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Worldwide News & Analysis







Alternative Power Report

By Guy Youngs, Forecast & Adoption Lead



Guy

Youngs

GM, Komatsu Plan Hydrogen Fuel Cells for EV Mining Truck

General Motors and mining and construction equipment giant Komatsu plan to jointly design and validate the hydrogen fuel cell technology for the 930E electric drive mining truck. GM has been conducting hydrogen fuel cell research and product development for more than 50 years and has developed

platforms for both lithium-ion batteries and hydrogen fuel cells.

Mining trucks typically operate at a single mine throughout their life, a situation that simplifies the challenge of rolling out hydrogen refueling stations. GM and Komatsu plan to test the prototype HYDROTEC-powered mining vehicle in the mid-2020s at Komatsu's Arizona Proving Grounds research and development facility. The prototype mining truck will be powered by more than 2 megawatts of HYDROTEC power cubes.

Source: Electrek Read The Article

PSR Analysis: This is an interesting take on a problem that may have already been solved but it makes a first with GM and Komatsu and that's a step in the right direction. Some pundits question whether the economics of hydrogen are a non-starter, especially since we already have battery electric superheavy haulers in service. It takes roughly three times as much electricity to generate hydrogen and then burn it as it does to just power up batteries. Watch this space to see how GM and Komatsu resolve this issue.

Drivers of Heavy, Dirty Cars Pay Stiff Penalty Tax in France

As of Jan. 1, 2024, the French government has revised its "malus écologique", a one-time penalty tax for registering bulky, CO2-emitting cars, to include many more ICE vehicles, even some of the most popular budget models.

Drivers of cars emitting 118 g/km of CO2 pay €50 (about \$55), and this increases rapidly with higher CO2 emissions, with a maximum ceiling for vehicles reaching €60,000 (\$65,590). Vehicles weighing 1,600 kg/1.6 tons or more will have to pay between €10 and €30 per additional kilo.

Source: Electrek Read The Article

PSR Analysis: Governments are always looking for revenue streams, and in this the French government is no different, but while it won't generate vast sums, it is a step in the right direction to discourage ICE purchases, and we must not forget that taxes always seem to grow.

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Alternative Power Report Continued from page 2

Survey: EV Range Anxiety Slips in Importance

Euromonitor International has released the results of its Electric Vehicle Readiness Index for 2023 survey, which evaluates the most prepared countries which can support widespread EV adoption.

Norway, Switzerland and Sweden ranked at the top of the index, due to EV market maturity and consumer buying power. Brazil, South Africa and India were ranked at the bottom, owing to limited government incentives, low incomes and the undersupply of public charging stations

Source: EV Magazine Read The Article

PSR Analysis: What is telling about this survey is that it shows that Range Anxiety has fallen to third place with only 22% citing it as a major concern behind charging infrastructure and price. This represents a significant shift over the last few years.

Cathode Material for Cheaper, More Sustainable EVs

Researchers at the U.S. Department of Energy's (DOE) Argonne National Laboratory have invented and patented a new cathode material that replaces lithium ions with sodium and that would be significantly cheaper to produce. The cathode is one of the main parts of any battery. It is the site of the chemical reaction that creates the flow of electricity that propels a vehicle. Estimates suggest that a sodium-ion battery would cost one-third less than a lithium-ion one.

Source: MSN Read The Article

PSR Analysis: Research in battery technology has developed at a tremendous pace and anything that reduces cost and is more sustainable is a plus. Sodium is far more naturally abundant and easily mined than lithium. It is thus a fraction of the cost per kilogram and much less susceptible to price fluctuations or disruptions in the supply chain. **PSR**

North America Report



Michael

Aistrup

Consumers, Professionals Boost Lawn & Garden Spending

By Michael Aistrup, Senior Analyst

Lawn and garden equipment manufacturers make powered lawn and garden equipment, primarily for household and business maintenance of lawns and gardens. Equipment manufactured by this industry includes lawn tractors, riding and standing mowers,

hedge trimmers, leaf blowers, woodchippers and other machinery for maintaining lawns and gardens.

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North America Report Continued from page 3

> The lawn care industry is experiencing growing demand for residential outdoor landscaping from younger households across the country.

Industry Trends. Increased per household spending on lawn care and gardening services by the American family, younger individuals purchasing residential property, easing of COVID-19 restrictions and other factors like lawns adding to the aesthetic appeal of the residential property, is anticipated to bolster the DIY and commercial lawn care market.

Here is a look at the key factors affecting this segment moving forward.

- **COVID-19** and related supply chain issues and labor disruptions will continue to impact flow in factories during the first part of 2024 but will ease towards the end of the year.
- The global economy is still facing significant uncertainty, says Briggs & Stratton Vanguard Vice President of Electrification David Frank. A lot of this uncertainty is driven by ongoing supply chain challenges, transportation bottlenecks and onshoring and labor shortages. This has led to price fluctuations and difficulty predicting costs across the supply chain.
- **Capacity** of lithium-ion battery technology to meet the performance needs of both the homeowner and the commercial landscaper has grown by leaps and bounds. Battery technology can match the power of traditional gasoline-powered lawn and garden equipment.
- **Robotics Increase.** According to a recent market study by Future Market Insights, the robotic lawn mower market is projected to progress at a compound annual growth rate (CAGR) of 12.5%. Sales of robotic lawn mowers are expected to remain concentrated in residential use, but sales in the commercial segment are projected to experience significant growth over the coming years. GPS and Bluetooth-enabled robotic lawn mowers and wireless mobile devices are potential investment options for manufacturers.

Summary. The lawn care industry is experiencing growing demand for residential outdoor landscaping from younger households across the country. Increased interest in gardens in residential developments primarily contributes to the expansion and growth of the lawn care market. Increased gardening activities, driven by the need for self-sufficiency in growing indoor fruits and vegetables amidst rising health consciousness, have increased landscaping needs by the younger generation.

Most people tend to pay additional amounts for a residential space or an apartment with a gardening area. Thus, the demand for landscaping is on the rise as developers provide an aesthetic appeal to commercial and residential properties. Trends in the residential and nonresidential real estate markets directly affect demand for lawn and garden equipment, with demand for equipment rising when the number of houses and offices grows.

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North America Report Continued from page 4 Despite global supply chain issues and a raging pandemic, key players in the DIY & Hardware Store market experienced double-digit year-over-year growth. These numbers are the result of COVID-19 restrictions, which required many people to stay home and provided them with the opportunity to carry out home improvement activities. A note of caution: industry analysts are beginning to question whether this increasing interest in DIY activities will continue as COVID-19 becomes less of an issue. **PSR**

DATAPOINT: North America Dumpers/Tenders 1,600

By Carol Turner, Senior Analyst, Global Operations

1,600 units is the estimate by Power Systems Research of the number of Dumpers/Tenders expected to be produced in North America in 2024.

Dumpers/Tenders are vehicles designed for carrying bulk material, often on building sites. Dumpers are distinguished from dump trucks by configuration: a dumper is usually an open 4-wheeled vehicle with the load skip in front of the driver, while a dump truck has its cab in front of the load.

Utility style models are versatile and are extremely popular with homeowners. Dumper/Tenders, commonly referred to as the Power Buggy, are sought after pieces of equipment, much faster than a conventional wheelbarrow and can accelerate job site related activities.

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.

Exports: About 15% worldwide.

Market Share: With 67.5% of total units produced, Country Home Products leads in production of Dumpers/Tenders in North America. In second position is Allen Engineering with 19%; third, is Power Buggy (Indy) with 9%.

Trends. In 2023, production of Dumpers/Tenders in NA decreased 12%. Expect production to rebound in 2024 and grow by 6%. The decline in 2023 was due to saturation in the marketplace along with longevity of products in the field. Expect production to increase an additional 5% by 2025.

Electric (Battery) Data. In 2023, production of Electric (Battery) powered units decreased 35% to 80 units, but we expect to see a 20% increase in 2024 to about 100 units.

Companies that offer Battery powered units. Allen, Cipsa, Power Buggy. PSR

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The revolutionary concept provides cost-effectiveness, zero-emissions, zeronoise and excellent performance values (very fast) in different types of boats for pleasure and commercial use.

Europe Report

By Natasa Mulahalilovic, Marine Product Manager

Electric Hydro Foiling Popular in Maritime Industry



The electric hydro foiling propulsion system is a fast-growing technology taking an important place in the future of the maritime industry. The revolutionary concept provides costeffectiveness, zero-emissions, zero-noise and excellent performance values (very fast) in different types of boats for pleasure and commercial use.

Natasa

The technology is innovative and is, for most vessels, based on a Mulahalilovic specific aerodynamic design of a boat, retractable foils, electric motors, and batteries. Hydro foiling and electric systems work together to cut through waves causing less drag and resulting in higher speed.

The use of energy is much less than for any other vessel with a traditional propulsion system. E-foiling boats give an impression of flying over water silently with no CO2 emission or any other air or water pollution. The experience is comfortable, safe, clean and speedy.

Artemis Technologies from Belfast (Ireland) is a pioneer in building and commercializing hydro foiling electric workboats, petrol, and water taxis. Artemis recently introduced a ferry of 24 meters to carries 100 passengers, the model EF-24 Passenger.

With its futuristic design and 16 tons of batteries installed below deck, it ensures energy storage of 2.82 MW and cruising speed between 28 knots and 32 knots (60 km/hour). This is double the speed of a traditional ferry with electric propulsion.

The new technology uses between 80% and 85% less energy compared to a conventional electric ferry. If the EF-24 operates 200 Nautical Miles per day, 350 days a year it will save some GBP 2.6 million in fuel consumption and up to 8,000 tons of CO2 emission annually, compared to a diesel craft of the same capacity.

The ferry's first journey connecting Belfast to Bangor in Northern Ireland is scheduled to take place in July 2024 and will be operated by Condor Ferries.

Apart from Artemis Technologies, the Swiss innovative company MobyFly is working on electric hydro foiling ferries in the range of 10 to 30 meters with a capacity of 10 to 350 passengers, and a speed of 38 knots (70km/h).

The latest creations are being tested on lakes in Geneva. MobyFly's next level is the creation of boats with a hydrogen/foiling propulsion system.

Candela from Sweeden has been producing recreational electric hydro foiling boats since 2019 with very much success. The next phase is implementation of



Europe Report Continued from page 6



the same technology in work boats such as ferries, taxis, super-yachts tenders. The P-12 Shuttle was launched last year and now is going into production in a facility in Stockholm. The P-12 Shuttle is an 11.99 meters vessel with a capacity of 30 passengers and top speed of 50 NM.

Meanwhile, new builders of recreational boats steadily but surely are appearing in this specific niche. Candela with its latest C-8 model, Futur-e and Edorado are some of those who lead today's market. They create a unique experience of boating while achieving a higher level of sustainability benefits. It is anticipated that recreational boats with e-foiling propulsion will take 1% of the pleasure boat market by 2030. Faster growth is expected in the following decades.

Deutz AG To Sell Torqeedo Shares To Yamaha

Deutz AG signed an agreement Jan. 19, 2024, to sell its shares in Torqeedo to Yamaha Motor Co Ltd. The sale of Torqeedo's shares were planned and announced at the Deutz Annual General Meeting held in April 2023.

Torqeedo is a market leader in developing and manufacturing advanced marine electric engines and propulsion systems.

Deutz acquired the German company in 2017 to accelerate electrification of its core segments of agricultural machinery, construction equipment and material handling equipment.

Once the technology transfer was successfully completed, Deutz sought a "better owner" for Torqeedo to help further development of its own products, to gain access to a larger marine industry market and to get better global after-sales support. Torqeedo has 230 employees and has sold 250,000 inboard and outboard engines worldwide in 15 years. Yamaha is one of the world's biggest outboard marine engine manufacturers.

Yamaha Motor Co will benefit from Torqeedo's advanced know-how and expertise in the field of electric engines, outboard and inboard propulsion systems, batteries, and accessories.

Torqeedo will have a major role in development of a mid-range electric outboard engines under the Yamaha brand, aiding Yamaha's ambition to become a global leader in the fast-growing electric boat propulsion market. Having Torqeedo's product line in its portfolio will help Yamaha reinforce its role in the decarbonization of the marine industry.

The purchase agreement is expected to close in the first quoter of 2024.

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PSR



The strategic intent behind this acquisition by the Chinese manufacturer is to secure a stable supply of raw materials essential for the production of batteries to power its electric vehicles.

Brazil/South America Report

By Fabio Ferraresi, Director Business Development South America



BYD Seeks To Acquire Lithium Mining Operation in Brazil

BYD is negotiating to acquire Sigma Lithium, the largest lithium mining entity in Brazil, according to the Financial Times. The potential agreement could be valued at US\$ 5 Billion (R\$ 14.3 Billion). Sigma Lithium operates a lithium mining facility in the Jequitinhonha Valley in the state of Minas Gerais. The strategic intent behind this acquisition by the Chinese manufacturer is to

Fabio Ferraresi

secure a stable supply of raw materials essential for the production of batteries to power its electric vehicles.

BYD has expanded its presence in Brazil through the acquisition of the Ford plant in Camaçari (BA). This facility is earmarked for the production of light vehicles. Additionally, BYD operates a manufacturing plant in Campinas (SP), specializing in the production of bus chassis and plug-in hybrid electric vehicle (PhEV) panels.

Source: Financial Times Read The Article

PSR Analysis. After Tesla demonstrated interest in the same company, BYD advances its negotiations. It is in line with BYD's strategy of verticalization and helps to solve one of the strategic bottlenecks of EV production, minerals availability and price.

BYD Plans Supply Chain Verticalization in Brazil

In a recent interview with EPBR News Agency, the Chinese carmaker BYD announced its strategic initiative to comprehensively verticalize its electric vehicle production operations in Brazil. This encompasses the entire value chain, ranging from lithium exploration and processing to battery manufacturing, culminating in the production of both buses and automobiles.

A distinctive aspect of BYD's strategy in the Brazilian market is the inclusion of ethanol flex hybrid vehicles in its product portfolio. This unique approach sets Brazil apart from the rest of the world in BYD's offerings.

Alexandre Baldy, Chairman of the Board of BYD Brazil, emphasized the company's goal of establishing Brazil as a regional hub in Latin America for BYD. This strategic move aligns with the company's broader vision for consolidating its operations and influence within the Latin American electric vehicle market.

Source: EPBR Read The Article





South America Report Continued from page 8



PSR Analysis. The initiative is producing a low cost EV vehicle with significant impact in the Brazilian Market and for exports to all of Latin America. If it impacts the end market positively, it is bad news for tier 1 and tier 2 components suppliers.

With regards to ethanol flex hybrid engines, there is an opportunity for engine manufacturers because BYD is not familiar with renewable fuel technology. However, it has verticalization as one of the pillars for its business model. PSR

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Far East: Japan Report

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



2023 Domestic MC Shipments Increase 4%

Domestic motorcycle shipments increased for the first time in two years to 376,720 units in 2023, up 4% from the previous year. Class 2 mopeds, which have relatively low maintenance costs, performed well, increasing 47% year-onyear. The shortage of semiconductors and the easing of logistics disruptions also contributed to the increase in shipments.

Akihiro Komuro

Class 1 mopeds (50cc and below) fell by 29% to 92,824 units. Class 2 mopeds (over 50cc and under 125cc) were up 47% to 149,655 units, light motorcycles (over 125cc and under 250cc) were up 16% to 66,630 units and small motorcycles (over 250cc) were down 6% to 67,611 units.

Source: The Nikkei

PSR Analysis: Since the outbreak of COVID-19, motorcycles have been re-evaluated as a form of mobility that allows people to avoid crowds, and the renewed awareness of their convenience has contributed to this increase in shipments. Although not mentioned in this article, sales of fun-to-ride large motorcycles have also been relatively strong. Some new vehicles are still taking a long time to be delivered, so shortening lead times for shipments will be an issue in the future. PSR

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Far East Report Continued from page 9

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小室 明大 – 極東及び東南アジア リサーチアナリスト

国内二輪出荷、2023年は4%増 原付2種が好調

2023年の国内二輪出荷台数は前年比4%増の37万6720台で2年ぶりに増加した。維持費が比較的安い原付き2種が好調で、前年比47%増だった。半導体不足や物流の混乱が緩和したことも出荷増に寄与した。

排気量別では原付1種(50cc以下)が29%減の9万2824台だった。原付2種 (50cc超125cc以下)が47%増の14万9655台、軽二輪車(125cc超250cc以下) は16%増の6万6630台、小型二輪車(250cc超)は6%減の6万7611台だった。

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: COVID-19の発生以来、人込みを避けられるモビリティとして二輪車が見直されたが、その利便性が再認識されたことがこの出荷台数の増加につながった。この記事では触れられていないが、ファンライドの大型二輪の販売も比較的好調に推移しているということだ。まだ一部の新車は納期が長期化しているため今後は出荷までのリードタイム短縮が課題になるだろう。**PSR**

Far East: South Korea Report

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

Hyundai Motor Sells Chongqing Plant in China

Hyundai Motor Company has sold its finished car plant in Chongqing, China, to a Chongqing government-owned company for 1.62 billion yuan (about 33 billion yen, \$222 million) in December 2023. Hyundai Motor is rushing to restructure its Chinese business, which has suffered from sluggish sales, and concentrate its management resources in the U.S. and Southeast Asia.

The company sold the plant to Chongqing Liangjiang New Area Yufu Industrial Park Construction and Investment Group, which is owned by the city of Chongqing, and its affiliate will use the plant as a production base for electric vehicles.

Source: The Nikkei

PSR Analysis: As mentioned in the July 2023 issue of PowerTALK News[™], Hyundai Motor's strategy in China is changing. China is rapidly shifting to EV, and Chinese car brands are growing rapidly. This has led to poor sales in the Chinese market for Hyundai Motor, and Hyundai Motor is trying to shift its resources to Southeast Asia and North America, switching to a strategy of focusing on luxury cars in China.



Far East Report Continued from page 10

South Korean products have grown due to a good balance between price and quality. The market view is that the cost is not as high as Japanese or European products, and the quality is better than that of Chinese products. This situation is not limited to the automobile industry; similar situations can be seen in other manufacturing industries. South Korean products have grown due to a good balance between price and quality. The market view is that the cost is not as high as Japanese or European products, and the quality is better than that of Chinese products.

However, the improvement in the quality of Chinese products and the low price of Chinese products due to mass production are eliminating these advantages for South Korean products. To respond to such rapid changes in the market, Hyundai Motor is rapidly reviewing and optimizing its strategy. Hyundai Motor's decision should be seen in this light. **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

現代自、中国重慶工場を330億円で売却

現代自動車が中国・重慶市の完成車工場を売却した。2023年12月に重慶市政府系企業に16億2000万元(約330億円、2.22億ドル)で譲渡した。現代自は販売不振が続く中国事業のリストラを急いで米国や東南アジアに経営資源を集中する。

重慶市が持つ「重慶両江新区魚復工業園建設投資グループ」に売却し、関連 会社が同工場をEV生産拠点として活用する。

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: PowerTALK7月号でも触れたように、現代自の中国での戦略に変化が生じている。中国は急速にEVシフトを進めており、中国車ブランドが急成長している。そのことが現代自の中国市場における販売不振に繋がっており、現代自は中国には高級車中心の戦略へと切り替えて、リソースを東南アジアや北米にシフトしようとしている。

このような状況は自動車製造分野だけではなく、他の製造業でも似たような 状況が見られる。韓国製品の良さは価格と品質のバランスの良さであり、それ が支持されて成長してきた。日本製や欧州製ほど高くない費用と、中国製より も良い品質、というのが象徴的な見方だ。だが中国製品の品質の向上と大量 生産による低価格化はこうした韓国製品が持つ長所を無くしてしまいつつあ る。そうした市場の急激な変化に対応すべく、迅速な戦略の見直しと最適化が 図られている。この現代自の決定もそうした見方をすべきだろう。**PSR**

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Southeast Asia: Thailand Report

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

Thailand Lithium Deposit World's Third Largest

The Thai government has announced the discovery of a large lithium deposit, calling the deposit the third largest in the world after Bolivia and Argentina. It has estimated reserves of approximately 14.8 million tons. The deposit was found at two sites in the southern province of Phang Nga. However, it will take some time to find out how much of the discovered resources can be used.

Thailand is keen to become the center of EV production in Southeast Asia, leveraging its experience in assembling conventional cars, and the discovery of the lithium deposit will give the country a boost in achieving this goal.

Source: AFPBB

PSR Analysis: Thailand, which has maintained its position as an export base for pickup trucks, and Indonesia, with a domestic market of 270 million people, are the two largest producers in the Southeast Asian automotive industry. In response to the transformation of the automotive industry, both countries have introduced policies to attract investment and promote domestic companies.

Since 2014, Indonesia's sales volume has often exceeded that of Thailand. Another strength of Indonesia is that it produces a large amount of nickel and has important strategic resources domestically. In terms of its competition with Indonesia, this news is clearly positive for the Thai auto industry.

However, it remains to be seen how these discoveries will affect the Thai economy. If much of the estimated 2 million tons of lithium can be used as battery material, the balance of power in the race to acquire lithium will change dramatically.

Naturally, the Thai government wants to make effective use of this resource, but lithium mining involves the risk of environmental pollution. Naturally, foreign investors will consider developing or acquiring mines. The development of batteries that use less lithium is also underway, which could reduce demand. What will happen in the future remains to be seen, but we will have to keep a close eye on how this deposit will affect the Thai economy and the global EV shift. **PSR**

東南アジア > タイレポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

タイでリチウム鉱床発見 埋蔵量約1500万トン、世界3位規 模

タイ政府は1月19日、大規模なリチウム鉱床が見つかったと発表した。埋蔵量 は約1500万トンで、ボリビアとアルゼンチンに次ぎ世界3位規模となる。鉱床は



Southeast Asia Report Continued from page 12

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南部パンガー県内の2か所で見つかり、推定埋蔵量は1480万トンだと明らかに した。ただし、「発見した資源のうちどれだけ利用できるか調査中だ。判明に は時間がかかる」と説明している。タイは従来型の車の組み立てで培った経験 を生かし、東南アジアにおけるEV生産の中心地になることに意欲を示してお り、今回のリチウム鉱床の発見は、その目標達成に向け弾みをつけるものとな る。

出典: AFPBB (一部筆者により元記事内容を改編しました)

PSR分析: ピックアップトラックの輸出基地としての地位を守ってきたタイと、2.7 億人の国内市場を有するインドネシアは、東南アジアの自動車産業における 2大生産国である。自動車産業の変革に対応すべく、両国では様々な政策を導入して投資誘致や国内企業の育成に努めている。

2014年以降はインドネシアの販売台数がタイを上回ることが多い。インドネシアはニッケルの産出量が多く、重要な戦略資源を国内に保有していることも強みだ。そうしたインドネシアとの競争という意味で、このニュースがタイの自動車産業にとってポジティブなニュースであることは明らかだ。

だが、まだ鉱床が発見されたと報じられただけで、それらがどのようにタイの 経済に影響を与えるかは未知数である。だが、この200万トンと推計される規 模のリチウムの多くがバッテリーの材料として使用できるとなれば、リチウムを めぐる獲得競争の勢力図は大きく変わるだろう。当然タイ政府はこの資源を有 効に活用することを検討するが、リチウム採掘には環境汚染のリスクもある。 当然外資は鉱山の開発や買収を検討するだろう。リチウムの使用量が少ない 電池の開発も進められており、需要が減る可能性もある。今後どうなるかはま だまだ分からないが、この鉱床がタイ経済やグローバルのEVシフトに対してど のような影響を与えるかは注視しなくてはならない。**PSR**

China Report

By Aditya Kondejkar, Research Analyst – South Asia Operations.

Recharging Slows Penetration of New Energy HD Trucks



Jack

Hao

In 2022, the penetration rate of new energy units in the commercial vehicle market exceeded 10%, and the penetration rate of heavy-duty trucks was close to 5%. The new energy subsidy policy was scheduled to be withdrawn at the end of 2023, but data for the January to October period is basically the same as the previous year. The share of new energy units for the commercial vehicle segment is far lower than the market share of 30.4% for new energy passenger vehicles.



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At present, there are no more than 400 replacement stations for heavy-duty trucks nationwide, distributed in a dotted pattern. With the accelerated adjustment of China's transportation structure, it is expected that by 2025, the national railway and water freight volume will increase by 10% and 12%, respectively, compared to 2020, while the road freight volume will relatively decrease. In this context, bulk and ultra long-distance road transportation will gradually exit the market, and the advantages of short and point-to-point road trunk transportation with radii of around 500 kilometers and 300 kilometers will be further highlighted.

The main factors currently promoting the new energy transformation of trunk logistics are the economic advantage of oil and electricity, as well as the improvement of energy replenishment facilities. Research has shown that when the economic gap between oil and electricity exceeds 20%, and the range of a single vehicle exceeds 300 kilometers, the advantages of new energy heavy-duty trucks are more prominent.

At present, there are no more than 400 replacement stations for heavy-duty trucks nationwide, distributed in a dotted pattern. It is expected that over 1000 buildings will be built by 2025, with some gradually developing on a point basis and covering some trunk line scenarios, which will promote the penetration rate of new energy in trunk logistics heavy trucks.

Source: Sohu Read The Article

PSR Analysis. By 2030, it is expected that pure electric heavy-duty trucks will account for 70% of new energy heavy-duty trucks, in a market of an estimated 350,000 vehicles. Among them, battery swapping heavy-duty trucks will account for 70% -80% of pure electric heavy-duty trucks. China aims to achieve a sales volume of 100,000 fuel cell vehicles and 50,000 zero carbon internal combustion engine hybrid heavy-duty trucks by 2030.

The Development Plan for China's New Energy Vehicle Industry (2021-2035) clearly states that starting from 2021, the proportion of new energy vehicles in the public areas of national ecological civilization pilot zones and key areas for air pollution prevention and control, such as newly added or updated buses, taxis, logistics and distribution vehicles, shall not be less than 80%.

The construction cost of battery swapping stations is relatively high, and battery swapping standards are not unified. Each heavy-duty truck battery swapping station can only swap batteries for specific heavy-duty truck models and cannot fully achieve battery swapping between different vehicle manufacturers.

Due to this limitation, scaling up is difficult to achieve, as it is not only difficult to ensure stable profitability, but it also hinders the rapid growth of electric trucks as most of the exchange stations operate at a loss. **PSR**

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India Report

By Aditya Kondejkar, Research Analyst – South Asia Operations.



Ford's EV Strategy Is Changing

Ford Motor Co's unexpected decision to retain its factory in Tamil Nadu and its potential plans for the assembly of the latest Endeavour signals a potential shift in strategy towards a stronger focus on electric vehicles (EVs) and leveraging India as an export hub.

Aditya Kondejkar

This analysis delves into the implications of Ford's potential emphasis on EVs and its ability to capitalize on India's

Production-Linked Incentive (PLI) schemes for exports.

Globally, under its current CEO, Jim Farley, Ford is focused on the electrification and digital transformation of core segments in which it is a leader, namely trucks, SUVs, commercial vehicles, and performance cars.

Ford could also consider entering contract manufacturing EVs for other OEMs who are currently in India or are entering the country. It also may see a strategic opportunity in making India an export hub for Ford EVs, especially on the back of the PLI scheme, and likely FTAs being entered into, according to Vinay Piparsania, a former director at Ford India.

Source: Economic Times Read The Article

Source: ForbesIndia. Read The Article

Emphasis on EVs. There's also an opportunity for Ford among its discontinuation of sedans such as Fiesta, Mondeo, and Fusion since this aligns with a broader industry trend toward prioritizing electric mobility.

The company's commitment to cease sedan production suggests a strategic reallocation of resources towards EVs. As India is experiencing an increasing appetite for electric vehicles, Ford's potential emphasis on this segment could position it strategically in a market poised for significant growth.

Strategic Plant Retention. The decision to retain the Tamil Nadu factory gains significance in the context of EVs. The manufacturing plant could become a crucial asset for producing electric vehicles, given its established infrastructure and operational history. This strategic move may allow Ford to align with the Indian government's push towards electric mobility and set the stage for a more sustainable and future-oriented product lineup.

Export Strategy and PLI Benefits. Retaining the factory in Tamil Nadu suggests that Ford might be considering India as a key export hub. The country's favorable geographical location, combined with the PLI schemes aimed at promoting local manufacturing and exports, provides an opportune environment for global manufacturers. Leveraging India as an export base could boost Ford's



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Ford's potential shift towards a stronger focus on electric vehicles and the retention of its factory in Tamil Nadu indicate a strategic realignment to align with global automotive trends and India's push towards electric mobility. competitiveness in the global market and also align it with the Indian government's vision for making the country an export hub.

PLI Scheme Benefits. Participation in India's PLI schemes, designed to incentivize manufacturing and exports, could provide Ford with significant financial advantages. By capitalizing on these incentives, Ford can reduce production costs, enhance competitiveness, and contribute to India's goal of becoming a manufacturing and export powerhouse in the automotive sector. This aligns with global trends where companies strategically position themselves to benefit from government incentives and tap into emerging markets.

Ford's potential shift towards a stronger focus on electric vehicles and the retention of its factory in Tamil Nadu indicate a strategic realignment to align with global automotive trends and India's push towards electric mobility.

The possible use of India as an export hub, coupled with the benefits from PLI schemes, positions Ford strategically to navigate the evolving automotive landscape in the country. As the industry continues to embrace electric mobility, Ford's moves in India reflect a forward-looking approach that considers both local market dynamics and global competitiveness. Further insights into Ford's specific plans will be crucial to understanding the extent of its commitment to EVs and the role of India in its global strategy. **PSR**

Russia Report

By Maxim Sakov, Market Consultant, Russia Operations

Editor's Note: Power Systems Research has paused all research and business development activities in Russia. We 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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