PowerTALK™ News

45 YEARS 1976 · 2021

Published Monthly by Power Systems Research
Data · Forecasting · Solutions™

August 27, 2024 Volume 9 No. 8

Worldwide News & Analysis

In This Issue

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Alternative Power Report

By Guy Youngs, Forecast & Adoption Lead

Safe, Long-Cyclable Lithium Battery for High Temperatures

Guy Youngs

A research team at the University of Hong Kong (HKU) has developed a new generation of lithium metal batteries, with the innovation centering on microcrack-free polymer electrolytes, which promise extended lifespan and enhanced safety at temperatures as high as 100 degrees Celsius

The microcrack-free polymer electrolytes are synthesized via a straightforward one-step click reaction, exhibiting notable attributes including "a remarkable resistance to dendrite growth and outstanding non-flammability," the researchers reported

Dendrite growth is a tree-like structure of crystals that grows on metal cathode and has large consequences regarding material properties as it causes the loss of active lithium inside batteries, which leads to capacity loss.

Source: *PV Magazine* **Read The Article**

PSR Analysis: Dendrite growth has been a key component of the duration of battery life (in terms of the number of cycles and battery degradation), so any move in this area holds great promise. **PSR**

Toyota Mirai Drivers File Class-Action Lawsuit

A number of people who own and lease the Toyota Mirai hydrogen car have filed a class action lawsuit against the automaker because of their dissatisfaction with the vehicle.

According to the lawsuit, the automaker misled Toyota Mirai customers when it came to the reality of owning the hydrogen powered vehicle. The complaint states that the Japanese company and its sales teams led potential customers of the fuel cell cars to believe that "hydrogen refueling is available, seamless, and comparable to refueling with gasoline." The complaint also states that this was not the experience of those customers.

Each of these issues have been cutting into the resale value of the hydrogen car, which has dropped to only 19.4% of its value after five years of use.

Source: *Hydrogen Fuel News* **Read The Article**

PSR Analysis: The Mirai has been the jewel in Toyota's hydrogen crown for some time now and this class action could be the beginning of the end for this model. This matter has been compounded by Toyota's confusing strategy over Alternative Power vehicles. Only time will tell whether this proves to be the end of Fuel Cell vehicles (certainly at Toyota) or whether it will encourage more Hydrogen fueling stations. **PSR**

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Alternative Power Report

Continued from page 2

Wastewater Is Needed by the LFP Battery Supply Chain

Many people are talking about lithium iron phosphate batteries, especially auto industry stakeholders who are eager to get their hands on a higher-performing, lower-costing and safer battery. If the supply chain doesn't get its act together soon, this may be problematic.

81% of the global supply of phosphate rock is produced by just six countries, with China and Morocco in the lead, but the real problem is further up the supply chain. Regardless of the source, an LFP battery can't use phosphate rock straight from the mine. It has to be purified with only 3% of total phosphate production currently suitable for lithium ion battery applications, given its refinement needs

Source: *CleanTechnica* **Read The Article**

PSR Analysis: Gathering phosphates from wastewater sludge could be a solution, but as with most new tech, investment is need. A side effect of this could be improved water quality. **PSR**

Diesel Demand Drops as Commercial EV, Electric Semi Markets Grow

This article is a link to a podcast by Electrek which explores the historic drop in global diesel demand. It examines whether it is inflation and a slowing economy or the rapid rise in EV sales that's displacing millions of gallons of oil demand..

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

PSR Analysis: The podcast gives a useful background to this story and is only 14 mins long. **PSR**

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Global Report

Snowmobile Market To Hit $2.42 Billion

Michael Aistrup

By Michael Aistrup, Senior Analyst

The Global Snowmobile Market size was valued at $1.62 billion in 2023, according to Power System Research, and is estimated to register a CAGR of 5.1% between 2023 and 2032 with a projected market value of $2.42 billion in 2032.

North America Is Major Snowmobile Market

According to the International Snowmobile Manufacturers Association (ISMA), 82% of snowmobile sales are in North America.

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Global Report

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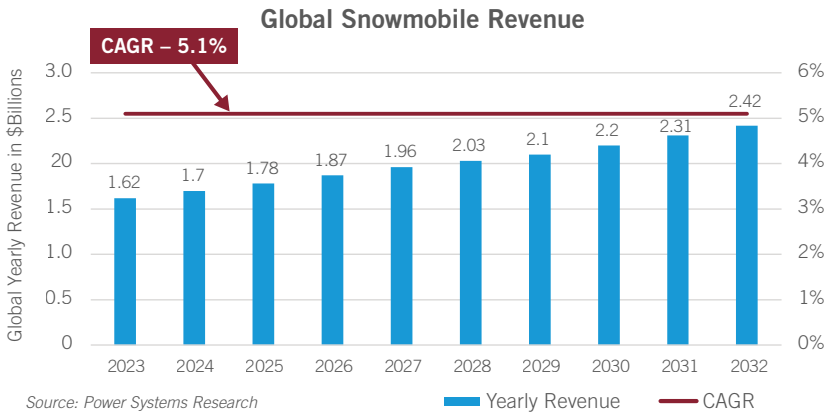
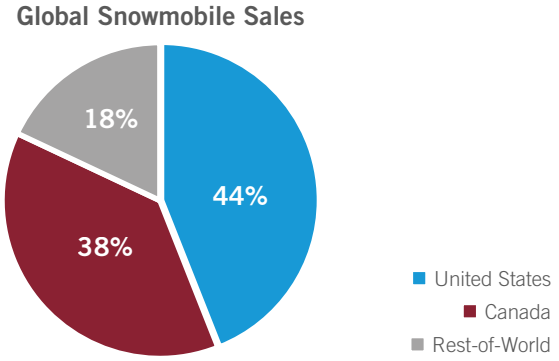


Source: Power Systems Research

GROWTH DRIVERS

- Increasing snowmobile sales in North America. 82% of Global sales are in North America
- Rising demand for adventure sports activities. As people seek ways to enjoy outdoor activities during the winter months, the demand for snowmobiles for personal use increases.
- Growing electrification in the power sports industry. Electric snowmobiles offer enhanced performance, maneuverability, and reliability.
- Rising disposable incomes. Consumers with more disposable income may be more likely to invest in high-ticket items
- Increasing awareness of environmental impacts. There is increasing demand for eco-friendly transportation options.
- Expanding tourism significantly fuels the snowmobile market. The versatility and excitement of snowmobiling contribute to its appeal as a must-try activity.



Source: Power Systems Research

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Global Report

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The growing popularity of snowmobiling in North America and Northern Europe is due to the rise in winter sports activities.

CHALLENGES

- Accidents and injuries related to snowmobiling. Safety issues related while driving are the factors that create a negative impact
- The high maintenance cost is a key factor restraining the market growth. As per the ISMA report, an average snowmobile owner spends approximately $3,000 – $4,000 yearly on travel gear and related services. The annual ownership costs of this vehicle range between $1,500 to $5,500 for an average ride of 1,500 miles a year.
- Decreasing levels of snowfall is some regions. Regions experiencing consistent snowfall are likely to have a steady demand for snowmobiles, while areas with unpredictable snow conditions may see fluctuating demand.

KEY MARKET INSIGHTS. The growing popularity of snowmobiling in North America and Northern Europe is due to the rise in winter sports activities. The increasing number of these vehicles shows the popularity of snowmobiling as a winter sport activity. As people seek ways to enjoy winter activities, the demand for snowmobiles for personal use is growing.

The growth of snowmobiling has undergone a revolution because of technological advances. Innovations in engine design, materials, and electronics have led to more fuel-efficient and environmentally friendly snowmobiles, reducing their environmental impact. Advanced suspension systems and track designs have enhanced handling and maneuverability. **PSR**

North America Report

Initial Impact of 2024 CARB ACT Truck Sales Regulations

Chris Fisher

By Chris Fisher, Senior Commercial Vehicle Analyst

The article shown here is starting to give us some insight as to how the 2024 CARB ACT regulations are playing out in California and what the other states who plan to adopt these regulations can expect upon their implementation. It is a bit of a long read but very insightful of what the truck dealers are currently experiencing.

Information is beginning to trickle out about sales requirements for commercial truck dealers in California that will soon extend to other states committed to implementing the California Air Resources Board's (CARB) Advanced Clean Trucks (ACT) and low-NOx Omnibus regulations.

The complexity is staggering.

The restrictions and oversight CARB's regulations put on truck dealers are unprecedented. The agency hasn't outlawed internal combustion engines (ICE)

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North America Report

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yet — **that's coming in 2036** — but beginning in January, five more states (Massachusetts, New Jersey, New York, Oregon and Washington) will be subject to the zero-emission vehicle (ZEV) sales and delivery requirements **California dealers faced under the ACT rule all year**, while also experiencing the limitations on ICE sales that come with the regulations.

The act of selling trucks in these five states is about to fundamentally change, and California dealers are doing their part to warn their out-of-state contemporaries.

"Start prepping your customers now. Because when it comes it'll be a shock," warns Eric Bassett, owner of Sacramento-headquartered Riverview International Trucks. "Everything changes."

> *The ACT rule was created to drive ZEV adoption in the state and requires commercial truck OEMs to produce and deliver for sale an increasing percentage of ZEVs each year over the next dozen years until hitting 100% in 2036.*

The Omnibus rule targets emissions and requires engine manufacturers to lower NOx levels to 0.05 g/hp-hr and particulate matter to 0.005 g/hp-hr for 2024 model year (MY) engines or use previously acquired emissions credits for engines that approach but do not meet the standard.

Source: *CCJ* **Read The Article**

Here is another article describing the situation in California.

Source: *Clean Trucking* **Read The Article**

PSR Analysis. To say there is significant confusion within the California commercial truck market is an understatement. While PSR has spoken about the significant barriers to adoption for zero-emission medium and heavy commercial trucks for several years, the reality of the implementation timeline has hit home.

One of the biggest concerns during the next few years is, will there be enough trucks on the road to service the economy and avoid significant supply chain disruptions? Basically, if the dealers cannot sell enough ZEV's they are not allowed to sell ICE vehicles under the CARB regulations. Hopefully, CARB and the industry can work together to overcome the various barriers and establish strategic and realistic timelines otherwise this initiative will have significant adverse effects. **PSR**

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DataPoint Report

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The market value of motorcycles is strongly correlated with the increasing preference of young people for motorcycles.

DATAPOINT:
North America Personal Watercraft Production
100,400

By Carol Turner, Senior Analyst, Global Operations

100,400 units is the estimate by Power Systems Research of the number of Personal Watercraft (PWC) expected to be produced in North America in 2024. In this category, we include jet drive boats and jet drive pontoons as well as personal watercraft.

Jet Drive Boats are boats propelled by a jet of water ejected from the back of the craft; they have no propeller and can maneuver in shallow water. PWCs are also driven by jet water and come in several styles: Stand-Ups or Sit-Downs. They are often referred to as jet skis. Sit Downs are designed for one, two or three persons in a sitting position, one in front of the other. PWC Stand-Ups are designed for one rider standing or kneeling on the watercraft.

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 a combined plant total of 51.5%, Yamaha leads in production of PWC in North America. In second position is Bombardier with 39%; third, is Kawasaki with 8.5% (Mexico & US).

Export: Up to 30% worldwide.

Trends. In 2023, production of PWC gained nearly 8.5%. Production is expected to remain flat with a nominal decrease of 1% in 2024 over 2023. The increase is based on high demand for recreational items that includes Personal Watercraft and jet drive boats. Even though sales have skyrocketed, PWC builders experienced supply chain disruptions during the pandemic that impacted deliveries for calendar year 2021.

According to the **National Marine Manufacturers Association (NMMA)**, this trend is here to stay – the boating industry is booming with demand at an all-time high as Americans plan for a summer on the water. As the country returns to a new normal, people are reassessing how they spend their quality time with loved ones, and many are continuing to choose boating as the preferred choice in recreation. Sales of these recreational vehicles depend on disposable income and leisure time. Expect the production of Personal Watercraft to gain an additional 10% by 2030.

Yamaha Unit Sales (rounded):	
2019: 51,000	**2022:** 44,000
2020: 41,000	**2023:** 52,000
2021: 43,000	

Battery Electric
Company: Taiga Motors (Canada)
2022: 334
2023: 592 (77% increase)
2024: 515 (13% decrease)

PSR

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Europe Report

Deutz and Rolls Royce Engine Deal Approved

By Emiliano Marzoli, Manager European Operations

Emiliano Marzoli

DEUTZ and Rolls-Royce's Power Systems division have completed the transaction for DEUTZ to take over the sales and service activities for various Daimler Truck industrial engines. The transaction relates specifically to engines with displacements from 5 to 16 litres and power output of up to 480 kW.

Under the completed transaction, DEUTZ will take over distribution of the MTU Classic model series and the MTU 1000 to 1500 engine series, which are based on three Daimler Truck engine platforms. These engines are used in a range of off-highway applications, mainly in the agricultural machinery and construction equipment sectors.

The service activities for engines that are already in use also form part of the takeover. Following a transition phase, these activities are expected to be carried out exclusively by authorized DEUTZ partners starting Jan. 1, 2025.

The takeover follows close on the heels of DEUTZ's alliance with Daimler Truck to develop and market medium- and heavy-duty engines (MDEG and HDEP platforms) in the off-highway segment. The alliance was entered into by the two companies in 2023 and is slated to begin in 2028.

Rolls-Royce's Power Systems will continue to use engines based on Daimler Truck technology to power railway and military land vehicles, as well as for power generation.

Source: *Deutz* **Read The Article**

Source: *Rolls-Royce* **Read The Article**

PSR Analysis:

Impact on Rolls-Royce Power Systems

- **New focus:** By divesting its lower-power-range engine business, Rolls-Royce Power Systems can concentrate on its core strengths in higher-power engines and systems, allowing for greater investment in research and development, and potentially leading to technological advancements in this area.
- **Financial benefits:** The sale generated a significant cash inflow which can be used for other strategic initiatives or to strengthen the company's financial position.

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Europe Report

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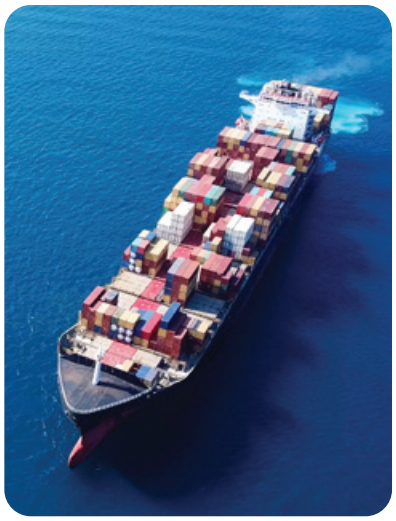

Impact on Deutz

- **Expanded market share:** The acquisition significantly expands Deutz's market share in the lower-power-range engine segment, particularly in agriculture and construction machinery.
- **Strengthened product portfolio:** Deutz gains access to the mtu Classic series and the mtu engine series 1000 to 1500, enhancing its product offerings.
- **Potential synergies:** There's potential for cost synergies and operational efficiencies by integrating the acquired business into Deutz's operations.

Impact on the Market

- **Increased competition:** Deutz becomes a stronger competitor in the lower-power-range engine market, potentially leading to increased competition and price pressures.
- **Increased Sales:** from 2025, unit sales for Deutz could increase by 12-15% compared to volumes before the agreement, and by 50% in the 5-16 litres engine range, according to Power Systems Research OE Link™ database.
- **Potential for innovation:** With both companies focusing on their respective strengths, it could stimulate innovation in both the higher and lower-power engine segments.

Overall, the deal is seen as a positive strategic move for both companies. Rolls-Royce Power Systems can now focus on its core competencies, while Deutz strengthens its position in the lower-power-range market. The long-term impact on the market will depend on how the two companies leverage their respective strengths and adapt to evolving market conditions. **PSR**

Maersk Continues Investments in Fleet Decarbonization

Natasa Mulahalilovic

By Natasa Mulahalilovic, Marine Product Manager-Europe

The Danish A.P. Moller & Maersk, the second largest container shipping company in the world, has set a goal to reach zero-emission container shipping by 2040. The Maersk ambitious objective is much advanced compared to the global shipping industry objective to meet net-zero carbon emissions by 2050 to fight against 3% of the global greenhouse emission that they are responsible for.

The program initiated in 2021 aims to renew the fleet of 707 container ships, 304 owned and 403 long-time-chartered, with dual-fuel vessels and propulsion systems. Contracts with different partners and suppliers are in the process of being signed. The giant has chosen to combine methanol and liquified gas bio-LNG for the propulsion systems of its renewed green fleet. The exact split of propulsion technologies will be determined over time considering the latest regulatory requirements and green fuels supply.

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Europe Report

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Decarbonization transition of the Maersk's fleet should be completed by 2040 keeping the total capacity level at 4.3 million TEU.

New 25 out of planned up to 60 container ships fitted with methanol fuel-dual engines fitted were ordered in 2021 from the Chinees ship builder Yangzijiang Shipbuilding Group and South Korean HD Hyundai Heavy Industries. They are committed to finalize delivery by 2027. Operating with new 25 ships, Maersk expects to reduce CO2 emissions by about 3 million tons per year.

An additional order of 23 new containerships bio-LNG-fueled is confirmed. This order is placed by Canadian shipbuilding and long-time ship chartering company, Seaspan. Ships will be a part of the Maersk's long-term chartering business unit and will be manufactured by Chinees shipyards Yangzijiang and New Times Shipbuilding.

Maersk's has also started retrofitting its ships in collaboration with the Chinese shipyard Zhoushan Xinya Shipbuilding Co and MAN Energy Systems. MAN B&W ME-LGIM two-stroke methanol engines are chosen to power the container ships. The first of 11 ships programmed to be retrofitted in the first stage, named Maersk Halifax, has just been delivered and is in operation.

Decarbonization transition of the Maersk's fleet should be completed by 2040 keeping the total capacity level at 4.3 million TEU.

A.P. Moller and Maersk is the first ocean shipping company operating with dual-fuel propulsion systems and it remains one of the most advanced in the Zero Carbon Shipping transition. But Clarkson's latest reports show that orders for dual-fuel ships are growing globally.

In the first half of this year the number of orders for ships powered with methanol propulsion systems was 49, and 50 for vessels powered with LNG systems. For the same period as last year, the ordered units were at 42 and 30 respectively.

LNG as an alternative fuel to fossils is gaining its popularity, thanks to the decreasing prices of natural gas and a globally well-established refueling infrastructure. Methanol is currently a more expensive option to LNG but it can be stored and transported in much easier conditions than LNG. No matter what preferences, the maritime industry actors have started the unstoppable decarbonization race aiming to finish by 2050. **PSR**

Brazil/South America Report

By Fabio Ferraresi, Director Business Development South America

Marcopolo Volare Unveils Hybrid Ethanol 1.0 Micro Bus

During Latbus 2024 in São Paulo, Volare unveiled its Attack 9 HVE, Brazil's pioneering ethanol hybrid minibus. The project is being developed by Volare, a division of the Marcopolo group, in collaboration with Horse and WEG. Although presented in 2024, the official market release is scheduled for 2026.

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South America Report

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Fabio Ferraresi

The vehicle is powered by a 1.0-liter, three-cylinder ethanol engine supplied by Horse, which also functions as an electric generator. This generator supplies energy to recharge the batteries of WEG's electric drive system. The internal combustion engine operates for only one-third of the vehicle's total operational time, maintaining an optimal rotational speed of approximately 3,000 rpm.

The design minimizes noise, vibration, and harshness (NVH) characteristics, enhancing passenger comfort while reducing operational stress on vehicle components. The powertrain is complemented by a four-speed automated transmission and it is equipped with a tri-battery system delivering a combined output of up to 100 kWh, which supports a maximum range of 500 kilometers. The vehicle configuration options will accommodate around 30 passengers.

Additionally, the adoption of this ethanol hybrid technology enables transportation companies to accrue carbon credits, promoting environmental sustainability.

Source: *Estradao* **Read The Article**

PSR Analysis: This is an important step for Horse as an independent Engine and Powertrain supplier and for Marcopolo and Volare as suppliers with alternative propulsion design responsible. Carbon Credits will be possible by the well-to-wheel calculation under the MOVER program regulated by Brazilian authorities.

Brazil Heavy Duty Trailers Market Remains High

The Brazil Heavy Trailers sector continues its upward trend in registration, with a 5.6% increase in sales during the first seven months of the year, compared to the same period in 2023.

According to data from the National Association of Road Implements Manufacturers (Anfir), 89,880 units were registered between January and July.

In the light segment (body on chassis), sales rose by 4.8% with 37,359 units sold. Key growth categories included mixers (up 56% with 973 units), grain/cargo dry (up 13.2% with 8,772 units), and aluminum/refrigerated boxes (up 12.64% with 15,652 units).

The heavy segment (trailers and semi-trailers) experienced a 6.2% increase, totaling 52,521 units sold. Significant growth was observed in the grain/cargo dry (up 11.47% with 11,951 units), carbon tank (up 54.24% with 5,062 units), and general cargo box (up 61.7% with 5,008 units) categories. Conversely, sales in the dump truck category decreased by 21%, totaling 10,844 units.

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

PSR Analysis: The good momentum is line with MHV market growth and is driven by the same main factors as the sustained performance of Agribusiness, Brazilian economy growth and consequent increase of loads transportation. **PSR**

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Iseki will produce 90% of its products for overseas markets, mainly Europe and the United States, in Indonesia by 2030.

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Far East: Japan Report

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

Iseki To Move Production To Indonesia

Akihiro Komuro

Iseki will produce 90% of its products for overseas markets, mainly Europe and the United States, in Indonesia by 2030. The company will gradually transfer the production of tractors and other products for overseas markets that have been handled domestically and will use the consolidation of production as an opportunity to review product design.

In Japan, the market for agricultural machinery is shrinking, and it is difficult to secure human resources. The company will strengthen the position of its production base in Indonesia to expand its overseas business, particularly in Europe and the United States.

The production capacity of the local plant increased to 22,000 units in 2023, a 20% increase over the previous capacity. At present, the production transfer is about 60% complete.

As Indian companies competing overseas are increasing their offensive with products that are 10-20% cheaper, the company is also reviewing the design of its products. The company will reduce development costs by designing tractor transmissions and other components to be common worldwide. The company will increase price competitiveness by using inexpensive parts from India's TAFE, with which it has a technical tie-up.

Source: The Nikkei

PSR Analysis: The shrinking of Japan's domestic agricultural machinery market and the growth potential of Indonesia's agricultural machinery market are clearly illustrated by this move. According to the Ministry of Agriculture, Forestry and

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Far East Report

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Fisheries (MAFF), the number of farmers in Japan has been reduced by 50% over the past 20 years to approximately 1.16 million. According to the Japan Agricultural Machinery Manufacturers Association (JAMMA), domestic shipments of agricultural machinery are down 30% from 10 years ago. Under these circumstances, it is difficult to expect sales of agricultural machinery to grow.

Meanwhile, in Indonesia, the Ministry of Investment has launched an inspection program for Japanese companies to provide them with investment opportunities in the agricultural machinery industry. The quality of Japanese agricultural machinery and its approach to agriculture itself are highly regarded in Indonesia. In particular, ISEKI and other Japanese brands of rice paddy tractors are popular. The specifications of paddy tractors required by rice farmers are different from those of field tractors in Europe and the United States, such as waterproof performance and a small turning radius for easy maneuverability. Indonesia is the world's third largest rice producer and exports large quantities of rice to the United States and China.

Although farmers' incomes remain low and the number of farmers is declining, the Indonesian agricultural machinery market will grow in the long term as more efficient farming is a must to produce a stable food supply for the country's 270 million people (fourth in the world).

Also noteworthy are developments like those in the automotive industry, such as the use of third-party parts and the sharing of transmissions. The Southeast Asian market is a price-performance market, and no matter how high the performance, if the product is expensive, it will not sell. There will also be a growing movement to create more cost-appealing products. **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

井関農機、欧米向け生産9割インドネシアへ　国内は縮小

井関農機は2030年までに欧米を中心とする海外向け製品の9割をインドネシアで生産する。これまで国内で担ってきた海外向けトラクターなどの生産を順次移管し、生産集約を機に製品設計も見直す。日本は農機市場が縮小し人手の確保も難しい。欧米を中心とした海外事業の拡大に向け、インドネシアの生産拠点の位置づけを高める。

インドネシアでは欧米向けのトラクターや芝刈り機の最終組み立てなどを担い、2023年には現地工場の生産能力を従来比2割増の2万2000台に増強した。生産移管の現時点の進捗状況は6割程度となっている。

海外で競合するインド勢が10～20%安い製品で攻勢を強めるなかで製品の設計も見直す。トラクターのトランスミッションなどを世界共通設計にして開発コストを削減する。技術提携するインドTAFE社の安価な部品を利用して価格競争力を高める。

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Far East Report

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参考: 日経 (一部筆者により元記事内容を改編しました)

PSR 分析: 大出力が必要とされる鉱山機械の分野においても電動モデルの開発が進められている。架線による給電は現時点では最適解と言えるだろう。特に鉱山機械における電動化は今後も架線を設置しそこから給電するタイプが主流となっていくものと私は予測している。バッテリー自体が重く、積載量が限られてしまうと効率に大きく影響する。また、大容量のバッテリーを充電する時間などを考慮すると、運用しながら給電できることが望ましいからだ。**PSR**

Far East: South Korea Report

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

Hyundai Motor Lists Subsidiary in India

Hyundai Motor has begun the initial public offering (IPO) process for its Indian subsidiary to further develop the company. The IPO is expected to raise $3 billion, making it the largest IPO ever in India. Over the past 20 years, Hyundai Motor has exported 3.6 million Indian-made passenger cars to more than 150 countries, including emerging markets, making it the largest exporter among India-based automakers. India is now Hyundai Motor's second largest market after North America, surpassing its home market of South Korea.

The driving force behind Hyundai Motor's success has been its emphasis on local sourcing to maintain affordability and lower costs. The company sources approximately 90% of its parts and materials from the state of Tamil Nadu, around its southern manufacturing hub of Chennai, and works with 194 primary suppliers in India. This has allowed Hyundai Motor to become more cost efficient in its production and supply chain, resulting in improved profit margins and manufacturing processes.

Hyundai Motor is aggressively investing in its plants in Tamil Nadu and Maharashtra and plans to increase the combined annual production capacity of the two plants to 1.82 million vehicles. Most of this capacity will be for overseas markets. The export market is a driving force as the average selling price of vehicles for export is higher than that of vehicles shipped to the Indian domestic market. Hyundai Motor's investment in the Indian market is focused on EVs and EV components. So far, the company has been importing and selling EVs, but plans to start local production later this year.

Source: The Nikkei

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Far East Report

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As India also moves toward electrification, there is a strong possibility that, as in Southeast Asia, the existing power structure will change drastically.

PSR Analysis: While Suzuki has traditionally enjoyed a large share of India's fast-growing automotive market, Hyundai Motor has been increasing its presence in recent years. Of course, Hyundai Motor is not the only one eyeing the Indian market; Chinese brands are also aggressively expanding their business in India.

MG, which SAIC operates in partnership with Indian steelmaker JSW, has the second largest share of EV sales after Tata. BYD is also trying to increase its sales share, and competition from Chinese companies is inevitable for Hyundai Motor.

As India also moves toward electrification, there is a strong possibility that, as in Southeast Asia, the existing power structure will change drastically. **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

現代自動車、インドで子会社を上場

現代自はさらなる発展に向けて、インド子会社の新規株式公開（IPO）手続きを始めた。同社は30億ドル（約4600億円）を調達し、インドで過去最大規模のIPOになると見られる。現代自は過去20年間、インド生産の乗用車に関して新興国などの150カ国以上に360万台を輸出し、インド拠点の自動車メーカーとして輸出台数が最大となった。インドは現代自にとって今や北米に次ぐ第2位市場で、母国の韓国市場を上回っている。

現代自が成功した原動力は手頃な価格を維持するために現地調達を重視し、コストを引き下げたことだ。生産拠点の南部チェンナイ周辺のタミルナド州から部品や材料の約90%を調達し、インドで194社の一次供給業者と連携している。これによって、現代自は生産とサプライチェーンのコスト効率が高まり、利益率や製造過程の改善につながった。現代自はタミルナド州でとマハラシュトラ州にある工場に積極的に投資し、2つの拠点を合計すると年間生産能力は182万台に増やす計画だ。この生産能力の大部分が海外市場向けになる予定だ。インド国内向けに出荷する車よりも輸出向けの平均販売価格が高く、輸出市場がけん引役になっている。現代自のインド市場に対する投資の中心は、EVとEV用部品だ。今まではEVを輸入販売してきたが、年内に現地生産を始める予定だ。

参考: 日経（一部筆者により元記事内容を改編しました）

PSR 分析: 急速に成長しているインドの自動車市場では伝統的にスズキが大きなシェアを獲得してきたが、近年は現代自動車の存在感が増している。もちろん現代自だけがインド市場を見ているわけではなく、国ブランドも積極的にインドで事業を展開している。SAICがインドの鉄鋼メーカーJSWと合弁で運営するMGのEV販売シェアはタタに次ぐ2位だ。BYDも販売シェアを伸ばそうとしており、現代自にとっては中国勢との競争が避けられない。インドもまた電動化を進めている中で、東南アジアと同様にこれまでの勢力図が大きく変わる可能性が高い。**PSR**

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Southeast Asia: Indonesia Report

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

Indonesia Moves To Reduce Chinese Ownership of Nickel Projects

Indonesia is trying to reduce Chinese investment in new nickel mining and smelting operations in order to qualify for U.S. tax incentives. Under the Biden administration's Inflation-Reduction Act (IRA), large tax incentives will apply after 2025. However, it does not apply to batteries sourced from "foreign entities of concern," such as companies in which Chinese capital holds more than 25% of the shares, or to EVs that use nickel or other key minerals. Indonesia's nickel industry will be hit hard by these conditions. This is because the country has been the world's largest producer of nickel for the past four years, thanks to a large influx of Chinese capital into its mining and smelting operations.

According to three people familiar with the matter, the Indonesian government and the nickel industry are working on new investment projects in which Chinese companies will have a smaller stake. It is possible that the nickel supplied through these deals will be eligible for tax benefits under the IRA. However, in order for the Indonesian nickel industry to receive tax benefits, it will also need to negotiate a trade agreement with the United States. The Indonesian side is proposing an agreement limited to critical minerals.

According to a person familiar with the Indonesian government's position, it is in talks with several investors to build a smelter in which Chinese companies would have less than a 25% stake.

Source: Financial Times Japanese Edition

PSR Analysis: This is not to say that Indonesia is pro-China or anti-China. They are in a state of strategic exploration from the perspective of how to gain greater national benefits. Chinese capital has already been invested in a large mine in Indonesia, which is effectively under Chinese control.

Although Japan and the U.S. are researching batteries that do not depend on nickel, they are still at the experimental level, and nickel will continue to be needed for the foreseeable future. This means that batteries for EVs will be difficult to obtain unless China has a stable supply of nickel. Excessive dependence on China is one of the reasons for some EV opponents, and competition to secure EV batteries is intensifying at the national level. **PSR**

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Southeast Asia Report

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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

インドネシア、ニッケル開発で脱中国を模索

インドネシアが米国の税優遇を受けるため、ニッケルの新規採掘・製錬事業に対する中国投資を減らそうとしている。バイデン政権が導入したインフレ抑制法（IRA）では、2025年以降に大規模な税優遇が適用される。しかし、中国資本が株式の25%以上を保有する企業などの「懸念される外国の事業体」から調達した電池や、ニッケルなどの重要鉱物を使用するEVには適用されない。インドネシアのニッケル産業は、この条件により打撃を受けることになる。同国は過去4年間、採掘・製錬事業に多額の中国資本が流入したことで、世界最大のニッケル生産国となったからだ。

この件に詳しい3人の関係者によると、インドネシア政府とニッケル業界は中国企業による出資比率を抑えた、新たな投資案件に取り組んでいるという。こうした案件を通じて供給されたニッケルには、IRAの税優遇が適用される可能性はある。ただ、インドネシアのニッケル産業が税優遇を受けるためには、米国と貿易協定の締結を交渉する必要もある。インドネシア側は重要鉱物に限定した協定を提案している。

インドネシア政府の立場を知る人物によると、中国企業の出資比率が25%未満の製錬所を建設するため、複数の投資家と協議中だという。

出典: フィナンシャル・タイムズ日本語版（一部筆者により元記事内容を改編しました）

PSR分析: これはインドネシアが親中国だとか反中国だとかということではない。彼らはどうすれば大きな国益を得ることができるか、という視点から戦略的な模索をしている状態だ。すでにインドネシアにある大きな鉱山には中国の資本が投下され、事実上中国の管理下にあると言って良い。ニッケルに依存しない電池を日本や米国は研究をしているものの、まだまだ実験レベルであり、当面はニッケルが必要とされる状況が続く。ということは、中国がニッケルを安定的に供給しない限りEV向け電池は手に入りにくい。過度な中国依存は一部のEV反対派の根拠のひとつとなっている。EV向けバッテリー材料の確保競争は国家間レベルで激化しつつある。**PSR**

China Report

By Jack Hao, Senior Research Manager - China

BYD Plans Factory in Turkey To Produce 150,000 Vehicles

BYD has signed an agreement with the Turkish government to invest USD 1 Billion to build a factory in Turkey. This is BYD's second factory in Europe following one

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China Report

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In 2023, the sales volume of pure electric vehicles in Turkey reached 66,000 units, accounting for 6.8% of the total sales volume, which is a significant increase compared to 1.2% in 2022.

Jack Hao

built in Hungary. Under the agreement, BYD will build a factory and research and development center with an annual production of 150,000 vehicles. The factory is planned to start production by the end of 2026 and will provide job opportunities for up to 5,000 workers. The factory is expected to improve BYD's logistics efficiency.

The Turkish government is welcoming the factory construction of Chinese automotive enterprises and is holding discussions regarding factory construction are taking place with SAIC and Great Wall, as well as BYD and Chery. Previously, Turkey announced the cancellation of a plan to impose an additional 40% tariff on all vehicles from China, which was announced a month earlier, to encourage Chinese automotive enterprises to invest in Turkey.

Additionally, the continuous growth in the sales of electric vehicles in the Turkish automotive market is also an attractive factor. By 2032, it is expected that the market share of electric vehicles in Turkey will exceed 30%.

Source: *PCauto* **Read The Article**

PSR Analysis: This move may help Chinese car manufacturers like BYD bypass protectionist measures and enter the vast European Union market, especially against the backdrop of the EU imposing additional tariffs on Chinese-made electric vehicles.

The Turkish automotive market has shown strong growth momentum in recent years, particularly in the field of electric vehicles. In 2023, the sales volume of pure electric vehicles in Turkey reached 66,000 units, accounting for 6.8% of the total sales volume, which is a significant increase compared to 1.2% in 2022. By 2032, it is predicted that the share of electric vehicles in Turkey's domestic car sales will reach 30.4%. This rapidly growing market potential is highly attractive to Chinese electric vehicle brands. In recent years, the Turkish public has spoken highly of Chinese brands, and the more localized Chinese enterprises are in Turkey, the better the prospects for development.

The Turkish side believes that, due to its customs union agreement with the EU, Turkey is an ideal base for exporting to the EU market. At the same time, Turkey hopes to use tariff leverage to encourage Chinese companies to invest locally, thereby promoting the development of the country's new energy automobile manufacturing industry. This strategy not only attracts foreign investment and creates jobs but also is expected to turn Turkey into an export base for automobiles targeting the EU and other neighboring regions. **PSR**

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India Report

By Aditya Kondejkar, Research Analyst – South Asia Operations

Rising Inventory Levels Challenge Auto Dealers

Aditya Kondejkar

The Indian automotive market is grappling with a significant inventory challenge, with passenger vehicle stock levels reaching 55 to 60 days' worth, equating to approximately 550,000 to 600,000 unsold vehicles as of May 2024. This rise in inventory has been a concern for auto dealers, who are already feeling the strain from prolonged high inventory levels. During the previous festive season, inventory levels surpassed 60 days, prompting the Federation of Automobile Dealers' Associations (FADA) to request reductions in stock dispatches from OEMs and the Society of Indian Automobile Manufacturers (SIAM).

The increasing inventory is placing considerable financial pressure on dealerships. Longer inventory holding periods impact cash flow and increase interest costs, making it challenging for dealers to manage their finances effectively. In response to this growing issue, FADA plans to approach SIAM to advise its members on moderating stock inflow and addressing the inventory surplus.

Despite a strong start to the year with notable sales growth in early months, the high inventory levels, combined with market uncertainties such as election-related delays and adverse weather conditions, are likely to dampen immediate sales performance. However, there is cautious optimism that the upcoming festive season could provide a much-needed boost in demand, helping to alleviate some of the inventory pressure and stabilize the market.

Source: *Financial Times* **Read The Article**

The current inventory levels in the Indian automotive market highlight a critical issue of imbalance between supply and demand. The elevated stock of unsold vehicles not only burdens dealerships with higher holding costs but also signals potential disruptions in the supply chain and market dynamics. Effective inventory management and strategic coordination between OEMs and dealers are essential to mitigate these challenges.

The proactive stance of FADA in addressing the inventory issue and seeking intervention from SIAM underscores the urgency of the situation. The ability to manage and reduce inventory levels will be crucial for maintaining dealer profitability and ensuring market stability.

Looking ahead, while the festive season may offer relief through increased consumer demand, sustained efforts in inventory management and market adaptation will be necessary. The automotive sector must navigate these challenges carefully to balance stock levels and support overall industry health. **PSR**

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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 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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