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Argonne National Laboratory's cradle-to-grave analysis considers everything from raw material extraction to vehicle scrappage to provide a holistic view of the sustainability of different vehicle and fuel technologies.

Alternative Power Report

By *Guy Youngs*, Forecast & Adoption Lead

VW's US Innovation Hub Reveals 4 EV Breakthroughs



*Guy
Youngs*

VW's US Innovation Hub just announced four breakthroughs in electric mobility and sustainable transport. First, the team used artificial intelligence on University of Tennessee's high-performance computer cluster to develop a modular structure in the shape of tiny pyramids; the structure can be 3D-printed from liquid resins and can hold 30K times its own 0.15 lb weight (68g), so this frame would be up to 60% lighter than the steel frame.

Second, they have developed a method of using paper as a recyclable alternative to plastic parts and foils for EV interiors.

Third, researchers re-created the tail gate of a 2020 Volkswagen Atlas using sheet molding compound, a type of fiberglass-reinforced plastic. The new tailgate is 13 pounds lighter than the metal one, resulting in a weight savings of more than 35%. VW says that the tailgate doesn't need changes in assembly processes, so it can be produced in high volumes.

Finally, VW's team has patented a coil and charging pad design with silicon-carbide materials. The research team has been able to increase the charging power level up to 120 kW with this prototype from an earlier 6.6 kW prototype, and their goal is to reach 300 kW.

Source: *Electrek* [Read The Article](#)

PSR Analysis: So why is this all important? Apart from the unique savings in weight, the reduction of plastics use and the wireless charging, this is a very good example of how automakers are seeking to further improve their offerings within the electric vehicle world. Constant improvement and innovation (in things like regenerative braking and battery technology) shows a strong commitment to BEV and de-carbonization.

EVs Have Fewer Greenhouse Gas Emissions Than Gas Vehicles

Argonne National Laboratory's cradle-to-grave analysis considers everything from raw material extraction to vehicle scrappage to provide a holistic view of the sustainability of different vehicle and fuel technologies.

The analysis showed that EVs (which have no tailpipe emissions) also have fewer greenhouse gas emissions than conventional gasoline or hybrid electric vehicles when the entire life cycle is considered.

Argonne National Laboratory also provided emission estimates for technology anticipated to be available in 2030–2050.

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Alternative Power Report

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Source: *CleanTechnica* [Read The Article](#)

PSR Analysis: Surprisingly, in the press at the moment, there are a lot of news articles claiming that EVs are more polluting than ICE powered cars. This kind of ill-informed fake news is damaging to the whole de-carbonization efforts across the world, so it's encouraging to see yet another research article from such a solid organization as Argonne National Laboratory

Methane Is A Big Greenhouse Gas Problem

The world has a methane gas problem. Methane is over 80 times worse for forcing global heating over 20 years than its greenhouse gas sibling, carbon dioxide.

And yet we love to burn natural gas, which is mostly methane, to make electricity and heat. Our agricultural and food systems leave a lot of biomass lying around where a lot of it turns into methane and enters the atmosphere. Acceptable limits of leakage are suggested at 0.2%, however evidence suggests that actual leakage to be in the range of 1.5% to 3%

Directly related to this, hydrogen is a smaller and lighter molecule and will leak out of gaps that methane cannot pass through. The molecule really messes with steel in pipelines and joints, embrittling the steel and messing with electronics in ways that methane doesn't. And hydrogen, while not as directly bad as methane, is increasingly being put forward to be a heating source.

Putting hydrogen into pipelines isn't nearly the solution many pretend it to be.

Source: *CleanTechnica* [Read The Article](#)

PSR Analysis: This data suggest that we need to seriously tighten any and all legislation relating to methane leakage, and we need to do this before we rush headlong into hydrogen. If we fail to do this, we will undo all the good that hydrogen can offer.

Hurdles Must Be Overcome Before Hydrogen Engines Go Mainstream

Liebherr's managing director of its combustion engine business unit, Stefanie Gerhardt, has outlined four major hurdles to resolve before hydrogen can become mainstream.

Gerhardt asserted that hydrogen combustion engines can be used everywhere where electrically powered machines and hydrogen fuel cells reach their limit. And she suggested that they would be particularly useful in construction applications where economy, robustness, and high performance are required.

1) Combustion technology. While diesel burns in a stable and controlled manner, hydrogen combustion is more sensitive to mixture quality and local hotspots, and this can lead to abnormal combustion such as pre-ignition, knocking or backfires, all of which need to be avoided to ensure an engine's reliability.

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Alternative Power Report

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The general consensus is there will be a recession coming soon in the United States, and now it is just a matter of whether this will happen later in 2023 or the first of part of 2024.

2) Lubrication. Another technical challenge involved in developing hydrogen combustion engines comes with ensuring that they are lubricated correctly.

3) Availability of hydrogen fuel. Chief among the challenges is the availability of the fuel itself. “The hydrogen supply network is not yet developed enough so that every customer who wishes to operate a vehicle off highway and also on highway gets an easy access to it,” Gerhardt said.

4) Sustainability of hydrogen fuel. Meanwhile, hydrogen fuel will only count as a low-emission fuel if it is “clean” hydrogen. That means producing it using electricity generated from renewable sources.

Source: *International Construction* [Read The Article](#)

PSR Analysis: While the article is fairly high level it clearly identifies the main issues, some of which will take considerable time and investment to overcome, but it's useful as this comes from someone who is clearly invested in hydrogen. **PSR**

North America Report

Q2 2023 Economic Update Is Mostly Positive

By Jim Downey, Vice President-Global Data Products



*Jim
Downey*

SUMMARY. As we are halfway through 2023, there is more uncertainty with the economy than earlier in the year. The general consensus is there will be a recession coming soon in the United States, and now it is just a matter of whether this will happen later in 2023 or the first of part of 2024.

The latter may be more assumed recently. The stock market has not fallen, and the US economy has not entered a recession this year, 2023. Some of the factors that have prevented this are market investors being enthusiastic over AI (Artificial Intelligence) potential, the Federal Reserve's pause in interest rate increases, and the slowdown of inflation. So seemingly the pause button has been hit on recession scenarios.

We will wait to see but this has to be thought of as good news from just a few months ago. This will have varying effects on production volume growth rates when considering different market segments and product applications. Supply chains are still hindered with long lead times and material shortages.

North American total production (all segments) is estimated to be just under 2% in 2023 over 2022. This is down from last quarter's projection of 3%. The forecast for 2024 is fairly flat with market growth at 1.8%. So, the forecasted growth rates for 2023 and 2024 are low year-over-year compared to 2021 and especially 2022. A rebound of sorts is expected in 2025 of around 5% growth over 2024.

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Global Report

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AGRICULTURAL. Agricultural machinery production for 2022 finished at 5.6% from 2021. The forecast for 2023 is now estimated at a growth rate of only 1.8%, which is down from the Q1 2023 projection of 3%. The trend has 2024 slowing to less than 1% growth over 2023. PSR anticipates 2025 to rebound to growth of 3%. After a few flat years demand should pick up and crop yield ought to be better.

CONSTRUCTION. Power Systems Research is projecting that construction equipment production will have increased in North America by 7.3% in 2022 versus 2021. 2023 and 2024 are expected to slip with growth down to flat. -1.8% and -.6%, respectively. Construction equipment's undeveloped demand is a factor as well as higher costs, supply chain issues and some alternative drive transition. However, government expenditures for infrastructure expansions should help with new equipment demand. PSR expects growth again in 2025.

INDUSTRIAL. As stated before, the industrial segment's growth patterns are very similar to that of the construction segment. New machinery production increased 11% last year in 2022 over 2021. Industrial equipment production is expected to slow down in 2023 and 2024. With predominant backorders, this is predicted to continue to increase into the future. This year, the growth is projected at -.6% and 2024 will be nearly flat. Forklifts are one of the primary applications to boost this market segment. PSR is projecting a rebound with a growth rate of 5.7% in 2025 over 2024.

MEDIUM & HEAVY VEHICLES. Medium and heavy commercial vehicle production is expected to increase by 1.8% this year over 2022 primarily driven by on-going pent-up demand in the class 8 segment. However, a significant slowdown in ocean bound cargo freight along with a slowing of overall freight demand will negatively impact the industry later in the year and into 2024. Continued inflation and relatively higher interest rates will also pressure demand moving forward. As a result, PSR expects a downturn in class 8 truck demand next year as truck capacity re-balances from back-to-back years of high truck production.

POWER GENERATION. As stated last quarter, the power generation segment finished 2022 at 6% over 2021. Power generation production is expected to increase by 9% in 2023 over 2022. This is primarily due to strong demand from datacenters and infrastructure projects. The rise of electricity needs for the coming years will also grow demand. PSR is not projecting slow down until 2024.

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North America Report

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Continued Growth Seen for Powersports Market

By *Mike Aistrup*, Senior Analyst



*Michael
Aistrup*

The growing popularity of powersports is expected to provide many new opportunities leading to the rapid growth of the market. Some of the trends fueling this long-term growth potential are:

Growing/changing market for utility-terrain vehicles (UTVs).

- Technological advancements through improved durability and adaptability to UTV's, ensure greater enjoyment for UTV riders.
- Industry-leading companies will continue to focus on increased product range and rigorous R&D initiatives to strengthen their market standing.

Continued growth in the tourism industry, especially for powersports in Europe. In 2021, the number of nights spent at European Union (EU) tourist accommodation establishments totaled 1.8 billion, up by 27% compared with 2020, as per Eurostat statistics 2021.

The electric segment is expected to grow significantly following the rapid penetration of electrification technology across the automotive sector. According to PSR research, electric power sports market size is expected to see nearly 16% growth between 2023 and 2032.

- Major powersport OEM's will continue to focus on reducing their carbon footprint by introducing electric models and aiming for sustainable manufacturing processes.
- Electric vehicles are expected to acquire a significant market share over the long term because of growing environmental concerns and the negative effects of toxic emissions.

Manufacturers will continue creating power sports vehicles with safer parts and accessories that help ensure optimum user safety. R&D efforts are being made to lower ownership costs, which could present lucrative prospects for North America power sports market growth.

Established companies, alongside other emerging players, are contributing heavily to an increasingly competitive market outlook, through the implementation of various strategies such as collaborations and partnerships, as well as new product launches. Four major Japanese engine manufacturers have announced they will work together to develop hydrogen-powered engines for future two-wheelers and other transportation vehicles.

The use of UTVs and ATVs in military applications will foster industry development. These vehicles are used extensively for the movement of goods and personnel in the defense sector.

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North America Report

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89,700 units is the estimate by Power Systems Research of the number of Personal Watercraft (PWC) expected to be produced in North America in 2023

Demand among youth for off-road tourism and leisure activities, especially surfing, off-road biking, and snowmobiling.

- A rise in disposable income, clubs, and state organizations promoting powersports activities.
- Government policies supporting the development of recreational infrastructure.
- Private sector participation in the construction of dedicated infrastructure for recreational and amusement purposes.

Changing lifestyles, the adoption of recreational activities by young and middle-age populations, and the improving tourism infrastructure are the major trends driving the powersports market in emerging countries.

High emphasis on safety by providing training and accessories will lower the risks involved and encourage riders to go for powersport vehicles. **PSR**

DATAPOINT: North America Personal Watercraft 89,700

By *Carol Turner*, Senior Analyst, Global Operations

89,700 units is the estimate by Power Systems Research of the number of Personal Watercraft (PWC) expected to be produced in North America in 2023. 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.

Product information for this report 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: Yamaha leads in production of PWC in North America with a combined plant total of 48%. In second position is Bombardier with 40.5%; third, is Kawasaki with 10.5%.

Exports: Collectively, up to 30% worldwide.

Trends: In 2022, production of PWCs gained nearly 8.5% over 2021. Production

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DataPoint Report

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is expected to drop 4% from 2022-2023. The increase in 2022 was based on high demand for recreational items, including Personal Watercraft and jet drive boats.

Even though sales skyrocketed in 2022, 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 2025.

Battery Electric. Taiga Motors (Canada) produced electric PWC in 2021 (137 units). The company produced the same number in 2022, but electric production is expected to drop to about 125 units in 2023. **PSR**

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Europe Report

By *Christopher Bamforth*, Analyst – European Operations

New Machinery Requirements



*Christopher
Bamforth*


New Machinery requirements have been published for Europe and will replace the existing Machinery Directive Jan. 20, 2027. OEMs will have to be compliant with the new requirements on that day since there is no transition period.

With a heavy focus on safety, the environment and machine learning, the main takeaways are that these are EU regulations. This means that manufacturers will not have to wait for each member state's upgrade of the regulation into law. This may streamline the process although it could mean big changes for some member states that previously had fewer requirements.

And there's another important consideration. Since we have entered the digital age, all certifications and instructions can be in digital format. One exception is the non-professional machinery's safety measures which must be included in paper format.

As far as AI machinery and machine learning is concerned, this document is the precursor to the upcoming AI regulation. But the upcoming AI Regulation, when published, will consider these systems as high-risk Artificial Intelligence and impose additional requirements.

Source: *EUR-Lex* **Read The Article**

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Europe Report

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PSR Analysis: This is the first publish meaning that things will stay like they are, but they have already opened the door to many potential changes and modifications. The main focuses are strong, with a strong stance on AI and machine learning. We will have to wait until they publish the AI regulations, but we already have some inclination of what is to come. The next step is the development of the application guide of the Machinery requirements and the update of the harmonized standards. **PSR**

Brazil/South America Report

By Fabio Ferraresi, Director Business Development South America



*Fabio
Ferraresi*

PSR Sponsoring/Presenting at SAE Brazil Mobility Forum

Source: PSR / SAE Brazil [Read The Article](#)

For the fifth consecutive year, Power Systems Research (PSR) will participate in the 20th SAE mobility Forum in Curitiba-PR. This year's event will be held Sept. 12 and 13 at FIEP (Paraná State Industries Federation) auditorium.

This Forum brings together the most important companies in the Medium Heavy Vehicles and Off Highway Vehicles in Brazil. Originally, the event was called “Diesel Forum,” but with the new technologies of propulsion in the key segments covered by the forum, it changed its name to “Mobility Forum” in 2020. PSR Senior executives in South America are frequent speakers at the event, and support high level discussions on future trends and current challenges.

Mexico Beats Argentina as Main Destination of Brazilian Vehicle Exports

Mexico became the main trading partner of the Brazilian automotive sector in July, beating Argentina in 2023 YTD results. Brazil exports volume to Mexico are favorable because of a 33% growth in the Mexican domestic market. Brazil expanded its exports to the country by 142%, according to Anfavea.

Even with the help of increasing exports to Mexico, Brazilian exports had a significant reduction to 30,300 units, 27.6% below the same period in 2022, which totaled 41,900 units.

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South America Report

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The Chilean market has shrunk by 30% this year, from 261,000 to 182,000 units compared to the first seven months of 2022.

The Chilean market has shrunk by 30% this year, from 261,000 to 182,000 units compared to the first seven months of 2022. Purchases of vehicles made in Brazil decreased 61% in the period, from 41,000 to 16,000 units.

In Colombia, the domestic market fell by 60%, from 263,000 to 104,000 units, from January to July compared to the same period last year, and the presence of Brazilian vehicles fell 42%, from 47,000 to 27,000 units.

Mexico, on the other hand, expanded its market by 24% this year, jumping from 602,000 to 743,000 vehicles, a move in which Brazil almost doubled its sales by going from 44,000 units, from January to July 2022, to 82,000 in the same period in 2023, an increase of 89%.

Because of the performance of trade with Mexico, aided by the reduction of taxes, it was also possible to export vehicles with higher added value, such as trucks and buses. In this way the values obtained with foreign trade increased, despite the reduction in volume.

Source: Autodata / ANFAVEA **Read The Article**

PSR Analysis: The results of 2019 free trade between Mexico and Brazil on vehicles and auto parts are now seen as a combination of factors, as the increase of Mexico market, Brazilian currency devaluation from 2019 to 2023 and the ability of Brazilian companies to export to Mexico.

The reduction of exports to Colombia and Chile and the increase of exports to Mexico have different mix of products and producers, that impacts the segment, OEM and model levels of PSR databases. Our quarterly updates already reflect the different mix of production forecast for 2023 onwards.

29% of Trucks Produced in 2023 Equipped with Euro 6 Engines

Data released by Anfavea about July Sales and Production show only 29% of the trucks sold in 2023, and produced during the year, met the PROCONVE P8 / Euro VI emissions regulation.

From January to July 2023, 53,900 trucks were produced, 36.2% below the 84,500 units produced in same period last year. This amount is also lower than that produced in the same period in 2021, when 89,500 trucks were produced on the Brazilian OEM assembly lines.

Truck production is still at a slow pace as the market continues to generate low demand for the new PROCONVE P8 technology.

In July, the 8,400 units sold, were 27.6% less than the 11,600 units sold during the same period last year. Compared to June, however, when registrations totaled 7,900 units, there was a growth of 6.2%.

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South America Report

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Year-to-date, the 60,900 trucks registered were 11.9% below the same period in 2022, which registered 69,200. The total also fell short of the first seven months of 2021, with 70,700 units, surpassing only the same period of 2020, which totaled 47,400 units.

Source: Autodata / ANFAVEA [Read The Article](#)

PSR Analysis: The sales results are within what had been projected by ANFAVEA and there is expectation of a recovery in demand in the second half of 2023 with a reduction in Interest rates, progress on the fleet renewal regulation and economic cycle improvement. The production numbers are in line with our production forecast, with consumption of high inventory built at the end of 2022 and lower production and sales in first half of 2023 because of instability with government change and higher Trucks. **PSR**

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Far East: Japan Report

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

Firms Develop Hydrogen-Powered Generator




*Akihiro
Komuro*

Komatsu, Hitachi, and Denyo announced the commercialization of a gen-set that uses a mixture of hydrogen and light oil as fuel. It is possible to mix up to 50% hydrogen, which does not emit CO2 when burned, and CO2 emissions can be reduced by 50%.

The first unit will be installed at Komatsu's Oyama Plant, with full operation scheduled for the end of September. Hitachi will serve as the point of contact for the system, which will be marketed to a wide range of external customers.

The system can mix up to 50% hydrogen with diesel engines that use diesel oil. The power output is 250 kW. Komatsu and Hitachi provided the fuel injection control technology and the function to safely stop the engine in case of abnormal combustion, respectively, and Denyo assembled them into the generator.

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Far East Report

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Hitachi and Denyo have been developing this technology since 2018, while the three companies, including Komatsu, have been working on it since 2021.

Source: The Nikkei

PSR Analysis: Hydrogen burns very quickly. It also has high-temperature properties, and its high temperature makes it difficult to co-fire with diesel oil due to higher NOx emissions compared to diesel.

This generator was exhibited at the Construction Machinery Exhibition held in Osaka in June, but at that time it was not allowed to be photographed or featured in articles because it had not yet been publicly announced.

In the field of generators, there are also demands for CO2 reduction and improved environmental resistance, but the biggest challenge is cost.

At present, both initial and operating costs are well below those of existing diesel generators. In the case of hydrogen, there are still no environmental arrangements for refueling, and trials are likely to continue for the foreseeable future.

Funding in this area is limited to companies that have the capital strength to withstand the large investment and the time it will take to recoup the investment, which is likely to be several decades. **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

コマツ、日立、デンヨーが共同で水素混焼発電機を製品化

コマツと日立製作所、デンヨーは8月8日、水素と軽油を混ぜて燃料に使う発電機を製品化したと発表した。燃焼時にCO2を出さない水素を最大50%混ぜることが可能で、CO2排出量も50%削減できる。コマツの小山工場に初号機を導入し、9月中の本格稼働を目指す。今後は日立を窓口、広く外販する。

軽油を使うディーゼルエンジンに水素を最大50%まで混ぜられる。出力は250キロワット。コマツが燃料噴射の制御技術、日立が異常燃焼時に安全に停止する機能などをそれぞれ提供し、デンヨーが発電機に組み上げた。日立とデンヨーは2018年から、コマツを加えた3社では2021年から開発を進めてきた。

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: 水素は燃焼速度が非常に速い。高温の特性もあり、温度も高い。NOxがディーゼルと比較してより多く出るという課題もあって、軽油との混焼が難しかった。この発電機は6月に大阪で開催された建機展で展示されていたが、その時はまだ公表前ということもあって撮影や記事での紹介が禁じられていた。

発電機分野でもCO2削減や耐環境性能の向上は要求されているが、最大の課題はコストだ。現時点ではイニシャルコストもランニングコストも既存のディ

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Far East Report

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Foxconn, Taiwan's leading electronics contract manufacturer, has received regulatory approval for its plan to invest \$246 million in two new projects in Quang Ninh Province in northern Vietnam.

ーゼル発電機と比較すると大きく見劣りする。水素の場合は充填する環境の整備もまだまだ不足しており、トライアルでの運用が当面は続くだろう。だが売れないからといって開発を全てストップするわけにはいかない。この分野の推進は、大規模な投資と、数十年に及ぶだろう投資を回収するまでの期間に耐えうるだけの資本力を持つ企業に限られる。そうした意味でこの発電機の開発に参画した3社にかかる期待は大きい。 **PSR**

Far East: Vietnam Report

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

Foxconn To Invest \$246 Million in Vietnam EV Parts Production

Foxconn, Taiwan's leading electronics contract manufacturer, has received regulatory approval for its plan to invest \$246 million in two new projects in Quang Ninh Province in northern Vietnam. The projects, to be carried out by a subsidiary of Foxconn Singapore, will focus on the manufacturing and assembly of telecommunications equipment and electric vehicle components.

This will bring Foxconn's total investment in Vietnam to approximately \$3 billion. Of the new investment, \$200 million will be invested in a factory to produce EV chargers and components, which is expected to begin production in January 2025 and employ an estimated 1,200 workers.

Source: REUTERS Japan

PSR Analysis: As multinationals diversify their supply chains away from China, they are choosing Vietnam for its cost and location advantages, as well as its open and safe investment environment.

This trend began in the early 2010s but has recently accelerated due to China's strict zero-corona policy, rising wages, and political conflicts with Western countries. As a result, Asian countries such as Thailand, Indonesia, Vietnam, and India are currently in fierce competition for FDI (Foreign Direct Investment).

Vietnam has an advantage over other countries in this competition because its operating costs are relatively low compared to other Asian countries and they are better than Myanmar and Cambodia.

Its location provides easy access to China and major maritime trade routes; it has a stable political situation among ASEAN countries and has signed many trade agreements.

In addition to Foxconn, Samsung, LG, Intel, and other companies have already established operations there, and the possibility of Vietnam becoming a

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South East Asia Report

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manufacturing hub in Southeast Asia is attracting attention.

One concern is the stable supply of electricity. A shortage of electricity due to a sharp increase in demand for power will affect local manufacturing plants. **PSR**

**This information was provided by our friend Mr. John Tran who lives in Vietnam. We thank him for his dedication and cooperation.*

東南アジア > ベトナムレポート:

小室 明大 – 極東及び東南アジア リサーチアナリスト

フォックスコン、ベトナムEV部品生産に2.46億ドル投資へ

台湾の電子製品受託生産大手フォックスコンはベトナム北部クアンニン省の2つの新規プロジェクトに2億4600万ドルを投資する計画について、当局から承認を得た。プロジェクトは子会社のフォックスコン・シンガポールによるもので、通信機器とEV部品の製造・組み立てが中心となる。フォックスコンによるベトナムへの総投資額は約30億ドルに拡大する。新規投資額のうち、EV充電器と部品を生産する工場に2億ドルを投じる。2025年1月から生産開始予定で、従業員は1200人の見込み。

出典: ロイター・ジャパン (一部筆者により元記事内容を改編しました)

PSR 分析: 多国籍企業が中国からサプライチェーンを分散させる中、コスト、立地、オープンで安全な投資環境といった利点からベトナムが選ばれている。2010年代初頭からこのトレンドは始まっていたが、中国の厳しいゼロコロナ政策、賃金の上昇、欧米諸国との政治的対立などの理由から、最近さらに加速しています。その結果、現在タイ、インドネシア、ベトナム、インドなどのアジア諸国は、激しいFDI獲得競争を繰り広げている。この競争において他国に対してベトナムには優位性がある。ベトナムの操業コストは他のアジア諸国に比べて相対的に低く、ミャンマーやカンボジアよりも優れていること。その立地から中国と主要な海上貿易ルートへのアクセスが容易であること。ASEAN諸国の中でも政情が安定しており、貿易協定の締結数が多いことが挙げられる。上記のフォックスコン以外にも、サムスンやLG、インテルなどもすでに現地に進出しており、今後ベトナムが東南アジアにおける製造業の中心地になる可能性が注目されている。懸念点としては安定的な電力供給だろう。世界的な気温上昇はベトナムにおいても同様であり、電力需要の急増に伴う電力不足は現地の製造工場への影響がある。 **PSR**

※この情報はベトナム在住の我々の友人 John Tranから寄せられました。彼の献身的な協力に感謝します。

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China Report

By *Jack Hao*, Senior Research Manager - China

XCMG Group, Toyota Sign Strategic Cooperation Agreement



*Jack
Hao*

XCMG Group and Toyota have signed a strategic cooperation agreement in the field of hydrogen energy. The companies will build a complete hydrogen energy machine and core component industry base centered around Xuzhou, which will drive development of the hydrogen energy industry in Xuzhou.

XCMG Group expects this contract to aid both parties to collaborate and innovate in cutting-edge technology research and development applications such as hydrogen vehicles, fuel cells, and core components.

Using hydrogen energy to change the future is the goal of Toyota and XCMG. The foundation for the development of Xuzhou's green and low-carbon energy industry is solid.

Source: *D1CM* [Read The Article](#)

PSR Analysis. XCMG Group and Toyota have strong complementary prospects, and huge potential for cooperation and development. Working together, they will accelerate the progress of off-road machinery from traditional fuels to electrification and finally to fuel cells.

Toyota has always been a major supporter of hydrogen fuel cell vehicles as an alternative to electric vehicles. Toyota will focus on selling hydrogen powered trucks and cars in Europe and China. In 2022, Toyota sold over 3,900 fuel cell vehicles, while its global sales are about 9.5 million units.

Toyota hopes to sell 200,000 hydrogen powered vehicles by 2030. The products of XCMG Group include five pillar industries: Construction Machinery, Lifting Machinery, Piling Machinery, Concrete Machinery, and Road Machinery, as well as strategic new industries such as Mining Machinery, Aerial Work Platforms, Environmental Industry, Agricultural Machinery, Port Machinery, and Rescue Support Equipment. It has over 60 enterprises under its jurisdiction, including mainframe, trade services, and new business models. This cooperation could have a major impact on both parties. **PSR**

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Under Maruti's 3.0 Strategy, the company proposes to expand annual capacity by 2 million units within nine years, and it plans to feature 28 distinct models by 2031.

India Report

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

Maruti Suzuki Plans India Market Expansion



*Aditya
Kondejkar*

Under Maruti's 3.0 Strategy, the company proposes to expand annual capacity by 2 million units within nine years, and it plans to feature 28 distinct models by 2031. The automaker aims to reach an annual production volume of more than 4 million vehicles by 2031. Of this total, approximately 15% (about 600,000 units) will be electric vehicles (EVs), and about 1 million will be hybrid units.

This represents a substantial 75% surge from the current production capacity of 2.25 million units.

Foreseeing a threefold increase in export volume to 750,000 units by FY31, Maruti intends to allocate 3.2 million units for the domestic market. The company envisions hybrids and EVs comprising approximately 40% of this portion, translating to over 1.2 million units.

Source: *Autocar India* [Read The Article](#)

Greenfield Expansion: The company is on track at its Kharkhoda site in Haryana. The first plant with a capacity of 2.5 lakh units will start making cars by the first half of 2025. After that, they're planning to add a similar plant each year to reach a total capacity of one million units. They're also looking for another place to add one million more units by the fiscal year 2030-31. This step-by-step approach shows how the company is carefully planning to grow and adapt to the changing needs of the market.

Maruti Suzuki India has strategically established its foothold in pivotal electrification and export-oriented initiatives in Gujarat with plans to acquire Suzuki Motor Corp.'s plant in Gujarat. This strategic course entailed acquiring shares from its parent entity, Suzuki of Japan. The imminent surge in investments within Gujarat can be traced to the operation's dedicated emphasis on emerging technologies, namely electrification and biogas.

The ongoing collaboration with Amul for the biogas project, although in its infancy, underscores the company's commitment to pioneering endeavors. This deliberate strategy is poised to enhance the region's business landscape by fostering innovation and economic advancement. **PSR**

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India Report

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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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