset natural field decline rates.

Energy transition and capital discipline reshape the long-term US production trajectory. The 2020 price collapse and capital discipline have reset US oil production to 11.3 MMb/d in 2020 from 12.2 MMb/d in 2019. Beginning in 2022, US shale returns to growth of 3–5% annually owing to support from an oil price environment that allows operators to balance growth and financial returns. However, US growth increasing at twice the rate of the world's oil demand growth—as it did at times in the 2010s—is not likely to be repeated, unless oil prices are significantly higher than expected. US output will peak at 13.7 MMb/d in 2030—surpassing 2019 levels but lower than the 2020 ASW peak forecast of 14.7 MMb/d. IHS Markit analysts assume restrictions on new federal leases, reflecting the likely policy restrictions that will emerge as the energy transition accelerates.



[Supplier Trends and Highlights] Flexpoint to supply its Bend Sensor technology to autonomous vehicle manufacturer

The Flexpoint Impact Detection Sensors have been specifically designed to perform this function accurately and quickly



Source: Gettyimage/nasakid

Flexpoint Sensor Systems announced in a press release on Yahoo Finance that the company has entered into an agreement with a leading manufacturer of autonomous vehicles for the design and production of an impact detection system based on Flexpoint's patented Bend Sensor technology. This company is a major player in the development and production of autonomous vehicles. The initial order will be delivered within 45 days, with larger-scale production likely to begin in 2022.

Clark Mower, president of Flexpoint stated, "This agreement is significant, not only because it is an automotive application, but it is an application in the new and rapidly growing market and industry of autonomous vehicles. As you can see from recent releases the Company has been working with autonomous vehicle manufacturers to help them solve the issue of detecting these impacts. The result of these collaborative efforts has led to an agreement and to the awarding of a purchase order for the first vehicle specific impact detection sensor system. The light weight and robustness of the sensor make it ideally suited for this and other applications in this industry where the weight of the vehicle has such a significant impact on the vehicles operational capabilities."

Outlook and implications

In April and July, the company stated that it was receiving a lot of interest and was working on applications for a lot of different companies in the automotive industry. This agreement represents the culmination of the work done for these manufacturers. Additional agreements for Flexpoint sensor products with this and other manufacturers are likely for the rest of the year.

[Supplier Trends and Highlights] Schaeffler to unveil Space Drive 3 Add-ON drive-by-wire system for autonomous vehicles at IAA Mobility 2021

The system is based on the AUTOSAR software standards and meets ISO 26262 requirements



Source: Schaeffler

German automotive components and systems manufacturer, Schaeffler, will unveil its Space Drive 3 Add-ON system at the upcoming IAA Mobility 2021 event in Munich next month. According to a press release issued by Schaeffler on 24 August, this is the third generation of the company's Space Drive drive-by-wire system, which is a multiple redundant technology that supports autonomous driving.

This next-generation steer-by-wire technology supports simplified integration into existing vehicle architectures. Schaeffler will also be presenting its new rolling chassis, which is a modular and scalable platform for autonomous passenger vehicles and freight mobility; in addition to the premiere of Schaeffler's force-feedback handwheel (HWA), which replaces conventional steering wheel and mechanical steering column with mechatronic actuators, opening up new possibilities for passenger cabin layouts.

Outlook and implications

Based on the AUTOSAR software standards, the Space Drive 3 Add-ON meets the functional safety requirements of ISO 26262 and is ready for small-volume production. The rolling chassis' corner modules allows a steering angle of up to 90 degrees and comprises a wheel hub motor, a wheel suspension system incorporating air suspension that enables the vehicle to "kneel" for greater ease of access, an actuator for electromechanical steering, and a brake mechanism.

Commenting on the development, Viktor Molnar, head of Chassis Systems at Schaeffler, said: "Space Drive 3 is a major milestone for us. It means we can offer our customers a production-ready steer-by-wire system that is highly scalable and extremely flexible. What's more, the system can record every steering parameter, which in self-driving vehicles enables feedback for the advanced driver assistance systems (ADAS)."



[VIP ASSET] China's increasing focus on hydrogen FCVs

Growing awareness of man-made climate change has seen governments all over the world accelerate the pace of legislative change as part of efforts to lower carbon emissions. This report evaluates different aspects of the hydrogen-powered vehicle ecosystem in China.

Key findings

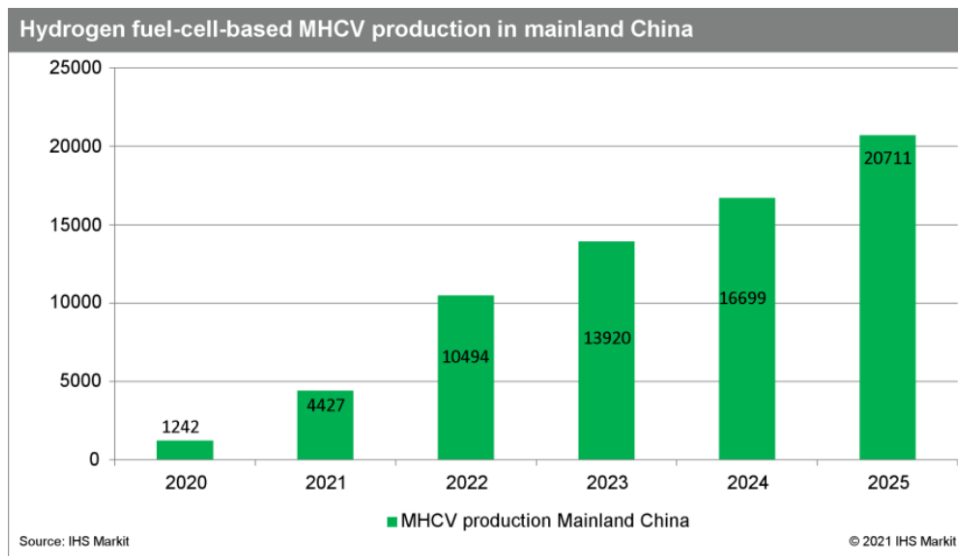
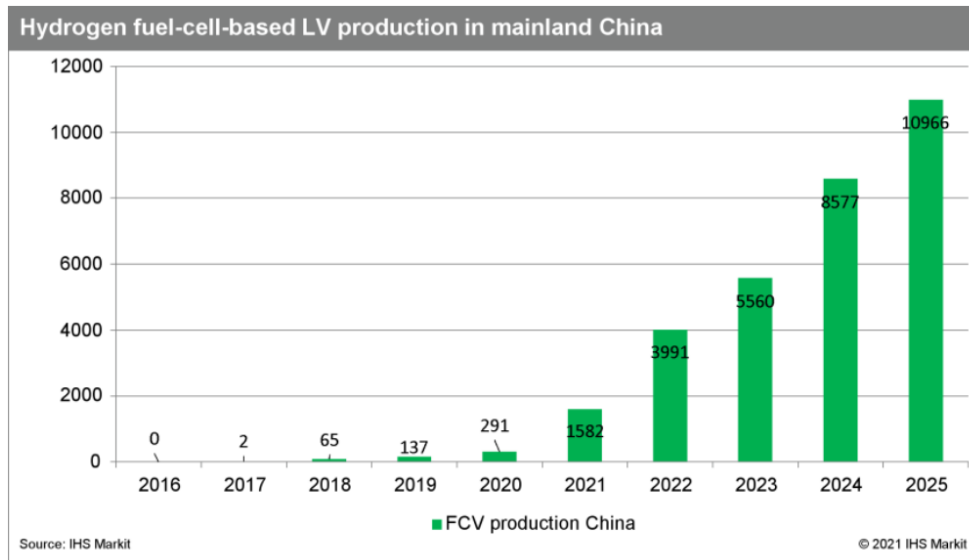
- With electric vehicles (EVs) gaining popularity in China and other countries across the globe, there is a looming shortage of raw materials such as lithium, nickel, and cobalt, which are used in EV batteries. At the same time, there is a need for the development of hydrogen-powered vehicles.
- China is promoting the use of hydrogen fuel-cell technology, as the emissions are not harmful and hydrogen is abundantly available. By 2025, China expects to bring the number of fuel-cell vehicles (FCVs) on its roads to 100,000 units. However, there are certain barriers to the introduction of fuel-cell EVs (FCEVs), a major one being the high cost associated with the production, storage, and distribution of hydrogen gas suitable for vehicles.
- Local governments across China have been offering subsidies, establishing a hydrogen ecosystem, including testing centres, R&D facilities, and refuelling stations.
- According to IHS Markit's alternative propulsion forecast, there will be around a dozen light-vehicle FCEV models produced in China by 2025, with the total light-vehicle production volume of FCEVs forecasted to be around 11,000 units. In the MHCV segment, the production of FCEV models is expected to reach 20,711 units by 2025, up from 1,242 units in 2020. We expect there will be around 100 models and variants of hydrogen-powered MHCVs by then.

China's programme to reduce carbon emissions has seen it invest heavily and offer subsidies to promote vehicles that run on cleaner fuels such as electricity, hydrogen, and solar power. China is by far the biggest and fastest-growing market for electric vehicles (EVs) in the world and is striving to become a leader in hydrogen-powered vehicles. Despite the impact of the coronavirus disease 2019 (COVID-19) pandemic, China's new energy vehicle (NEV) market continued to expand during 2020 and the first half of 2021. Sales of NEVs, which include battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and fuel-cell vehicles (FCVs), increased 10.9% to 1.37 million units last year and by 201.5% year on year (y/y) to 1.206 million units during the first half of 2021.

China is focused on promoting the use of hydrogen fuel-cell technology to power vehicles, as the emissions are not harmful and hydrogen is abundantly available. Industry authorities have spoken on several occasions recently on China's commitment to developing a low-carbon transportation system, with FCVs – also known as fuel-cell electric vehicles (FCEVs) – incorporated in the roadmap from the very beginning. Specifically, China plans to increase the pace of development towards commercialisation of FCV technology and of investment in FCV infrastructure. By 2025, China expects to bring the number of FCVs on its roads to 100,000 units, with passenger FCVs entering the picture.



FCV production volumes in China



FCV production in mainland China in the light-vehicle category was at zero five years ago. However, the volumes are expected to increase in the next five years, thanks to efforts by automakers including Foton, Changan, Dongfeng, and Maxus. According to IHS Markit’s alternative propulsion forecast, there will be around a dozen light-vehicle FCV models produced in China by 2025, including two from Dongfeng, two from Hongqi, two from Maxus, and one each from Aion, Audi, Changan, Foton, and Wey. The Foton light truck currently accounts for more than 70% of total production volumes of light-vehicle FCVs in China. The model will continue to dominate the light-vehicle FCV market in the coming years and is forecasted to account for around 40% of total light-vehicle FCV production in China by 2025.

In the medium and heavy commercial vehicle (MHCV) segment, the production of FCV models is expected to reach 20,711 units in 2025, up from 1,242 units in 2020. We expect there to be around 100 models and variants



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of hydrogen-powered MHCVs by 2025. The major players in the hydrogen-powered MHCV industry in China are BAIC Foton, Dongfeng Commercial, CNHTC, FAW, SAIC-Iveco Hongyan, Geely, Kinglong, Skywell Auto, Yutong Bus, and Zhongtong Automotive.

Currently, the models with the highest production volumes in the hydrogen MHCV segment in China include BAIC Foton's AUV L, SAIC-Iveco Hongyan's Genlyon, and Kinglong's Chuanliu M. Meanwhile, models such as FAW's J6P, Volvo's 7000-Series L (3), Skywell Auto's Bus, Yutong Bus's E-Series M are gaining traction in the Chinese market and are expected to be the leading models in the hydrogen MHCV segment in the country by 2025.

Although the application of hydrogen FCV technology is largely confined to the commercial vehicle sector at present, favourable policies have attracted leading automakers such as Toyota, SAIC, and Dongfeng to focus on this technology. Currently, the FCV models in the country are primarily commercial buses and vans. Passenger FCVs are rare in the market. However, FCVs have long been enjoying generous subsidies from the government. Light commercial FCVs can receive CNY300,000 (USD44,500) in subsidy and heavy-duty FCVs can receive CNY500,000.

The need for FCVs

With EVs gaining popularity in China and other countries across the globe, there is a looming shortage of raw materials such as lithium, nickel, and cobalt used in batteries for EVs and PHEVs. Automakers are extending their battery supply contracts with battery companies and, in turn, the battery suppliers are scrambling to ensure long-term supplies of raw materials to continue with battery production. In April, Chinese battery supplier Contemporary Amperex Technology Co Ltd (CATL) partnered with China Molybdenum Co (CMOC), one of the largest cobalt producers in the world, to develop a major cobalt and copper mine in the Democratic Republic of the Congo (DRC). The deal included CATL's acquisition of a 25% stake in CMOC subsidiary KFM Holding for USD137.5 million.

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