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About Us

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Medium / Heavy EV Market In Early Testing

By *Chris Fisher*, Senior Commercial Vehicle Analyst

Autonomous Medium and Heavy Commercial Vehicles



*Chris
Fisher*

We have been hearing a lot of talk and getting questions on the current status and the future of autonomous vehicles within the medium and heavy segment.

Early adopters of autonomous technology will likely be in the class 8 long haul segment followed by the bus and medium duty truck segment. Currently, the high cost of the technology can be better absorbed in class 8 long-haul truck applications.

The transition from level 0 to level 1 and 2 is happening relatively quickly due in part to the availability of the technology. Level 3 adoption is still a few years away and it is currently not legal to use on the highway. It will likely be 2027 or 2028 before we see small levels of level 3 commercial vehicles on the road.

Level 4 and level 5 vehicles will likely begin with class 8 semi-trucks and long-haul straight trucks in small quantities of level 4 starting at the very end of this decade. Introduction of series production of level 4 and 5 heavy trucks is likely at least a decade away. Very early testing of fully autonomous trucks is underway and more significant testing is expected in the 2024/2025 timeframe.

Here are brief definitions for the six levels of autonomy as defined by **SAE J3016**.

SAE Level 1: At Level 1, the lowest rung of automation, a vehicle has at least one driver support system that provides steering assistance OR braking and acceleration assistance. The driver remains responsible for driving the vehicle and must be prepared to take control at any time and for any reason. Adaptive cruise control is an example of a Level 1 driver assistance technology. It maintains a safe following distance between your vehicle and traffic ahead without any intervention by the driver. A steering assistance feature, such as lane-centering assistance or lane-following assistance, would also qualify as Level 1 autonomy. However, a vehicle with both of these features working together qualifies as Level 2 driving automation.

Level 1 SAE Examples

- Steering OR brake/ acceleration support to the driver
- Lane centering OR adaptive cruise control

SAE Level 2: Level 2 automated driving is defined as systems that provide steering and brake/acceleration support, as well as lane centering and adaptive cruise control. Even if these technologies are activated, the human at the wheel must be driving and constantly supervising the automated features. Level 2 driving automation applies to vehicles with advanced driving assistance systems (ADAS) that can take over steering, acceleration, and braking in specific scenarios.

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Medium / Heavy EV Market In Early Testing

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Dumper/Tenders, commonly referred to as the Power Buggy, are sought after pieces of equipment because they are much faster than a conventional wheelbarrow and they accelerate job site related activities.

Level 2 SAE Examples

- Steering AND brake/acceleration support to the driver.
- Lane centering AND adaptive cruise control at the same time.

SAE Level 3: Level 3 is known as conditional driving automation. It uses various driver assistance systems and artificial intelligence to make decisions based on changing driving situations around the vehicle. People inside the vehicle do not need to supervise the technology, which means they can engage in other activities. However, a human driver must be present, alert, and able to take control of the vehicle at any time, especially in the case of an emergency due to system failure. The leap from Level 2 to Level 3 automation is significant, so no Level 3 systems are legal to use on American roads. Yet.

SAE Level 4: An automated driving system (ADS) on the vehicle can itself perform all driving tasks and monitor the driving environment – essentially, do all the driving – in certain circumstances. The human need not pay attention in those circumstances.

SAE Level 5: An automated driving system (ADS) on the vehicle can do all the driving in all circumstances. The human occupants are just passengers and need never be involved in driving. **PSR**

DATAPOINT: North America Dumpers/Tenders 1620

By *Carol Turner*, Senior Analyst, Global Operations

1,620 units is the estimate by Power Systems Research of the number of Dumpers/Tenders to be produced in North America during 2022.

This information comes from industry interviews and from two proprietary databases maintained by Power Systems Research: **EnginLink™**, which provides information on engines, and **OE Link™**, a database of equipment manufacturers.

Market Share: With 62.5% of total units produced, Country Home Products leads in production of Dumpers/Tenders in North America. In second position is Allen Engineering with 19.5%; third, is Indy Equipment with 10.5%.

Trends: Dumper/Tenders, commonly referred to as the Power Buggy, are sought after pieces of equipment because they are much faster than a conventional wheelbarrow and they accelerate job site related activities.

In 2021, production of Dumpers/Tenders in North America increased 7% to 1,542 units. Expect production to increase another 5% this year. The increase is attributed to the global economy along with the demand for new products for construction and mining related activities.

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Datapoint

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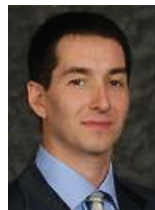
The decline in 2020 was attributed to product saturation in the market and also was somewhat related to COVID-19 shutdowns, even though consumers/contractors were still purchasing products.

At this time, many manufacturers are having longer production lead times due to lack of parts from suppliers and staffing shortages. Expect production to increase an additional 5% by 2025. **PSR**

Europe Report

By *Emiliano Marzoli*, Manager European Operations

Middle East Energy Show Is Back Live



*Emiliano
Marzoli*

The last two years have seen a turnaround in the global economy and the way of doing business. Many habits have changed, and trade shows were severely impacted by the pandemic. For 2022, however the MEE is back live in Dubai. The floor plan has been reduced, removing roughly half of the space used in previous edition. This is not a surprise considering that the show was not busy in 2020, with many last-minute withdrawals, and that it was cancelled for 2021. With many countries around the world relaxing Covid restrictions, attendance was positive, with the halls and stands buzzing during the show. One common comment, it's good to be back.

The energy sector is thriving now, pushed by investments in renewables and need for backup power. During the last few years, critical power (Data centres and hospitals), infrastructure investments and telecommunication have created a strong demand for diesel and gas generators.

However, the current supply chain shortages, logistic issues and rising costs have represented a tricky challenge for the industry. From OEMs to engines and components suppliers, companies are working around the clock to find solutions to deliver their products to partners and customers.

While in the third quarter of 2021, there was optimism looking at 2022, things are not developing as hoped. In fact, most companies reported an even more challenging environment, with components and raw material shortages continuing, rising prices, and increasing shipping costs. As already mentioned, during our 2021 forecast, we are not expecting a significant improvement in the supply chain until 2023. **PSR**

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Brazil/South America Report

By *Fabio Ferraresi*, Director Business Development-South America

Brazil Cuts Taxes on Production of Several Segments



*Fabio
Ferraresi*

Taxes on Industrialized Products (IPI) will be reduced by 25% for most of industrialized goods, in a Governmental effort to boost Industry production. The total impact in federal revenue will be US\$ 5 billion in 2022.

Source: *M&T* [Read The Article](#)

PSR Analysis: This should affect positively sales and profitability in all engine powered segments. However, profitability should be more impacted than volume. Construction Equipment should have the higher impact as well as spare parts. **PSR**

Electric VW E-Delivery Has New Chargers and Reach Into Colombia

VWCO will increase the offer of homologated chargers and now it can be charged in more than 10 different wall boxes. In addition to the new chargers, VW is starting the sale effort in Colombia in agreement with Porsche Colombia, with versions of 11 and 14 tons.

Source: *Automotive Business* [Read The Article](#)

PSR Analysis: Colombia is a market with high acceptance for EV and alternative propulsion and sales of this vehicle should grow fast. Total cost of ownership is still an issue for this product in Brazil, but many companies are investing in these products to associate the green and environmental appeal to its brands. **PSR.**

São Paulo Starts Construction of BRT Aiming Electric Buses

The São Paulo Government has announced the start of a BRT line, going through cities surrounding the São Paulo capital city with plans to be operating in 2023. This line has 17 km of extension and will use 82 Battery Electric Articulated 23 meter buses.

Source: *M&T* [Read The Article](#)

PSR Analysis: The cities surrounding São Paulo Capital have started deploying the initiatives of the main city, as expected. São Paulo City has a more aggressive plan for using BE Buses with 800 for 2022 and the average of 1600 per year from 2023 to 2032. **PSR**

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According to the current situation, electric vehicles can replace unified fuel vehicles in terms of price and mileage around 2025.

China Report

By *Jack Hao*, Senior Research Manager - China



*Jack
Hao*

Penetration Rate of Intelligent EVs in China in 2030 May Exceed 90%

China has the largest automobile production in the world, the most complete industrial foundation, supply chain foundation, talent foundation and market foundation,” said Li Bin, chairman of Weilai automobile.

These factors provide China with a significant advantage in developing intelligent EVs, he said “In fact, if we can have the advantages of these four aspects at the same time, China is the only one in the world,” he added.

The penetration rate of new energy has exceeded 10% in 2021. From the trend, this target will exceed 20% in 2025. China's penetration rate of intelligent electric vehicles in 2030 will exceed 90% in new car sales. In recent years, with the accelerated popularization of intelligent electric vehicles, the automotive industry will once again become the commanding height of scientific and technological innovation.

Source: *Beijing News* [Read The Article](#)

PSR Analysis: Today, new bus procurement is fully electrified. Buses have fixed routes, and the operation range is relatively stable. At the end of 2020, all buses in key regions and major cities have been replaced with new energy. The trend of bus electrification will continue to be promoted nationwide and gradually electric buses will replace diesel vehicles.

Considering that the running distance and working environment are relatively controllable, the market promotion of oil and electricity price difference, and the gradual completion of bus electrification, taxis will also accelerate electrification.

The second step is to accelerate the electrification of trucks such as urban logistics, environmental sanitation and muck trucks. The State Council proposes to promote green and low-carbon means of transportation, port and airport services, urban logistics distribution and postal express to give priority to the use of new energy or clean energy and strengthen the charging and switching facilities of new energy vehicles.

The penetration rate of private car electrification will also continue to increase. According to the current situation, electric vehicles can replace unified fuel vehicles in terms of price and mileage around 2025. At the same time, with the promotion of electrification in the field of public transport and trucks, driving the continuous improvement of infrastructure, the electrification of private cars will proceed more smoothly. **PSR**

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Far East: Japan Report

By *Akihiro Komuro*, Research Analyst, Far East and Southeast Asia

Sony Unveils EV SUV, Announces Collaboration With Honda



*Akihiro
Komuro*

On March 5, the Sony Group unveiled its prototype EV "VISION-S" SUV to the public for the first time in Japan. The vehicle brings together Sony's strengths in sensor, audio, and video technologies. On March 4, Sony announced a partnership with Honda, and the two companies will jointly develop EVs through a new company in which both companies will invest, with the aim of launching the EVs in 2025.

Following a sedan-type prototype announced in 2020, Sony unveiled an SUV at the Consumer Electronics Show (CES), a digital technology trade show held in the U.S. in January 2022.

The side mirrors will have no mirrored surfaces and will use images and data collected from nearly 40 sensors, including those in the front and rear of the vehicle, to enhance safety. The dashboard has three displays that can show movies and other content in addition to driving information. Inside the car, Sony's audio technology is used to provide a realistic music experience.

VISION-S was developed by a team that has worked on the "Aibo" dog-shaped robot. Sony and Honda will establish a joint venture company this year to develop another EV with the aim of launching the first model in 2025. The brand name and other details have not yet been decided. The new company will be responsible for sales, and manufacturing will be outsourced to Honda.

Source: The Nikkei

PSR Analysis: When Sony unveiled the VISION-S Prototype concept EV at CES 2020, the company said it was only a concept model and would not be mass-produced, but this model, presented under the Sony brand, attracted a great deal of attention. The VISION-S 02 presented at CES2022 is the second version, and is backed by the popularity of SUVs, which has become a global trend.

Furthermore, in the field of communication technology, Sony has partnered with a company under the Vodafone umbrella and is also looking at network communications compatible with 5G. Simply put, Sony is quite serious about developing mobility.

Sony and Honda began discussing collaboration last December and established a joint venture company in February. This was a very fast move, given that conventional Japanese companies tend to take a long period of time to consider the possibility of a partnership. This reflects the fast-changing mobility industry.

For Honda, this is a collaboration in the Vision-S project to explore new forms of mobility and does not represent a fundamental shift in the EV strategy that the

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Far East Report

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Honda has much to gain from working with Sony, which has been refining its sensor and radar technologies

company has been pursuing. However, Honda has much to gain from working with Sony, which has been refining its sensor and radar technologies. For Sony, it will also gain knowledge for manufacturing safe and long-lasting automobiles. Honda has already stated that all new car sales will be EVs or fuel cell vehicles by 2040.

As I have said in the past, automakers will not survive this upheaval simply by continuing to do things the way they have always done them. There have been many reports of companies from other industries entering the automotive industry, and we await further news on how the collaboration between Sony and Honda, whose brands have a high name value worldwide, will be brought to the market. **PSR**

極東 > 日本レポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

ソニーがEVのSUVを公開、ホンダとの協業も発表

ソニーグループは3月5日、EVの試作車「VISION-S」のSUVを国内で初めて一般公開した。センサー、音響、映像技術などソニーが得意とする技術を集めた。4日にはホンダとの提携を発表しており、両社が出資する新会社でEVを共同開発し、2025年の発売をめざす。

ソニーは2020年に発表したセダン型の試作車に続き、米国で2022年1月に開かれたデジタル技術見本市「CES」でSUVを発表。

サイドミラーには鏡面がなく、車の前後も含めて40個近いセンサーから集めた映像やデータを使って安全性を高めるといふ。ダッシュボードはディスプレイが3枚ならび、運転情報に加えて映画などのコンテンツを映せる。車内はソニーの音響技術を駆使し、臨場感のある音楽を楽しめる。

VISION-Sは犬型ロボット「aibo」などを手掛けたチームが開発した。ソニーはホンダと年内に共同出資会社を設立し、2025年の初代車種の発売をめざして改めてEVを開発する。ブランド名などは未定という。販売も新会社が担い、製造はホンダに委託する予定だ。

出典: 日経 (一部筆者により元記事内容を改編しました)

PSR 分析: CES 2020でソニーが初めてコンセプトEV「VISION-S Prototype」を発表した時、あくまでもコンセプトモデルであり量産はしないと述べていたが、Sonyのブランド下で発表されたこのモデルは大きな注目を集めた。今回CES2022で発表された「VISION-S 02」はその第2弾であり、世界的なトレンドとなっているSUV人気が背景にある。

ソニーが得意としている分野でもある音響技術を駆使し、臨場感のある音楽を楽しめる。さらに通信技術分野においても、Vodafone傘下の企業と提携して、5Gに対応したネットワーク通信も視野に入れている。端的に言ってソニー

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Far East Report

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はかなり本気でモビリティ開発に取り組んでいる。

ソニーはホンダと昨年12月から協業を検討しはじめ、2月に合併会社を設立した。従来の日本企業にありがちな、十分に時間をかけて検討するという動きからすると、非常に速いスピード感で実現したものだ。変化が早いモビリティ業界の動きを反映している。

ホンダにとってこれはあくまでモビリティの新たな形を模索するというVision-Sのプロジェクトの協業であり、これまでホンダが手掛けてきたEV戦略の根本的な方針転換を意味するものではない。だが、センサーやレーダーの技術を磨いてきたソニーとの協業でホンダが得るものは大きいだろう。ソニーにとっても、安全で長い期間使用される自動車を製造するための知見を得られるだろう。ホンダはすでに「新車販売のすべてを2040年までにEVか燃料電池車にする」と明言している。

従来から述べている通り、自動車メーカーはこれまでのやり方を続けていくだけではこの激動の変化を乗り越えられない。異業種企業の自動車業界への参入は多数報じられているが、世界的にもブランドのネームバリューが高いソニーとホンダの協業が果たしてどのようなかたちで市場投入されるのか、続報が待たれる。 **PSR**

India Report

By *Aditya Kondejkar*, Research Analyst – South Asia Operations.

Piaggio Developing Electric Scooter For Indian Market



*Aditya
Kondejkar*

Piaggio, which sells electric scooters in Europe, is developing products specifically for India but it will take 18-24 months to enter the market. It will focus on scooters and not launch electric motorcycles.

The large automaker has 2024 in its sights as a realistic go-to-market timeline for the new scooter.

"We are interested in providing customers with a solution in the two-wheeler space that (makes sense) even beyond the effect of subsidies. It is a matter of fact that the players that have entered recently in this space are gaining volumes on the base of subsidies," says Diego Graffi, MD & CEO Piaggio India. **Read The Article**

PSR Analysis. Both the Central government and many state governments are bullish on the transition from petrol-powered two-wheelers to emission-free products and there's plenty available in the form of EV buyer subsidies. The e-two-wheeler market in India is now buzzing with start-ups, new players and major OEMs like Bajaj Auto, TVS Motor Co and the soon-to-enter Hero MotoCorp.

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India Report

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However, there does not seem to be a major consensus on a consortium or about voluntary standardization of tech.

While Piaggio has introduced the Vespa Elettrica and recently showcased the Piaggio One modular platform for the global market, the products are not likely to be introduced in India. **PSR**

Russia Report

By Maxim Sakov, Market Consultant, Russia Operations

Editor's Note: Power Systems Research has paused all research and business development activities in Russia. We have maintained a presence in Russia since 2013 to bring important updates to our clients about the powered equipment markets within Russia. We are monitoring the current situation on a daily basis and hope to again establish this presence when the conflict with Ukraine is resolved. Please contact us at info@powersys.com if you have questions regarding business conditions in Russia. Thank you.

Russia Shuts Down Half of Auto Plants



*Maxim
Sakov*

March 10, 2022--The volume of working auto production facilities in Russia has dropped by 45% since the invasion of Ukraine.

On March 3, work continued in Russia on 55% of the facilities for assembling LCVs and passenger cars, comparing to 2021. Last year, domestic operations produced 83% of sales in Russia.

Work continues at AutoVAZ (in Tolyatti and Izhevsk), Stellantis and Mitsubishi alliance (PSMA Rus plant), Autotor (Kia and Hyundai assembly), Nissan, Haval, GAZ, UAZ, Mazda Sollers and Isuzu. The total number of vehicles produced by these enterprises has reached 766,000, which is 55% of the sales produced by the Russian automotive industry last year. The total annual production capacity of Russian automotive industry is about 2.7 million vehicles.

After implementation of Western sanctions and the volatility of currency exchange, automakers started raising prices and stopped production and shipping cars. Companies such as Volkswagen, BMW, Renault, Mercedes, Hyundai, Toyota, Sollers Ford have announced the temporary closing of factories. Closed import to Russia Audi, Porsche, GM, Jaguar Land Rover, Lexus, Volvo, Honda, Mazda and others.

Some market players expect full suspension of automotive production because of sanctions, problems with logistics and the shortage of components. The length of idle time depends on external factors and on industry ability to adapt to new situation.

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PSR Analysis: The main production problem in Russia today is based on logistics issues. These issues can halt car production for some time. However, some Russian plants, like UAZ, can switch back to older models, which can be built with domestic components only. At the same time, Chinese companies will quickly fill the gap. South Korea says it is going to continue to supply cars to Russia. Toyota and Lexus announced they will not leave the Russian market and Subaru said it will continue to export to Russia. **PSR**

KAMAZ To Change Truck Models Following Daimler's Exit

March 10, 2022—The KAMAZ plant, which was hit by sanctions, has production orders only until the end of March. Currently, the OEM is working through orders for April and May, according to a company official. Company operations are linked to supplies from Europe, which have been halted, he said.

He also added that production continues, but changes in model range cannot be avoided. The main efforts of the OEM will be concentrated on deeper localization of trucks and rearranging production using local components.

Daimler has suspended co-operative 12-year truck operations with KAMAZ. According to a Daimler spokesman, it will not supply components to KAMAZ and will not assemble trucks in their joint venture.

Read The Article

PSR Analysis: KAMAZ already faces a shortage of foreign-made components, and may have problems making trucks with Cummins engines, ZF transmissions and Bosch fuel systems. These components will be substituted with parts made by KAMAZ and its local partners until the end of March.

Earlier, assembly operations in Russia were suspended by truck makers Volvo, Scania and MAN. **PSR**

Caterpillar Plans To Stop Production in Russia

March 10, 2022—The American company Caterpillar, specializing in construction and mining machines, has suspended work at its plants in Russia because of the situation in Ukraine. Caterpillar said it is donating more than US\$ 1 million to the victims of the crisis.

“We are deeply saddened by the tragic events continuing to occur in Ukraine and hope for a peaceful resolution to the crisis. Through the Caterpillar Foundation, we are donating more than \$1 million to support both urgent and long-term needs of the Ukraine humanitarian crisis. We are complying with all applicable laws and evolving sanctions, while remaining focused on our employees, dealers and customers. Operations in Russia have become increasingly challenging, including supply chain disruptions and sanctions, and we are suspending operations in our Russian manufacturing facilities” – said in the company statement.

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Russia Report

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According to the company website, it has a production plant in Tosno (Leningrad region) and a distribution center in Moscow region.

Read The Article

PSR Analysis: Evidently, Cat business in Russia continues, however in reduced size. It's not possible to maintain production operation with absence of parts. Same reasons were stated in press-release of Hitachi, which has also suspended production in Russia with Cat and Komatsu. **PSR**

Foreign Automakers Face Ultimatum

March 10, 2022--Foreign companies which have paused their business operations in Russia must resume their work, or face bankruptcy of their Russian division.

Foreign companies made huge investments to localization production in Russia, and they don't want to leave the Russian market, but they face unprecedented pressure by their own regulators. In this situation the government has developed three scenarios for foreign concerns' subsidiaries which have production plants in Russia.

The first option involves the company continuing normal operations in Russia, with a supply of materials and components required for production. The second option is that foreign co-owners transfer its shares to their Russian partners, and later they can go back to Russian market. Some investors have already selected this option.

And the third option involves the company quitting work in Russia, shutting down production and firing employees. "We consider this as inspired bankruptcy," said a Russian official.

The last scenario is actually nationalization of the foreign operation, and it will be applied as an extreme measure because no manufacturer wants to lose its investments and profits. It's also bad for the Russian party because it can lead to problems at the bankrupted plants, related to patent violations, and lack of components. The patents can be neglected in the current situation, but there is no substitution for foreign components at this time. **Read The Article**

PSR Analysis: It looks like the confrontation scenario was calculated in advance, and both parties here will bear significant losses. **PSR**

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