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Power Systems Research (PSR) is a world leader in providing power equipment information, whether it's pure data, analysis, forecasting or specific business intelligence. This product information ranges from IC engines to battery-electric and hybrid powertrain technologies. PSR has been providing world class business and market intelligence to industry leaders for 50 years. How can we help you? For details, call **+1 651.905.8400** or email **info@powersys.com**.
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CONEXPO-CON/AGG 2026 Report

CONEXPO 2026 Offers Trend To Smart Machines

LAS VEGAS—Power Systems Research (PSR) sent a team of analysts to the CONEXPO-CON/AGG 2026 Show to talk with exhibitors and attendees about the state of the industry and to learn more about new products.

You can read their impressions of the show, their takeaways from talking with exhibitors and attendees about the state of the industry, and the information they gathered about innovative new products.

Interestingly, the PSR team didn't see big movement to battery power. They saw more hybrids and hydrogen power moving forward.

Interestingly, the PSR team didn't see big movement to battery power. They saw more hybrids and hydrogen power moving forward. Battery seemed to be relegated to smaller machines.

Another takeaway is that machines are getting smarter. Beyond the machines themselves, reports Jim Downey, Vice President-Global Data Products, many equipment manufacturers are investing heavily in software, telematics and connected platforms. This equipment gives contractors better insight into equipment performance and maintenance.

Artificial intelligence and operator-assist technology were seen in many spots across the show floor. Companies including Bobcat Company, Hitachi Construction Machinery and John Deere highlighted new in-cab systems designed to support operators and improve jobsite productivity. Bobcat demonstrated its voice-activated Jobsite Companion, Hitachi showcased its Assist Program, and John Deere Wirthgen Group detailed its SmartDetect and SmartDetect Assist technologies. See more product information in the show **Product Showcase here**. **PSR**

CONEXPO 2026 Shows Hybrid Power Gear

Read this Entire CONEXPO Report with Product Information Here

LAS VEGAS—Many visitors to the CONEXPO-CON/AGG 2026 show here March 3-7 arrived from the cold and snowy Midwest and East Coast. The show exhibit areas covered 2.9 million square feet; with some of the exhibit areas being outdoors, attendees felt the warmer than normal temps this time of year where Las Vegas had a record temperature of 86F on March 1. Those warmer temperatures lingered throughout the week.

This year's show at the Las Vegas Convention Center drew an estimated 2,000 exhibitors and while attendance figures were not available as we prepared this report, observers said traffic was very heavy and attendance was expected to surpass the record 139,100 figure set at the last show in 2023. **PSR**

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CONEXPO-CON/AGG 2026

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CONEXPO Provides North America Market Outlook

By Lorena Violante, Senior Market Research Consultant

Read this Entire CONEXPO Report with Product Information Here

Lorena Violante

We talked with many industry representatives at CONEXPO, and we generally heard that the North American construction equipment market is performing relatively well and that it is expected to experience low single-digit growth in the near term, with demand remaining stable. Demand continues to be supported by infrastructure investment and ongoing construction activity.

OEM representatives said their cautious forecasts were affected by factors such as interest rates, inflation, tariffs and global supply chain disruptions.

Tariffs were repeatedly mentioned as one of the main uncertainties affecting the industry. Frequent policy changes are impacting equipment pricing, sourcing strategies, and global supply chains. Manufacturers are adjusting sourcing strategies and regional production to mitigate tariff exposure.

The industry is moving toward a dual technology pathway. Electrification continues emerging in compact equipment and adoption is increasing slowly as customers become more familiar with EV solutions. Advanced diesel engines remain dominant in medium and large machines, and according to experts, diesel will remain the dominant technology for a long time.

OEMs said they are investing heavily in new engine platforms, efficiency improvements, telematics and connectivity. **PSR**

Alternative Power

By Guy Youngs, Forecast & Adoption Lead

Plug-in Hybrids May Use 300% More Fuel Than Thought

Study Shows PHEVs Exceed Government Estimates

Guy Youngs

There have been several studies that suggest that hybrid electric vehicles (also called PHEVs) are simply not the great environment saver that the marketing people are suggesting. A new study by the Fraunhofer Institute shows that on average, PHEVs use more than three times as much fuel as government estimates suggest.

The study is highly credible as it was based around on-board fuel consumption monitoring data from a massive 981,035 vehicles across Europe.

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Recently in Australia, Protrans Solutions conducted a successful trial with a battery-electric refrigerated trailer charged by onboard solar panels

A gap of over 300% is severe and makes it hard for the EU to regulate something when the estimated numbers are so wildly different from reality. The EU is aware of this problem, and is taking some measures to fix it

Source: *Electrek* **Read The Article**

PSR Analysis: For some time now, people have been arguing that PHEVs are not the planet saver that the marketing people are suggesting it is. This is just more data to confirm this. **PSR**

PV-Powered Refrigerated Trailer Completes Long-Distance Run

Recently in Australia, Protrans Solutions conducted a successful trial with a battery-electric refrigerated trailer charged by onboard solar panels on the 1,100 miles Sydney-Brisbane round trip without using diesel to refrigerate the trailer unit. This demonstrates a depot-to-depot cold-chain capability.

But that's easy, I hear you say, its Australia and its sunny. Well, how about cold and snowy Canada? Transport Canada's Zero-Emission Trucking Program, recently published a study which monitored over than 200 thousand kms (124,224 miles) of diesel and electric truck data over a year of operations in the Montreal-area. There findings were staggering with nearly $200k of savings per electric truck

Meanwhile in Europe, Trailer Dynamics in Germany has a different idea. Instead of electrifying the tractor, electrify the semi-trailer, so if you use an electric truck, great, this boosts your range, but if you are using a diesel truck, the e-Trailer can reduce fuel costs considerably. The benefits of a self-powered, battery-electric semi-trailer go beyond reducing CO_2 emissions as the technology also promises significant efficiency gains, which is music to the ears of fleet managers

Source: *PV Magazine* **Read the Article**

PSR Analysis: This article is one of many that give a clear indication of where trucking (especially reefers) will go in the future, but the key isn't really the cost saving, the efficiency improvements or the de-carbonization, but rather insurance. In the trucking world, if you have a 100k cargo of say, pharmaceuticals, the insurance company has historically insisted on a second diesel ICE to power the reefer unit alone. This is why this real life test of refrigerated goods in Australia's heat, is very telling. **PSR**

Comparing Lithium-ion, Sodium-ion and Solid-State Batteries

Researchers from Newcastle University in the UK, and the Fire Service Academy in Poland, have undertaken a detailed comparison of three key battery technologies: conventional lithium-ion, emerging sodium-ion (SIB), and solid-state batteries (SSB)

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They report that high energy lithium types (such as NMC battery variants) are more prone to fire risks (often referred to as thermal runaway) and these can become structural unstable when highly charged, leading to a potential fire risk. They also noted that thermal stability declines as nickel content increases. However, Lithium iron phosphate (LFP), is more robust and can thermal runaway even above 300 °C, making it less prone to fire risks. However, it offers lower voltage and energy density.

Sodium-ion batteries have more safety advantages, including higher thermal runaway, lower heat release rates, reduced hydrogen content in off-gassing and the ability to be transported at zero volts, which significantly lowers logistics risks.

Solid-state batteries represent a much more fundamental shift in thermal runaway risk by eliminating flammable liquid electrolytes.

Source: *Energy Storage News* **Read the Article**

PSR Analysis: This study has been very clear that the future of battery technology will rely on a diverse group of technologies rather than Lithium alone, but before we get to that stage there must be a continuing level of improvement in the refinement of existing lithium technologies, as well as the adoption of these new technologies as sodium-ion technology offers a practical near-term improvement. Meanwhile, solid-state architecture promises safety gains as well as range gains. **PSR**

First Country To Ban Sale of New Gas Cars Is Doing Just Fine, Thank You

In 2024, Ethiopia made history by becoming the first country in the world to ban the sale and import of new internal combustion-powered vehicles. The decision was based on several factors, but, surprisingly, environmental reasons were quite low on the list.

The major reason for this seemingly bizarre action was economics. As a poor country with no oil reserves, Ethiopia was importing US$ 4 billion of refined fuel every year – US$ 4 billion may not seem like a big number, but to a country whose total budget is only US$ 14 billion, it's massive.

The second major reason behind the decision was the completion of the Grand Ethiopian Renaissance Dam (GERD) which brings in massive amounts of energy to this energy poor country (it doubled the country's generating capacity).

World governments and transportation analysts are watching Ethiopia's electric experiment with interest, and many have expressed surprise at how well the African nation has handled the transition.

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By late 2025, there were about 115,000 EVs are on Ethiopian roads, representing 8.3% of the total vehicle fleet but with EV owners spending only about $4 per month on charging, (compared to an average $27 per month for gasoline) the experiment is a resounding success.

Source: *Electrek* **Read the Article**

PSR Analysis: Whilst Ethiopia doesn't have a massive charging infrastructure, the savings are absolutely massive especially when you consider that average wages are around $50 per month. It makes so much sense to ban the import of ICE powered cars and move to EVs especially when solar and wind can support EV's and the country doesn't manufacture cars, so why should they create a dependence on oil? **PSR**

DATAPOINT:
North America Snowblowers Production
274,253

By Carol Turner, Senior Analyst, Global Operations

274,253 units is the estimate by Power Systems Research of the number of Snowblowers expected to be produced in North America during 2026.

A Snow Blower or snow thrower is a machine for removing snow from an area such as a driveway, sidewalk, roadway, railroad track, ice rink, or runway. It can use either electric power (line power or battery), or a gasoline or diesel engine to throw snow to another location or into a truck to be hauled away.

Snow blowers range from the very small, capable of removing only a few inches (a few more cm) of light snow in an 18 to 20 in (457 to 508 mm) path, to the very large units, mounted on heavy-duty winter service vehicles and capable of moving 20-foot (6.10 m) wide swaths of heavy snow up to 6 feet (1.83 m) deep.

This product 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 35.50% of total units produced, Ariens Company leads in the production of Snowblowers in NA (US only). In second position is Stanley/MTD with 21%; third Toro with 15%.

Exports: Collectively, up to 30% worldwide.

Trends. In 2025, production of snowblowers in North America decreased nearly 7%. Production is expected to remain flat with a nominal increase of 65 units in 2026. The 2025 decline is attributed to brands being discontinued along with the

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Production of snowblowers typically starts in spring and summer, months before the first snowfall, making manufactures reliant on forecasting and inventory speculation.

termination of unpopular models. The decrease also was driven by weak sales in previous seasons due to milder winters, high inventory and shift towards electric models.

Production of snowblowers typically starts in spring and summer, months before the first snowfall, making manufactures reliant on forecasting and inventory speculation. Many models sell out if demand is higher than anticipated.

Expect production to gain up to 5% over the next few years as branding issue settle and brand preference buying selecting other brands in the marketplace. End users still like new innovative products that are more efficient than prior year models. Two-stage units are extremely popular and are available in four basic grades: Economy, Residential/Homeowner, Heavy Duty/Landowner, or Professional. Consumers are always interested in more efficient units for snow removal and eco-friendly models currently in the market.

Battery & Corded Combined
2024: 11223
2025: 11868 (5.7% increase)
2026: 13372 (12.7% increase)

Battery only: (Stanley/MTD & Toro)
Note: Stanley/MTDhas one model
2024: 10136
2025: 10789 (6.4% increase)
2026: 12225 (13.3% increase)

Corded only: (Toro)
2024: 1087
2025: 1070 (1.5% decrease)
2026: 1147 (7.2% increase)

**Battery increases due to new models in production*
**Corded decrease model not popular.*
PSR

Global Report

By Guy Youngs, Forecast & Adoption Lead

Iran War, Worldwide Tariffs Disrupt Global Markets

Guy Youngs

Strait of Hormuz. On Saturday, Feb. 28, the USA and Israel launched a joint attack on Iran which resulted, among other things, in the death of several of Iran's senior leadership, including the Grand Ayatollah Ali Khamenei. Apart from targeting the leadership, the attacks were also aimed at the Islamic Revolutionary Guard Corps (the Iranian paramilitary organization whose official role is to support the Islamic Republic).

Iran has long threatened, if attacked, to drag the region into total war, including targeting Israel, the Gulf Arab states and the flow of crude oil crucial for global energy markets. So, in retaliation, Iran has launched a series of attacks on gulf states, Cyprus, the US Navy carrier groups in the Gulf and the

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The importance of these attacks cannot be underestimated as 20% of the world's oil passes the through the Straits, and Qatar is one of the largest Natural Gas suppliers in the world.

Mediterranean. The US responded to these attacks by wiping out the Iranian navy and hitting various missile sites in Iran.

Iran then declared that any oil tankers using the Strait of Hormuz would be attacked, and they launched drone attacks on several tankers, and oil / gas sites in Qatar and Saudi Arabia.

More recently Iran has placed mines in the Straits and has attacked more tankers trying to flee the fighting. America and Israel have responded by more attacks on Iranian leadership. Ships attempting to leave the Straits are claiming connections to China, Turkey or that they are Muslim flagged ships. Others have gone through the Strait of Hormuz with their transponders switched off to conceal their position, sometimes only reappearing on marine trackers once safely out of the area.

In another twist, Iran's Islamic Revolutionary Guard Corps has announced that European and Arab nations will be granted unhindered access to the Strait of Hormuz solely on the condition that they expel diplomats representing the United States and Israel.

The importance of these attacks cannot be underestimated as 20% of the world's oil passes the through the Straits, and Qatar is one of the largest Natural Gas suppliers in the world. Iran's stated aim is to close the straits and force the oil price up to $200 per barrel.

Oil and Gas prices have already risen by up to 75% and are expected to rise further or at best remain high for a period of at least 4 weeks as President Trump has declared that this operation will last for a period of 4 weeks. Countries that are heavily dependent on oil imports (China, India, Japan, S Korea and USA) can expect to see some supply distortions which will impact upon growth and GDP. Natural Gas importers will also face a growth risk (the largest being China, Japan, Germany and USA)

We can therefore expect this to have a negative impact on the 2026 Forecast for at least 4 weeks, but the oil and gas prices will probably remain higher than normal for some time after this military operation concludes. The longer that this continues, the greater the impact and the longer the aftermath will continue and this may even trigger a global recession, but this remains uncertain at this time. **PSR**

What is the Strait of Hormuz and why is it so important?

Tariffs Continue To Cause Problems

Since the beginning of his second term Jan. 20, 2025, President Trump has increased tariffs on U.S. imports from all global partners, and to implement these tariffs, the President has cited in the International Emergency Economic Powers Act.

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It is estimated that cumulative IEEPA tariff collections reached approximately $165 billion by January 2026, with potential refund exposure of up to $175 billion.

These tariffs have been wide ranging and have been applied to over 180 countries worldwide, with rates varying based on trade agreements and specific goods.

The U.S. has imposed reciprocal tariffs on several countries, with a blanket rate of 10% for many trading partners. However, some countries like India and Brazil faced significantly higher tariffs of 50% due to specific trade issues. These tariffs include:

- **Mexico:** 25% tariffs.
- **Canada:** Tariffs were increased to approximately 35%.
- **South Korea:** A 15% tariff is in place, while negotiations continue.
- **China:** Tariffs have been reduced recently, but they remain high compared to other countries.

Many other countries then started to negotiate with USA to reduce these tariffs.

In a 6-3 decision issued Feb. 20, 2026, the Supreme Court of the US (SCOTUS) ruled that the International Emergency Economic Powers Act (IEEPA) does not authorize the president to impose tariffs.

The ruling invalidates the administration's sweeping country-level reciprocal tariffs and fentanyl-related levies, which had collectively accounted for roughly half of all US customs duties since their introduction in early 2025.

It is estimated that cumulative IEEPA tariff collections reached approximately $165 billion by January 2026, with potential refund exposure of up to $175 billion. The ruling invalidates the administration's sweeping country-level reciprocal tariffs and fentanyl-related levies, which had collectively accounted for roughly half of all US customs duties since their introduction in early 2025.

The Supreme Court did not address the mechanics of refunds, leaving the matter to renewed proceedings before the Court of International Trade (CIT). While nearly 2,000 companies had already filed protective actions prior to the ruling, this represents a fraction of the 300,000+ importers that had paid IEEPA duties by December 2025.

The Trump administration responded within hours. On Feb. 20, President Trump issued a proclamation imposing a 10% 'temporary import surcharge' on all countries under Section 122 of the Trade Act of 1974, effective Feb. 24, 2026, for 150 days. The following day, he announced via social media his intention to raise the rate to the statutory maximum of 15%

A critical constraint within Section 122 is that the tariffs expire automatically after 150 days — by 24 July 2026 — unless Congress votes to extend them. This is politically uncertain because the US midterm elections are approaching and polls are showing voter opposition to elevated import costs

Who wins and who loses.

- UK and Australia both had negotiated 10% tariffs, so a 15% tariff is a loss, but does the agreed deal still apply (no one is certain yet).

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President Trump has warned that trading partners perceived to be 'playing games' on previously agreed terms may face punitive responses, which has further introduced continued uncertainty.

- EU, Japan, S Korea and Taiwan all had agreements with a 15% tariff, so things are neutral for these countries, but they all had agreements to invest hundreds billions of US $ in the US, and to buy goods from the US. Yet again, no one knows whether these agreements still stand, or whether they will even go ahead.
- Mexico, Brazil, Canada, China & India all had tariff rates between 18% and 50%, so they are all winners in this instance. China and India also had agreements which may or may not be valid now

However, President Trump has warned that trading partners perceived to be 'playing games' on previously agreed terms may face punitive responses, which has further introduced continued uncertainty.

The EU's decision to pause ratification of its trade deal with Washington pending legal clarity bears watching as an indicator for broader multilateral confidence. India retains additional flexibility as it finalizes the terms of its framework agreement.

Finally, Trump's planned visit to Beijing on 31 March is significant for US–China trade dynamics — even after the ruling, China retains one of the highest aggregate tariff burdens among major US trading partners, with a trade-weighted effective rate of approximately 30%.

Recently Judge Richard Eaton of the U.S. Court of International Trade has issued an immediate compliance order on the question of refunds of the tariffs and has said that the Presidents team must issue an update on the processing of refunds by March 12, and a follow up update must be issued by April 20. Judge Eaton also stated that taxpayers will feel the burden by the end of the year should the admin not fulfil its refund obligations

The changes to the tariffs are an improvement for several large economies so this should be a boost to 2026 figures. **PSR**

North America Report

By Chris Fisher, Senior Commercial Vehicle Analyst

Strait of Hormuz Closure Can Tip Global Economy

Chris Fisher

Americans are warily eyeing prices at the pump as oil shipments through the Strait of Hormuz grind to a halt amid the threat of Iranian attacks on vessels. The IEA took the unprecedented step of saying it would release 400 million barrels of oil from reserve on Wednesday. But oil is far from the only product for which the world economy is heavily dependent on the shallow, narrow waterway which connects Persian Gulf ports with the rest of the world. From the metals market to agriculture and autos, a de

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North America Report

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facto closure of the strait would ripple through business sectors and both the U.S. and world economy.

Aluminum is a good example. It is one of the biggest non-petroleum commerce casualties of the U.S.-Iran war. In 2025, the Middle East accounted for roughly 21% of unwrought aluminum imports and 13% of wrought aluminum imports — and those percentages have been rising. Unwrought aluminum is the raw, unprocessed metal in forms like ingots and billets, while wrought aluminum has been mechanically shaped into sheets, rods, or other finished forms used directly in manufacturing.

"The Iran situation is having an impact, and as the conflict continues, industry concerns may grow," said Matt Meenan, spokesman for the Aluminum Association, a trade organization representing the U.S. aluminum industry. "This is a highly dynamic situation," Meenan said.

The longer the Middle East conflict goes on, the more damage that will be done to supplies of products that Americans expect to be on the shelves.

"The Gulf is a major supplier of aluminum, and disruptions could tighten supply chains for advanced manufacturing," said Tony Pelli, practice director of supply chain security and resilience at BSI Consulting, a global risk management firm. "Aluminum prices are already rising, and further disruption could increase input costs for automotive, aerospace, and construction manufacturing in the U.S. and Europe."

SOURCE: CNBC - 3-11-26

PSR Analysis. It is always something. Just as the North American trucking industry has started a transition into a positive freight environment, an on-going conflict in the Middle East could derail this transition. During the last three months, the OEMs have seen stronger order books primarily driven by tighter truck capacity, improved freight rates and improving freight demand along with an overall sense of optimism.

If this conflict ends relatively quickly and the Strait of Hormuz can fully open-up, the commercial truck market will continue to improve this year and beyond. If this conflict drags on, it will almost certainly give the fleets pause on purchasing new trucks out of fear of a major freight slowdown or even an economic recession. **PSR**

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Europe Report

By Emiliano Marzoli, Manager of European Operations

Emiliano Marzoli

EU Legislation Pushes EU Toward Manufacturing Independence

On March 4, 2026, the European Commission unveiled the Industrial Accelerator Act (IAA), a cornerstone of the "Clean Industrial Deal" aimed at reclaiming Europe's manufacturing prowess. The Act sets a bold target to increase manufacturing's share of EU GDP to 20% by 2035.

To achieve this, it introduces strict "Union origin" (Made in EU) and low-carbon requirements for public procurement and subsidy schemes. For the automotive and heavy machinery sectors, the Act is particularly transformative: starting in 2029, public tenders for electric vehicles (EVs) will require that at least 70% of the vehicle's non-battery value originates from within the EU, with final assembly and significant battery production also taking place on European soil.

Additionally, the Act creates "Industrial Acceleration Areas" to provide a digital "one-stop-shop" for permitting, drastically reducing the bureaucratic delays that have historically hampered the expansion of European factory sites.

Source: *EU Commission Report* **Read The Report**

Industry Implications. This legislation creates a "protected lead market" that directly shields listed companies—such as Volvo AB, Traton, and Iveco—from low-cost global competition. By tying public funds to European origin, the EU is effectively subsidizing demand for local manufacturers. However, this "Buy European" pivot forces a massive supply chain recalibration. Companies must now ensure that their tier-one and tier-two suppliers for steel, aluminum, and electronics are also EU-based to meet the 70% threshold.

For the agricultural and construction sectors, this could lead to higher equipment costs in the short term as manufacturers move away from cheaper global inputs. Long-term, however, it incentivizes a "Giga-factory" style scaling of the entire industrial value chain within Europe. The Act also places high bars on Foreign Direct Investment (FDI), ensuring that any non-EU entrants must provide genuine "value-add" through technology transfer and local employment. PSR

Traton Reports Positive 2025 Financial Results

In its full-year 2025 financial report, the Traton Group highlighted a significant divergence between global market headwinds and a resilient European core. While total unit sales for the Group declined by 9%, the MAN Truck & Bus brand demonstrated remarkable localized strength, recording a 30% surge in incoming orders for 2025 compared to 2024. This increase brought MAN's total order

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Europe Report

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volume to 100,000 vehicles, driven predominantly by high replacement demand in the EU27+3 region and strong performance in the bus and van segments.

Parallel to this commercial growth, MAN is finalizing the transition of the Lion's Coach E into series production. Following its world premiere at Busworld Europe in late 2025 and the successful completion of rigorous winter trials in the Arctic Circle in March 2026, the Lion's Coach E is the first battery-electric coach from a major European OEM to enter serial production at the Ankara facility, with first customer deliveries slated for later this year.

Source: *Traton Press Release* **Read The Article**

Industry Implications. The 30% year-on-year order increase (2025 vs. 2024) underscores a "decoupling" of European fleet demand from the broader global freight recession seen in North America and Brazil. For MAN, this growth is a critical endorsement of its "full-liner" strategy, proving that its diversified portfolio—particularly in urban buses and light vans—provides a necessary buffer when the heavy-duty truck market fluctuates.

The launch of the Lion's Coach E represents a high-stakes strategic play to capture the "last frontier" of transport electrification: long-haul travel. By being the first major European manufacturer to move from prototypes to a dedicated serial production line in 2026, MAN is effectively setting the technical benchmark for the industry. This first-mover advantage is bolstered by the use of shared components from the MAN eTruck program, allowing for rapid scaling and providing a mature solution for tour operators facing imminent "Zero Emission Zone" restrictions across European capitals. **PSR**

South America/Brazil Report

By Fabio Ferraresi, Managing Director - South America

Brazil Vehicle Exports Rise To Mexico, Fall To Argentina

Fabio Ferraresi

Brazilian vehicle exports showed mixed performance in early 2026, increasing significantly to Mexico while declining sharply to Argentina. Growth in shipments to Mexico reflects stronger demand conditions and efforts by Brazilian OEMs to diversify export destinations, while the drop in Argentina is linked to weaker domestic demand, tighter import controls and foreign exchange constraints.

Overall exports remained supported by regional demand adjustments and production planning by automakers, with light vehicles representing the bulk of volumes. The shift indicates an ongoing reconfiguration of South American automotive trade flows amid macroeconomic instability across key markets.

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South America Report

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Source: *Automotive Business* **Read The Article**

PSR Analysis. Diversification supports volume stability but depends on sustained competitiveness against Mexican domestic production and global platforms. Short term performance will remain sensitive to Argentina's macroeconomic normalization and trade policy conditions. The trend suggests continued adjustments in production allocation, logistics planning and market positioning across the Mercosur automotive value chain. **PSR**

Brazil Truck Production Drops in 2026 First Two months

Brazilian truck production fell 27% in the first two months of 2026 compared with the same period of 2025, despite expectations linked to the Mover Brazil program. The decline reflects weaker domestic demand, cautious fleet renewal decisions and slower freight activity at the start of the year.

OEMs adjusted output in response to lower order intake, particularly in the heavy duty segment. The result highlights ongoing volatility in Brazil's commercial vehicle cycle and limited short term impact of policy support measures on production levels.

Source: *AutoData* **Read The Article**

PSR Analysis. The contraction indicates that structural demand drivers such as freight activity and credit conditions remain more decisive than industrial policy incentives in the short term. Market recovery will depend on cargo volume growth, financing availability and operator confidence. The sector remains in a cyclical adjustment phase, with production planning closely tied to order backlog dynamics. Medium term effects of Mover Brazil will likely materialize gradually through efficiency gains and fleet modernization rather than immediate volume expansion. **PSR**

Volkswagen Pickup Tukan Is Brand's First Flex Hybrid Vehicle

Volkswagen confirmed that the upcoming Tukan compact SUV will be its first flex fuel hybrid vehicle developed for Brazil. The model will combine a hybrid powertrain with a flex fuel ICE capable of running on gasoline and ethanol, aligned with local decarbonization strategies and Brazil's biofuel infrastructure.

The vehicle is expected to be produced locally and positioned in the compact SUV segment, supporting Volkswagen's regional electrification roadmap. The launch reinforces the company's focus on hybridization technologies adapted to Brazilian market conditions and regulatory trends.

Source: *Automotive Business* **Read The Article**

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South America Report

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PSR Analysis. The Tukan signals Volkswagen's strategic alignment with Brazil's ethanol ecosystem by prioritizing flex hybrid solutions over full BEV adoption in the near term. This pathway offers lower infrastructure risk and faster market scalability but depends on cost competitiveness and consumer acceptance. The project reflects an expansion stage within the brand's regional electrification strategy, with potential spillovers across Mercosur supply chains. Market impact will depend on pricing strategy, local content levels and policy incentives for hybrid technologies. **PSR**

Far East: Japan Report

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

Akihiro Komuro

EcoFlow Launches Lightweight 2kWh Portable Power Station

EcoFlow Technology Japan has announced that it launched its new "DELTA 3 2000 Air" portable power station. Positioned in the 2kWh class, the new unit combines 1,920Wh of storage capacity with a lightweight design aimed at improving portability for household backup power, vehicle use and outdoor applications. The company simultaneously released a 220W lightweight bifacial solar panel using TOPCon cells, presenting the products as a combined solution for improving energy self-sufficiency during outages and off-grid use.

Despite its relatively compact dimensions of 220 × 223 × 426 mm, the DELTA 3 2000 Air offers rated output of 1,000W with 1,500W surge capacity and dual AC outlets. EcoFlow says the unit can support essential appliances such as refrigerators, lighting, notebook PCs and communications equipment during blackouts. The product uses lithium iron phosphate batteries and is rated for about 3,000 charge-discharge cycles while retaining 70% capacity, underscoring its positioning as a long-life backup power device rather than a short-term consumer gadget.

The company also highlighted disaster-preparedness and business continuity planning (BCP) applications, noting that the system can be used for communications backup, temporary server protection and auxiliary power for medical devices in homes and small offices. Its flat handle and compact form factor are intended to make storage easier in limited spaces such as under car seats or in narrow household gaps. The newly launched 220W bifacial solar panel, weighing approximately 5.1 kg, is designed to complement the power station by enabling more autonomous power supply in disaster or outdoor settings.

Source: PR TIMES

PSR Analysis: What matters here is not simply that EcoFlow introduced another

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Japan Report
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For years, portable generators defined emergency preparedness because they were the only realistic way to secure multi-day electricity during disasters.

portable power station, but that the center of gravity in Japan's backup-power market is shifting.

For years, portable generators defined emergency preparedness because they were the only realistic way to secure multi-day electricity during disasters. Now, high-capacity batteries are increasingly becoming the first product consumers buy, while engine-driven generators are being repositioned as a secondary runtime extender rather than the primary power source.

That is an important structural change. It means competition is no longer just about output or price, but about where each product sits in the household resilience stack: batteries for immediate indoor use, solar for supplemental charging, and generators for endurance once outages stretch beyond one day. In a market like Japan, where apartment living, noise sensitivity and neighborhood constraints are unusually strong, that hierarchy matters more than it would in North America or other generator-heavy markets.

The deeper implication for the power equipment industry is that this trend does not eliminate small engines, but changes the specifications under which they remain valuable. Standalone generators will gradually lose appeal in urban consumer channels, while quieter inverter units, auto-start capability, cleaner exhaust management and integration with battery systems will become more important.

In other words, the winning products may not be pure battery systems or pure generators, but hybrid ecosystems that reduce the inconvenience of engines while preserving their unique advantage: energy security as long as fuel is available.

For Japanese manufacturers, that suggests the competitive battleground is moving from simple hardware sales toward system design, usability and control logic. The companies that understand this early will be better positioned as disaster preparedness evolves from a seasonal retail category into a semi-essential household infrastructure segment. **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

EcoFlowが軽量2kWh級ポータブル電源を日本で発売

EcoFlow Technology Japanは、ポータブル電源の新製品「DELTA 3 2000 Air」を2026年3月3日に発売したと発表した。新製品は1,920Whの容量を備える2kWh級モデルでありながら、家庭用バックアップ電源、車載利用、アウトドア用途での持ち運びやすさを意識した軽量設計を特徴としている。同時に、高効率TOPConセルを採用した220W軽量両面ソーラーパネルも発売し、停電時やオフグリッド環境での電力自立性を高める組み合わせ提案として訴求している。

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Japan Report

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DELTA 3 2000 Airは220×223×426mmの比較的コンパクトな筐体ながら、定格出力1,000W、サージ1,500W、AC出力2口を備える。EcoFlowによると、停電時に必要となる冷蔵庫、照明、ノートPC、通信機器などの同時使用にも対応可能という。また、リン酸鉄リチウム電池を採用し、容量70%維持ベースで約3,000回の充放電サイクルに対応することで、短期用途にとどまらない長寿命のバックアップ電源として位置付けている。

同社は災害対策や事業継続計画（BCP）用途も強調しており、通信機器のバックアップ、サーバー機器の一時保護、医療機器の補助電源など、家庭や小規模オフィスでの活用を想定している。さらに、フラットハンドルと小型設計により、自動車のシート下や家庭内の隙間など限られたスペースにも収納しやすいとする。同時発売の220W軽量両面ソーラーパネルは約5.1kgで、災害時やアウトドアにおける自立した電源環境の構築を補完する製品として展開される。

参考:PR TIMES（一部筆者により元記事内容を改編しました）

PSR 分析: 今回のポイントは、EcoFlowが新しいポータブル電源を投入したこと自体よりも、日本のバックアップ電源市場における重心が確実に動いている点にある。 これまで非常時の電源確保といえば、数日単位の停電に耐えられる実用機として発電機が中心だった。しかし今は、まず大容量バッテリーを導入し、停電が長引いた場合だけエンジン側で補完するという考え方が広がりつつある。つまり、消費者の購買順序が「発電機が主役、蓄電池は補助」から、「蓄電池が主役、発電機は延命装置」へと変わり始めている。これは小さく見えて、実は構造変化として大きい。日本では集合住宅比率が高く、騒音や排気への感度も高いため、北米のような発電機中心市場とは異なり、室内で静かに即使える電源が先に選ばれやすい。だから競争軸も、単純な出力や価格ではなく、家庭のレジリエンス設計の中でどの位置を占めるかに移っている。

より業界的に見れば、この流れは小型エンジン需要を消すのではなく「残るための条件」を厳しくする。単体発電機は都市部の一般消費者向けでは相対的に不利になりやすい一方、静粛性の高いインバーター機、バッテリー連携、低負荷時の自動運転、排ガスや安全性への配慮といった要素は、むしろこれまで以上に重要になる。 要するに、今後価値を持つのはバッテリーか発電機かという二者択一ではなく、エンジンの弱点を隠しつつ長時間供給能力を活かせるハイブリッド型のシステム提案だ。 日本市場では防災が単なる季節商材ではなく、半ば生活インフラ化しつつある。その中で勝つのは、ハード単体を売る企業ではなく、停電時の使われ方まで設計できる企業だと思う。**PSR**

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Far East: South Korea Report

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

According to WinGD, the vessel series is expected to become the first ammonia-fueled gas carriers to enter commercial service, representing an important step in the shipping industry's decarbonization efforts.

Akihiro Komuro

Ammonia-Fueled Marine Engine Completes Approval Tests

Swiss marine power company WinGD says it has completed both Type Approval Testing (TAT) and Factory Acceptance Testing (FAT) for its ammonia-fueled two-stroke marine engine, marking what it described as a world first.

The tests were completed in January 2026 on the X52DF-A-1.0 engine at the Engine & Machinery Division of HD Hyundai Heavy Industries (HHI-EMD) in South Korea, witnessed by Lloyd's Register together with representatives from major classification societies and under the supervision of EXMAR.

The 52-bore engine is scheduled to be installed on a 46,000 m3 LPG/ammonia carrier ordered for EXMAR. According to WinGD, the vessel series is expected to become the first ammonia-fueled gas carriers to enter commercial service, representing an important step in the shipping industry's decarbonization efforts. The company said the development program demonstrated strong safety, reliability and performance results under a fuel pathway widely viewed as one of the more promising zero-carbon options for long-distance marine transport.

WinGD said the X-DF-A engine uses high-pressure ammonia injection with a pilot fuel dose of around 5% at full load, while delivering load handling, dynamic response and fuel efficiency comparable to equivalent diesel-fueled X-Engines in both ammonia and diesel modes. The company also said emissions results were encouraging, including NOx levels during ammonia operation that were below those generated in diesel use, alongside negligible contribution of N_2O to the overall greenhouse gas emissions footprint. WinGD added that it has already secured an early orderbook of around 30 X-DF-A engines across multiple vessel segments.

Source: WinGD

PSR Analysis: The real significance of this announcement is not the "world first" label by itself, but the fact that Korea is positioning itself around the most commercially critical bottlenecks in ammonia propulsion: engine manufacturing, class-approved testing and shipyard integration.

Many alternative-fuel projects still sit at the concept or pilot stage. This one is different because it was executed on an engine destined for an actual commercial vessel program, under classification-society supervision and in cooperation with a yard ecosystem that can industrialize the result.

That matters because the next competitive phase in marine decarbonization will not be decided by who publishes the boldest fuel vision, but by who can make

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South Korea Report

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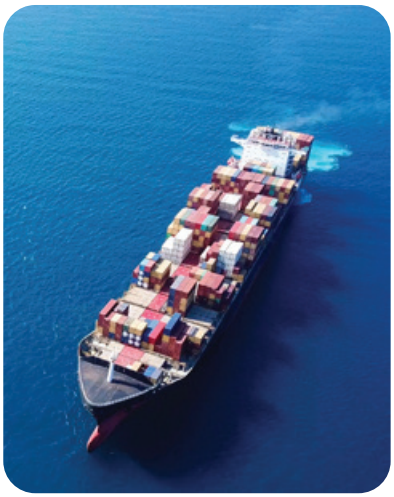

shipowners, charterers, insurers and financiers comfortable that the machinery can be ordered, classed, built and operated without introducing unacceptable technical risk.

The deeper industry implication is that ammonia is becoming less a pure fuel debate and more a capability race across the maritime supply chain. Korean players benefit because their strength is not limited to shipbuilding volume; they can connect engine builder, yard, equipment supplier and regulatory interface inside one coordinated industrial base.

Even so, this does not mean ammonia has already "won." Toxicity, crew handling, pilot fuel dependence, fuel availability and bunkering economics remain major barriers, and these issues may slow adoption outside cargoes and routes where ammonia logic is especially strong. What Korea is really buying through early testing is optionality and credibility.

If ammonia scales, Korean yards are ahead. If it does not scale as quickly as hoped, they still gain by proving they can validate and industrialize whichever future-fuel platform the market ultimately rewards. That is a more durable competitive advantage than simply being first to announce a new engine. **PSR**

極東 > 韓国レポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

韓国でアンモニア燃料舶用エンジンが世界初の承認試験を完了

スイスの舶用動力メーカーWinGDは、アンモニア燃料二元燃料2ストローク舶用エンジンについて、Type Approval Testing（TAT）とFactory Acceptance Testing（FAT）を完了したと発表した。同社によると、これはアンモニア燃料2ストローク舶用エンジンとして世界初の事例となる。試験は2026年1月、韓国にあるHD Hyundai Heavy IndustriesのEngine & Machinery Division（HHI-EMD）でX52DF-A-1.0エンジンを用いて実施され、Lloyd's Registerをはじめ主要船級協会の立会いのもと、EXMARの監督下で行われた。

この52ボアエンジンは、EXMAR向けに建造される4万6,000立方メートル級LPG／アンモニア運搬船に搭載される予定だ。WinGDによれば、このシリーズ船は商業運航に入る世界初のアンモニア燃料ガスキャリアになる見込みであり、海運業界の脱炭素化に向けた重要な節目になるとしている。同社は、今回の開発・試験を通じて、安全性、信頼性、性能の面で良好な結果が得られたと説明している。

WinGDによると、X-DF-Aエンジンは高圧アンモニア噴射を採用しつつ、全負荷時でも約5%のパイロット燃料で運転できる設計となっている。また、アンモニア運転時とディーゼル運転時の双方で、同等クラスのディーゼル燃料X-Engineと同水準の負荷追従性、動的応答性、燃費性能を実現したとしている。排出面でも、アンモニア運転時のNOx排出はディーゼル使用時を下回り、N2Oの寄与も全体の温室効果ガス排出量に対してごく小さいとした。

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South Korea Report

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Chinese electric vehicle manufacturer BYD is moving closer to launching local production in Indonesia as construction of its EV assembly plant in Subang, West Java, progresses toward operational readiness.

参考: WinGD（一部筆者により元記事内容を改編しました）

PSR 分析: このニュースの本質は、「世界初」という見出しそのものではなく、韓国がアンモニア推進の商用化における最も重要なボトルネックを押さえにいっている点にある。 代替燃料案件の多くは、依然として概念実証や研究段階にとどまっている。これに対し今回は、実際の商用船シリーズ向けエンジンを、船級協会立会いの下で試験し、造船所・エンジン工場・船主側の文脈まで含めて前に進めている。 つまり評価すべきなのは、燃料の理想論ではなく、「その機械が実際に受注され、船級承認され、建造され、運航に乗るところまで持っていけるか」という産業化能力だ。 海運の脱炭素は、どの燃料が最も美しいかで決まるのではなく、どの国・どの企業群がリスクを管理しながら実装までやり切れるかで決まる。

より深く見ると、アンモニアは単なる燃料選択の話ではなく、海事サプライチェーン全体の能力競争に変わりつつある。 韓国勢の強みは造船量そのものだけではない。エンジンビルダー、造船所、補機・機器サプライヤー、船級対応を一つの産業基盤の中でつなげられる点にある。 もちろん、これでアンモニアの勝利が決まったわけではない。毒性、乗組員の取り扱い、安全設計、パイロット燃料依存、バンカリング整備、燃料価格といった課題は依然として大きく、普及速度は限定貨物や特定航路から始まる可能性が高い。 それでも韓国が先に得ようとしているのは販売台数ではなく、「将来燃料を工業的に成立させられる国」という信用だ。仮にアンモニアの立ち上がりが想定より遅れても、この過程で蓄積される試験・承認・量産移管のノウハウは、他の次世代燃料案件にも転用できる。そこに韓国の狙いがあると見るべきだ。**PSR**

Indonesia Report

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

BYD's Indonesia EV Plant Nears Production Readiness

Akihiro Komuro

Chinese electric vehicle manufacturer BYD is moving closer to launching local production in Indonesia as construction of its EV assembly plant in Subang, West Java, progresses toward operational readiness. The facility is designed with an annual production capacity of approximately 150,000 vehicles and is currently entering the final preparation stage ahead of full-scale production.

According to reports, the plant has begun trial production and manufacturing line verification as the company prepares for commercial operations. The project represents one of the largest EV manufacturing investments in Indonesia and reflects the country's efforts to attract electric vehicle production.

Indonesia has been actively positioning itself as a regional EV manufacturing hub. The government has introduced incentives to encourage EV investment while promoting local production to build a domestic EV supply chain.

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Indonesia Report

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The investment also highlights the growing interest of Chinese EV manufacturers in Southeast Asia as a production base, both to serve local markets and potentially support regional exports.

Source: The Jakarta Post

PSR Analysis: One notable aspect of BYD's investment is that Chinese EV manufacturers are beginning to reshape the geography of automotive production in Southeast Asia. For decades the region's automotive industry developed around Japanese manufacturers, with Thailand serving as the main export base while Indonesia functioned primarily as a large domestic market.

In the EV era the dynamics are somewhat different. During the internal combustion engine period, engine technology and deeply localized supplier networks created significant barriers to entry. EVs shift the competitive focus toward batteries, electric motors, and power electronics, allowing companies with strong upstream supply chains to establish manufacturing operations in new markets more quickly.

At the same time, discussions in Europe and North America have recently pointed to a slowdown in EV demand growth. Southeast Asia may follow a different trajectory. Vehicle ownership levels remain relatively low and government EV policies are only beginning to take effect, meaning the regional EV market is still in an early expansion phase. **PSR**

東南アジア > インドネシアレポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

BYDのインドネシアEV工場が生産準備段階へ

中国の電気自動車メーカーBYDは、インドネシアでの現地生産開始に向けて準備を進めており、西ジャワ州スバンで建設中のEV組立工場が稼働準備段階に近づいている。同工場は年間約15万台の生産能力を想定しており、現在は試験生産や生産ラインの検証など量産開始に向けた最終準備段階に入っていると報じられている。

このプロジェクトはインドネシアにおけるEV関連投資の中でも最大級のものの一つとされる。インドネシア政府はEV産業の育成を目的に電動車生産の誘致を進めており、BYDの投資はその象徴的な事例となっている。

同国は東南アジアのEV製造拠点となることを目指し、EV生産を促進するためのインセンティブ政策を導入している。ニッケル資源などを背景に国内でEVサプライチェーンを形成する構想も進められている。

今回の投資は、中国EVメーカーが東南アジアを新たな生産拠点として重視し始めていることを示す動きでもある。

Source: The Jakarta Post

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PSR 分析: まず感じるのは、中国EVメーカーが東南アジアの自動車生産の地図を少しずつ書き換え始めているという点だ。これまで同地域の自動車産業は日本メーカーを中心に発展してきた。タイが輸出拠点となり、インドネシアは主に国内市場向け生産を担うという役割分担は長く続いてきた。

しかしEVでは事情が少し違う。内燃機関車の時代にはエンジン技術や長年かけて形成された部品サプライチェーンが参入障壁として機能していた。一方EVでは競争の中心がバッテリーや電動パワートレインへ移るため、上流の電池や電子部品の供給網を持つ企業は比較的短期間で新しい生産拠点を立ち上げることができる。

最近は欧米市場でEV需要の成長鈍化が指摘されることも増えている。しかし東南アジアでは市場環境がやや異なる。自動車普及率がまだ低く、政府によるEV導入政策も始まったばかりであるため、市場はまだ拡大初期段階にある。**PSR**

China Report

By Jack Hao, Senior Research Manager - China

BYD Launches Blade Battery and Flash Charging

Jack Hao

On March 5, 2026, BYD has launched its second-generation Blade Battery and Flash Charging Technology—yet another disruptive technology milestone in new energy vehicle history—officially ushering the industry into the "Flash Charging Era."

The second-generation Blade Battery achieves breakthroughs across multiple dimensions, delivering ultra-fast charging performance: it can charge from 10% to 70% in just 5 minutes and from 10% to 97% in only 9 minutes at normal temperature, while even in extreme cold conditions of -30°C, it takes merely 12 minutes to charge from 20% to 97%—just 3 minutes longer than at room temperature.

On the strategic front, BYD has launched the "Flash Charging China" initiative, with plans to establish 20,000 flash charging stations by the end of 2026, including 2,000 highway flash charging stations, while partnering with operators to build an additional 18,000 cooperative flash charging stations. In terms of mass production rollout, the technology will debut in the first batch of 10 models including the Yangwang U8 2026 Edition, Datang, and Song Ultra EV, with flash charging technology cascading down to mainstream 150,000 yuan-class vehicles within the year; first-batch vehicle owners will be entitled to one year of complimentary flash charging privileges.

Source: *Sina Finance* **Read The Article**

PSR Analysis. The launch of BYD's second-generation Blade Battery marks a new phase of "technological ecosystem" competition in China's power battery industry.

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China Power

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On the sales front, the promise of "5 minutes charging for 400 kilometers range" reduces range anxiety, and is expected to drive BYD's pure electric vehicle sales growth.

For CATL, this impact presents a characteristic of "controllable in the short term, intensifying in the long term."

In the near term, CATL can maintain its global leadership position through its 70.9% domestic market share in ternary lithium batteries, an international client network covering Tesla and German luxury brands, and technological reserves for mass production of solid-state batteries by 2027.

BYD's flash charging technology primarily targets the LFP battery segment, while CATL has constructed a defensive system through a tiered technology roadmap spanning LFP, lithium manganese iron phosphate, and solid-state batteries.

However, in the long run, if BYD successfully cascades flash charging technology down to mainstream 150,000-yuan-class vehicles and opens battery supply to third parties, it could divert 10-15% of CATL's LFP orders. More critically, if BYD's "vehicle-pile-network" ecosystem closed-loop forms network effects, it may redefine industry competition rules—shifting from single battery performance comparison to full-chain charging experience competition. This will force CATL to transform from a "battery supplier" to an "energy solution provider," with its high-margin model facing sustained compression.

The impact on BYD itself and China's electric vehicle market could be even more profound. On the sales front, the promise of "5 minutes charging for 400 kilometers range" reduces range anxiety, and is expected to drive BYD's pure electric vehicle sales growth of 40-50% in 2026, pushing its pure electric ratio from 40% to 60%, optimizing product structure and improving per-vehicle profitability.

On the market structure front, flash charging technology could accelerate the substitution of fuel vehicles in the above-200,000-yuan market and may trigger technological lag among second-tier battery manufacturers. Although industry CR2 concentration is declining, technological differentiation is intensifying, with the market bifurcating into "flash charging high-end" and "slow charging low-end" poles.

On the export front, opportunities and challenges coexist: on one hand, flash charging technology becomes the second global calling card for Chinese electric vehicles following "safety," assisting brands like Yangwang and Denza to break into the European high-end market.

On the other hand, overseas flash charging station construction progress, European and American technical trade barriers, and supply chain localization pressures constitute major constraints. Overall, the second-generation Blade Battery propels China's electric vehicle competition from the conclusion of the "electrification first half" toward the "intelligentization + flash charging second half."

BYD's success depends on the triple game of flash charging network construction speed, third-party supply breakthrough progress, and solid-state battery technological counter-attack rhythm during 2026-2027. **PSR**

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India Report

By Aditya Kondejkar, Research Analyst – South Asia Operations

TREM V: New Emission Blueprint Will Reshape Industry

Aditya Kondejkar

In March, the government of India released the draft proposal for TREM V emission norms, setting in motion what could become the most significant regulatory transition for the off-highway sector since the adoption of TREM IV.

Covering construction equipment, agricultural machinery, mining vehicles, and gensets, the proposed norms represent a decisive push towards global alignment, tighter emission control, and advanced digital monitoring.

TREM V aims to sharply reduce particulate matter, nitrogen oxides, and ultrafine particle emissions by mandating technologies such as diesel particulate filters (DPF), selective catalytic reduction (SCR) systems, enhanced engine calibration, and robust onboard diagnostics. While this brings India closer to frameworks like EU Stage V, it also sets the stage for a disruptive cost cycle for OEMs and customers alike. Early estimates indicate that machine prices may rise between US$ 1,600-US$ 3,200 (₹1.5–3 lakh) depending on horsepower and engine configuration, creating immediate uncertainty around demand planning and inventory strategies.

Source: *Autocarproessional* **Read The Article**

PSR Analysis. For OEMs, the proposed norms trigger a complex balancing act. Global players stand to benefit from platform standardization and shared engine architectures already compliant with Stage V in overseas markets. Domestic manufacturers, however, face a steeper climb, requiring R&D reorientation, supplier upgradation, thermal redesign, and new product validation cycles — all in an environment where margins are historically thin. Suppliers of sensors, ECUs, injectors, after-treatment hardware, and telematics could see significant upside, but Tier-2 and Tier-3 vendors risk being left behind if they cannot meet the precision and consistency these technologies demand.

The customer impact could be equally transformational. TREM V machinery will demand cleaner fuel, systematic DPF maintenance, periodic regeneration cycles, and better-trained operators. In price-sensitive segments such as agriculture, resistance to cost escalation may prompt calls for exemptions or extended timelines. Meanwhile, industries like mining and infrastructure, under pressure to adopt cleaner standards, may adopt TREM V faster than expected.

Yet the proposal has gaps that will require careful policy calibration. It remains unclear how TREM V aligns with India's emerging push toward alternative fuels such as hydrogen, biodiesel, and CNG/LNG for off-highway applications. Fuel quality readiness also presents a challenge, especially outside urban centers, where high-sulfur diesel could jeopardize DPF systems. Economic support for small OEMs and clarity on digital compliance architecture are still missing.

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India Report

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Despite these uncertainties, one fact stands out: TREM V marks a strategic shift rather than a routine emission upgrade. Its successful rollout will determine India's competitiveness in global machinery supply chains and shape the technology pathways that define the next decade of the country's off-highway ecosystem. **PSR**

Russia Report

Editor's Note: *Power Systems Research has paused all research and business development activities in Russia. We maintained an important presence in Russia from 2013-2022 to bring important updates to our clients about the powered equipment markets within Russia. We are continuing to monitor the current situation 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.* **PSR**

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