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In This Issue

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Questions, Comments? Contact Joe Delmont, Editor
jdelmont@powersys.com | +1 651.905.8400 | www.powersys.com

Click Here To Go To Page 1

Alternative Power Report

By Guy Youngs, Forecast & Adoption Lead

China Threatens EU, U.S. with Tariffs Up To 25%

Guy Youngs

Trade tensions have continually risen among China, the European Union, and the US in recent years, with much of the drama surrounding imported EVs, so 10 days after the Biden administration introduced a 100% tariff on several categories of Chinese goods, including EVs, China has threatened to retaliate with tariffs on its own vehicle imports.

The EU has also been included in this threat but while it is conducting a probe into China's EV exports, it has placed this probe on a temporary halt pending EU's elections

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

PSR Analysis: With China not having enough car carriers to export all the EVs it is manufacturing, it's very hard to see the EU not following the tariff route, but the real question that arises is whether or not this will lead to a trade war. China produces so many EVs that it needs to export, it's also hard to see how they can retaliate without widening the areas affected. **PSR**

European Batteries Could Be 60% Less Carbon Intensive Than Chinese

Moving the EV supply chain to Europe would cut the emissions of producing a battery by 37% compared to a China-controlled supply chain, according to new analysis by lobbying group Transport & Environment (T&E). This carbon saving rises to over 60% when renewable electricity is used.

Securing other parts of the battery value chain will be even more challenging given China's dominance and the EU's limited expertise. The report finds Europe has the potential to manufacture 56% of its demand for cathodes – the battery's most valuable components – by 2030, but only two plants have started commercial operations so far.

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

PSR Analysis: While reducing the carbon footprint is worthwhile, the move would have some potentially significant cost implications which would make EVs more expensive and could slow the pace of adoption. **PSR**

Diesel Demand Hits 26-Year Low as EV, Hydrogen Boom

US diesel demand plummeted to its lowest seasonal level in 26 years in Q1 2024. The production of distillate, the petroleum-based fuel that powers trucking, heating, and heavy industry, plunged to 3.67 million barrels per day in March (down from

Click Here To Go To Page 1

Alternative Power Report

Continued from page 2

more 4.1 million barrels last year) according to monthly data from the US Energy Information Administration.

Even in diesel-loving Europe, the diesel engine is dying. Volvo, for example, recently built its last-ever diesel vehicle, and companies like Nissan, Hyundai, and Daimler (parent company of Mercedes-Benz and the Freightliner and Rizon truck brands) have also backed away from developing new internal combustion engines.

it's worth noting that commercial EV sales are soaring. Despite all the doom, gloom, and wishful thinking from the pro-oil/anti-EV crowd, the numbers suggest a swift expansion in the commercial EV and ZEV (Zero-Emission Vehicle) markets.

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

PSR Analysis: Recently we have seen news articles about an apparent slowing of the EV market, but this (and other data) suggests that while some manufacturers are slowing their EV plans, EV growth rates are still good and in fact considerably better than ICE growth rates. **PSR**

Discovery May Drive Down Cost of Hydrogen Fuel

RIKEN Center for Sustainable Resource Science (CSRS) researchers in Japan have announced that they may have discovered the secret to being able to produce hydrogen fuel far more cheaply than the currently used methods by using 95% less Iridium.

Iridium is used as a catalyst in the production process of hydrogen, and we would need to allocate over 40 years of Iridium production in order to make the necessary hydrogen. Iridium is one of the rarest elements in Earth's crust, with estimated annual production of only 15,000 pounds in 2023.

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

PSR Analysis: By replacing most of the Iridium with manganese we may be able to reduce the cost of making hydrogen significantly and enable the wide scale use of hydrogen. This is still at an early stage but shows some promise. However, the lack of infrastructure is still a serious issue. **PSR**

Global Report

North America / Europe MHCV Alternative Power Update

By Chris Fisher, Senior Commercial Vehicle Analyst

As the governments of Europe and North America (U.S. and Canada) continue to push for a transition from fossil fuel powered vehicles to zero-emission vehicles, a number of significant barriers to adoption will continue to hamper this initiative.

Click Here To Go To Page 1

Global Report

Continued from page 3

In the United States, the Phase 3 Greenhouse Gas Emission Standards for Medium and Heavy trucks appear to have been finalized in March 2024.

Significant barriers to adoption of zero-emission vehicles include the total cost of vehicle ownership, a lack of charging and grid infrastructure, truck resale values and duty cycle issues. The primary types of alternative propulsion that are in focus include Battery Electric, Hydrogen Fuel Cell and Hydrogen ICE engines and to a lesser degree, Natural Gas and Biodiesel ICE engines. The vast majority of the medium and heavy commercial vehicle industry support the transition to zero-emission vehicles but the short timeline for implementation is causing great concern throughout the industry.

Chris Fisher

North America. In the United States, the Phase 3 Greenhouse Gas Emission Standards for Medium and Heavy trucks appear to have been finalized in March 2024. The standards require drastic emission cuts from 2027 through 2032. While the regulations do not specify what technologies must be implemented, the emission reduction levels will become increasingly more stringent each year and will ultimately force significant adoption of zero emission vehicles toward the end of this decade. Overall, the industry has serious concerns about the short amount of lead time given for implementation (see the below links).

Europe. It appears the Euro 7 emission regulations last scheduled for implementation in July 2027 have been pushed back until July 2031. The original 2022 Euro 7 proposal would have seen some of the world's strictest emissions rules imposed from mid-2025 for cars, and mid-2027 for trucks and buses.

In late 2022, the European Commission published its proposal for the new Euro VII emissions standard, which will apply to all vehicle types and powertrains. The proposal replaces and simplifies previously separate emission rules for cars and vans (Euro 6) and trucks and buses (Euro VI). The Euro VII standard brings emission limits for all motor vehicles under a single set of rules. The new rules are fuel- and technology-neutral, placing the same limits regardless of whether the vehicle uses petrol, diesel, electric drive-trains or alternative fuels.

Limits will be tightened for trucks and buses, while there will also be limits for previously unregulated pollutants, such as NOx emissions from heavy-duty vehicles. The proposed rules also set limits for particulate emissions from brakes and tires that will also apply to electric vehicles. Many in the industry were worried about time goals that they need to see as realistic. Postponing the Euro 7 regulations will also allow the industry to place a greater focus on zero-emission vehicles as opposed to a costly and time consuming upgrade to the diesel engines.

Read The Article | Read The Article

Summary. There is currently not a single zero-emission solution that will be efficient across the entire medium and heavy vehicle segment, but rather a combination of solutions. For example, Battery Electric powered vehicles would be best for short and regional haul routes and will work well for transit buses, short haul delivery and in many cases the refuse market when the duty cycles allow. Hydrogen Fuel cells would be better suited to longer haul routes for class 8 semi-trucks. **PSR**

Click Here To Go To Page 1

Global Report

Continued from page 4

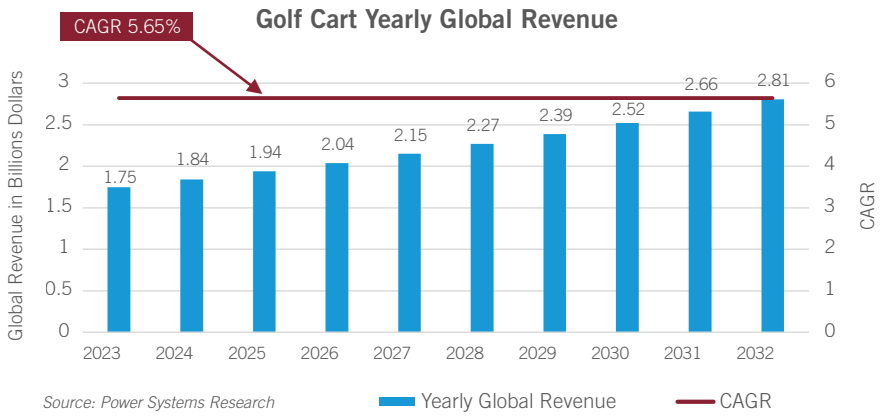
2024 Global Golf Cart Revenue To Hit $1.84 Billion

By Michael Aistrup, Senior Analyst

Michael Aistrup

Power Systems Research estimates the Global Golf Cart Market to be $1.84 billion in 2024 and expects this market to reach $2.81 billion by 2032, growing at a CAGR of 5.65% during the forecast period.

Market Demand Drivers. The increased popularity of the game of golf by senior citizens, women, and juniors has increased the demand for golf carts. The increased use of these eco-friendly electric vehicles by government and industry also has pushed demand.



- **Sustainability and Environmental Concerns.** Governments, golf courses, and consumers increasingly are emphasizing the need for eco-friendly alternatives. Electric golf carts, with their lower emissions and reduced environmental impact, meet these concerns.
- **The solar golf cart segment** is projected to experience rapid growth, primarily due to its eco-friendly nature and lower operating costs.
- **Popular golf destinations** and resorts experienced an influx of tourists, and millions of new participants have started golfing for the first time are leading to higher demand for golf carts.
- **Increased participation.** More than 2 million newcomers have been added to the industry for eight consecutive years between 2012 and 2019, with the number exceeding 3 million per year between 2020 and 2022.

Trends. Individual owners of golf carts, especially in senior residential golfing communities in the South, are customizing their golf carts and adding special features to the units. Golf courses also are upgrading, adding features such as GPS units.

Click Here To Go To Page 1

Global Report

Continued from page 5

The global golf cart market is characterized by a competitive landscape with several key players vying for market share.

- **Customization and Personalization.** Manufacturers offer a range of customization options, allowing golfers and golf course operators to tailor the carts according to their preferences.
- **Integration of Smart Features.** GPS systems, touchscreens, Bluetooth connectivity, and mobile app integration became increasingly common in golf cart models. These features provided golfers with real-time course information, scoring capabilities, and entertainment options, enhancing the overall golfing experience.

Market Restraints. Costs and charging limits are slowing the growth of this segment.

- **High Initial Cost.** The high initial cost of golf carts remained a significant restrain. The price of golf carts, especially electric models with advanced features, can be expensive for individual consumers and small golf courses. This high pricing limited the adoption of golf carts, especially in price-sensitive markets.
- **Limited Charging Infrastructure.** The limited availability of electric charging infrastructure was a restraint for the widespread adoption of electric golf carts. While the demand for electric models increased, the lack of charging stations and infrastructure in certain areas restricted the practicality and range of electric carts. The need for a robust charging network remains crucial for the continued growth of electric golf carts.

PSR Analysis. The global golf cart market is characterized by a competitive landscape with several key players vying for market share. These companies focus on product innovation, strategic partnerships, and expansion strategies to gain a competitive edge in the market.

Key players compete based on factors such as product quality, pricing, performance, innovation, and customer service. They engage in strategic collaborations, mergers and acquisitions, and geographic expansions to strengthen their market position.

Manufacturers are investing in the development of advanced technologies such as connectivity, autonomous capabilities, and energy efficiency to stay competitive in the evolving golf cart market. **PSR**

DATAPOINT: *Global Snowmobile Production*

89,400

By Carol Turner, Senior Analyst, Global Operations

89,400 units is the estimate by Power Systems Research of the number of Snowmobiles expected to be produced in Canada, Finland, Italy, Japan and U.S. in 2024.

Click Here To Go To Page 1

DataPoint Report

Continued from page 6

Snowmobiles, often called sleds, are motor vehicles that have a revolving tread in the rear and steerable runners in the front, for traveling over snow off-road, often at speeds exceeding 100 mph. They are used for recreation and industrial purposes.

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: Collectively, up to 75% worldwide.

Market Share: With combined plant totals of 56%, Bombardier Recreational Products (BRP) leads in the production of Snowmobiles. In second position is US-based Polaris with 17.5%; third is US-based Arctic Cat with 15%.

Trends. In 2023, production of Snowmobiles globally (excluding Russia) remained flat with a slight drop of 1/4%. Production is expected to decrease 6% in 2024 compared to 2023. Even though demand for snowmobiles is skyrocketing, production is declining because of the lack of snowfall in many key riding areas worldwide, especially during the months from January – March. Another important factor is Yamaha dropping out of the snowmobile market for MY 2025.

Despite weather related issues, manufacturers introduced an array of new models designed to entice buyers. Even though there are economic uncertainties and fuel prices are unstable, when it snows powersports enthusiasts still want to play. Expect production of snowmobiles to increase an additional 10% by 2025.

Battery Electric Units produced by Taiga Motors:

2022: 151
2023: 258
2024: 299

In 2023, production of Battery Electric units increased nearly 71%. In 2024, production of battery powered units is expected to increase 16%. **PSR**

Brazil/South America Report

By Fabio Ferraresi, Director Business Development South America

JCB Invests To Double Its Size in Latin America

JCB has unveiled the largest investment in its history in Latin America. It will inject US$ 100 million into its Latin American operations with the goal of doubling its size in the region by 2030.

The majority of the resources, US$ 70 million, will be allocated to factory expansion. According to JCB, US$ 30 million will be invested in the modernization of the Sorocaba (SP) facility.

Click Here To Go To Page 1

South America Report

Continued from page 7

An additional US$ 10 million is earmarked for the development of new products and the localization of certain equipment. Another US$ 10 million will be directed towards the distributor network.

Fabio Ferraresi

The company says this investment is expected to generate 1,000 new jobs: 300 direct and 700 indirect. Currently, JCB employs 600 people in Latin America, most of whom are based in Sorocaba, which serves as the production hub for the entire region.

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

PSR Analysis: While the Construction equipment market has much room for growth, JCB has kept the pace on growing faster than the Market in Brazil and South America. The investments for capacity expansion and new products nationalization are in line with other important players, such as Deere for example, but with a significant upward bias. Our clients are able to see these forecasts in our databases with details. PSR

Ford To Manufacture Ranger Engines in Argentina

Ford has announced the production of 2.0 and 3.0 V6 engines for the new Ranger in Argentina. The engines will be manufactured at the General Pacheco plant, where Ford has been producing the pickup since 2023.

Initially, only the Lion 3.0 V6 engine will be produced in Argentina. In the second half of the year, the 2.0 engine will also begin production in Pacheco. Ford has not disclosed the localization rates for each engine. Previously, the Panther 2.0 engine (170 hp and 41.2 kgfm) was sourced from India, while the Lion 3.0 V6 engine (250 hp and 61.3 kgfm) was imported from England.

The production will start with the 2.0-liter Panther engine. The Ford plant employs 3,500 direct employees and has an annual production capacity of 110,000 units. The factory operates under the Industry 4.0 concept, integrating various production stages and areas.

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

PSR Analysis: Ford reaffirms its long term strategy on local production of pickups in Argentina for the South American Market. While the Truck and Light Vehicles plant shutdown in Brazil created a credibility issue with the brand in the biggest market in South America, the pickup market kept growing, dominated by Toyota, GM and Volkswagen, with many newcomers in the region, such as Stellantis Group. **PSR**

Click Here To Go To Page 1

Far East: Japan Report

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

Unmanned tractors also have been introduced by Kubota and Yanmar; Yanmar's 113-horsepower model previously was the largest model among Japanese manufacturers.

Akihiro Komuro

Iseki Develops One of the Largest Unmanned Tractors in Japan

Iseki has announced the development of an unmanned tractor that operates without a pilot under the supervision of a human operator. With 123 horsepower, one of the largest in Japan, the tractor will support labor-saving agricultural work amid the trend toward large-scale farming. Priced from 21.9 million yen, the tractor will be marketed to large-scale farmers, mainly in Hokkaido.

The company's human-supervised robotic tractor, which previously had a maximum power of 98 hp, has had its power increased to 123 hp, thereby expanding the range of work and reducing the time required. It also reduces the time needed to train farmers who are unfamiliar with operating the tractor, allowing them to work more efficiently.

Source: The Nikkei

PSR Analysis: Unmanned tractors also have been introduced by Kubota and Yanmar; Yanmar's 113-horsepower model previously was the largest model among Japanese manufacturers. The 123-horsepower model developed by Iseki will be the largest model by a Japanese manufacturer and is expected to meet the demand for tractors in Hokkaido, where farmland is becoming more concentrated and the area under cultivation is increasing.

Smart agricultural machinery has already become a new competitive axis for manufacturers, and they are all working to develop new technologies. The biggest challenge in making agricultural machinery more intelligent is the extent to which it can contribute to labor savings to help make up for the year-to-year decline in the number of farmers. **PSR**

Click Here To Go To Page 1

Far East Report

Continued from page 9

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、国内最大級の無人運転トラクター　有人監視型

井関農機は人の監視のもと操縦者なしで作業する無人運転トラクターを開発したと発表した。国内最大級となる123馬力を実現し、農業の大規模化が進むなか農作業の省力化を支援する。価格は2190万円からで、北海道を中心にした大規模生産者向けに販売する。

同社の有人監視型のロボットトラクターはこれまで98馬力が最大だった。123馬力まで馬力を向上させることで、作業幅が広がったほか、作業時間も短縮した。操縦に慣れていない農家の訓練にかかる時間も短くなり、効率的な作業ができるようになるという。

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: 無人運転トラクターはすでにクボタやヤンマーからも発売されているが、日本メーカーではヤンマーの113馬力が今までの最大のモデルであった。今回イセキが開発した123馬力は国内メーカーの最大出力モデルとなり、農地集約が進んで耕作地が大きくなっている、特に北海道での需要に応えるモデルになるだろう。GPSや無線基地局などを利用する位置情報の取得と補正機能も精度が向上しているとされている。

農機のスマート化はすでにメーカー各社にとって新たな競争の軸になっており、各社とも新しい技術開発にとても熱心に取り組んでいる。年々不足する就農人口をカバーするという意味で、省人化にどれだけ貢献できるかというのが農機のスマート化における最大の課題である。**PSR**

Southeast Asia: Thailand Report

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

Suzuki Withdraws from Thai 4-wheel Vehicle Production

Suzuki says it will withdraw from four-wheel vehicle production in Thailand. Production at the local subsidiary will cease by the end of 2025, and vehicles made at the main plant in India will be exported to Thailand for sale. Thailand has long been a stronghold of Japanese automakers, but Chinese automakers have gone on the offensive with low-cost EVs, and with Subaru's decision to pull out, the plight of Japanese automakers is becoming more apparent.

Click Here To Go To Page 1

Southeast Asia Report

Continued from page 10

Suzuki Motor Thailand (SMT), a local subsidiary, will cease production by the end of 2025, and SMT will focus on sales and customer service in Thailand. Thai Suzuki Motor, which produces motorcycles and outboard engines, will continue operations.

Suzuki began local production of four-wheel vehicles in Thailand in 2012. It invested about 20 billion yen to build the plant. The company produced three models, mainly the Swift compact car, and exported them to Japan and to the Association of Southeast Asian Nations (ASEAN). However, Suzuki was a latecomer to Thailand compared to other Japanese automakers and struggled with local sales. Suzuki has not been able to launch EVs globally, and it appears that the company has determined that it will be difficult to regain market share in Thailand, where the shift to EVs is proceeding rapidly. The company will concentrate its management resources in India, which accounts for nearly 60% of its global sales, to increase its market share.

Source: The Nikkei

PSR Analysis: I have said many times in the past that electrification in Southeast Asia could be a headwind for Japanese manufacturers with large market shares, and this has proven to be the case. Subaru has also admitted that it will close its CKD plant in Thailand. China is expanding into Southeast Asia at a very fast pace, and its speed of action, including development, is extremely fast. The cost competitiveness of Chinese products is so great that Japanese manufacturers are facing a very difficult time in terms of pricing.

However, just as the EV trend in Europe and the U.S. is being reconsidered, if a similar trend emerges in Southeast Asia in the future, there is still a possibility that Japanese manufacturers, who have lagged in EV development and sales, may be able to make a comeback. The market is very fluid, and it is becoming increasingly difficult to forecast when and how things will change. **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

スズキ、タイ四輪生産から撤退　中国EV攻勢で苦戦

スズキはタイでの四輪生産から撤退すると発表した。現地子会社での生産を2025年末までに終了し、インドの主力工場で製造した車をタイに輸出して販売する。タイは日本車の牙城とされてきたが、中国勢が低価格のEVで攻勢をかけている。SUBARUが撤退を決めるなど、日本勢の苦境が鮮明になりつつある。

現地子会社のスズキ・モーター・タイランド（SMT）の生産を2025年末までに停止し、SMTはタイでの販売やアフターサービスに注力する。二輪車と船外機を生産するタイスズキモーターは操業を継続する。

スズキはタイでの四輪の現地生産を2012年に始めた。約200億円を投じて工場を建設した。小型車「スイフト」を中心に3車種を生産し、国内だけでなく、東南アジ

Click Here To Go To Page 1

Southeast Asia Report

Continued from page 11

Driven by multiple factors such as government support, market demand, and battery technology upgrades, the battery swap solution is attracting much attention from the market.

ア諸国連合（ASEAN）向けに輸出もしていた。だが、タイへの進出が他の日本車メーカーに比べて後発だったこともあり、現地販売に苦戦していた。スズキはEVを世界で投入できておらず、EV化が進むタイでのシェア回復は困難と判断したもようだ。世界販売の6割近くを占めるインドに経営資源を集中して、シェアの拡大を図る。

出典: 日経（一部筆者により元記事内容を改編しました）

PSR 分析: 東南アジアにおける電動化は、大きなシェアを持つ日本メーカーにとって逆風となる可能性があると過去に何度も指摘してきたが、それが顕在化してきた。スバルもタイのCKD工場を閉鎖すると認めている。中国が非常に早い速度で東南アジアに進出しており、開発も含めたそのアクションスピードは極めて迅速だ。中国の製品のコスト競争力は非常に大きく、日本メーカーは価格面でも非常に厳しい。

だが、欧米でのBEVの見直しが現在されているように、今後東南アジアでも同じような動きが出てきた場合、これまでEVの開発や販売で後れを取っていた日本勢が今後は盛り返す可能性はまだある。市場は非常に流動的であり、今後いつどのように変化するのかしないのか、予測の難易度は向上している。**PSR**

China Report

By Jack Hao, Senior Research Manager - China

Battery Swap Alliance Seen as EV Recharging Solution

Jack Hao

Driven by multiple factors such as government support, market demand, and battery technology upgrades, the battery swap solution is attracting much attention from the market.

NIO Energy has obtained a strategic investment of 1.5 billion yuan from Wuhan Guangchuang Xingxin Technology Phase I Venture Capital Fund Partnership and other institutions. Earlier, FAW Group signed a strategic cooperation framework agreement with NIO[it is the seventh car company to sign a battery swap cooperation agreement with NIO, following GAC Group, Changan Automobile, Geely Holding, Chery Automobile, Jianghuai Automobile Group, and Lotus. This covers almost half of the mainstream domestic car companies.

Competition in the battery swap track involves more than just NIO and several passenger car companies. Recently, power battery enterprises, commercial vehicle companies, and mobility platforms also have been aggressively entering this field. On May 16, 2024, CATL signed a framework agreement for a battery swap project cooperation with GAC Aion and Era Electric Service; in the commercial vehicle sector, Nanjing Golden Dragon, Sany Automobile, China National Heavy-Duty Truck, Dongfeng Liuzhou, and Hanma Technology have all started to plan the

Click Here To Go To Page 1

China Report

Continued from page 12

layout of battery swap heavy trucks. In addition, State Power Investment, GCL New Energy, and Sany Group are also positioning to layout heavy truck battery swap stations.

The support from multiple parties is due to the recognition of the huge market space and commercial value contained in the battery swap track, which has begun to attract the attention of the capital market. Open-Source Securities estimates that by 2025, the market size of China's battery swap industry chain is expected to reach 133.4 billion yuan; Orient Securities believes that by 2025, the proportion of domestic battery swap models is expected to reach 30%.

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

PSR Analysis: The battery swap model achieves "car-battery separation," where the electric vehicle easily can be separated from the battery. Users can quickly change the battery at a battery swap station, which greatly shortens the energy replenishment time and convenience. This model can alleviate range anxiety of electric vehicle users and also improve the efficiency and lifespan of the batteries.

The growth in the number of new energy vehicles has led to frequent reports of issues such as long charging lines, stranded electric vehicles, and uneven distribution of charging units. This increases consumer demand for more convenient and faster charging.

The advantages of battery swapping include high energy replenishment efficiency, small land occupation, low battery wear and tear, long driving range, and high safety. This reduces the pressure on power grid expansion, and lowers initial vehicle purchase costs. Disadvantages include high construction costs, long payback periods, difficulty in establishing standards, and challenges in making the business model profitable.

The battery swap model involves several key issues such as sharing of battery swap stations, management of battery banks, and interchangeability of batteries from different brands.

It is difficult for a single company to drive the construction of the industry ecosystem; a battery swap alliance with multiple car companies is needed to promote the construction of the battery swap system. Although the battery swap model has many advantages, it also faces many challenges. As a heavy asset and heavy investment energy replenishment model, the huge financial pressure alone can be a heavy burden for companies, such as the considerable construction and operation costs of the battery swap stations, and the inability to achieve profitability quickly. The battery swap model seems beneficial for competing for users, especially those with commercial characteristics like ride-hailing car users. However, the benefits it brings to users are limited, and there is a conflict with the car companies' recovery of the costs of the battery swap stations. **PSR**

Click Here To Go To Page 1

India Report

By Aditya Kondejkar, Research Analyst – South Asia Operations

Hybrid Vehicles Adapted as Strategic Alternative To EVs

Aditya Kondejkar

Hybrid vehicles are gaining traction in India as a practical alternative to fully electric vehicles (EVs), a trend driven by strategic manufacturer initiatives, evolving consumer preferences, and infrastructural and policy challenges.

Major automakers like Maruti Suzuki, Toyota, Nissan, Hyundai, and Kia are launching hybrid models to meet the increasing demand for fuel-efficient and environmentally friendly vehicles. Hybrids offer a balanced solution, providing the benefits of both internal combustion engines and electric powertrains without the range anxiety associated with EVs.

Despite higher taxes on hybrids compared to EVs, the slow development of EV infrastructure and long waiting periods for EVs make hybrids a more viable option for many consumers. The hybrid market is expected to continue its growth, supported by ongoing innovation and potential policy adjustments to reduce costs, positioning hybrids as a crucial component in India's journey towards sustainable transportation.

Source: *Fortune India* **Read The Article**

Strategic Moves by Manufacturers. Car manufacturers in India are focusing on hybrid vehicles to cater to the market's evolving needs. Maruti Suzuki, in collaboration with Toyota, plans to introduce hybrid models like the Maruti Innova HyCross and Toyota Urban Cruiser HyRyder. Nissan is set to launch hybrid versions of its X-Trail and Qashqai models. Hyundai and Kia are also entering the hybrid segment with plans to launch hybrid SUVs by 2026, marking a strategic pivot from their initial emphasis on EVs due to slower-than-expected adoption rates in India.

Consumer Preferences and Market Dynamics. Hybrids are becoming popular among Indian consumers because they offer better fuel efficiency and lower emissions without the range anxiety linked to fully electric vehicles. They provide a practical solution by blending traditional internal combustion engines with electric drive capabilities, making them an attractive choice in a market where the EV charging infrastructure is still under development. The affordability and convenience of hybrids are key factors driving their increased adoption.

Market Performance and Projections. Hybrid vehicle sales in India have seen significant growth, with a 38% increase in fiscal Q1 2024, capturing a 2.1% market share. This growth surpasses that of EVs, which experienced a slight decline in the same period. Globally, hybrids are also witnessing faster sales growth compared to EVs. This trend is expected to continue, driven by new hybrid

Click Here To Go To Page 1

India Report

Continued from page 14

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model launches from major automakers like Hyundai, Kia, and Toyota, which currently leads the hybrid market in India.

Infrastructure and Policy Considerations. The slow development of the EV infrastructure and the high Goods and Services Tax (GST) on hybrid vehicles (43% compared to 5% for EVs) are significant barriers to the widespread adoption of fully electric vehicles in India. Reducing the GST on hybrids could make them more affordable and accelerate their adoption. This policy adjustment would support achieving carbon reduction goals by providing an immediate, practical solution rather than waiting for the EV infrastructure to fully develop. Investments in hybrid technology and components further support the transition to more sustainable transportation solutions.

Conclusion. The growing preference for hybrid vehicles in India is driven by strategic manufacturer initiatives, consumer demand for practical and cost-effective solutions, and the current limitations of EV infrastructure. With ongoing innovation and potential policy adjustments to reduce the cost burden on hybrids, this segment is poised to play a crucial role in India's journey towards electrified and sustainable transportation. The increasing acceptance of hybrid vehicles reflects a significant shift towards greener and more sustainable automotive technologies in the Indian market. **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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