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North America Report

By *Jim Downey*, Vice President-Global Data Products

North America Economy Faces Multiple Problems



*Jim
Downey*

SUMMARY. The United States economy is facing several serious problems that don't have simple solutions and are not likely to be solved for several years, reaching out to the presidential elections in 2024.

Take your pick of problems: Inflation. Stock Market. Climate Changes. Interest Rates. Housing Prices. Gasoline Prices. Food Prices. Social Unrest. Political Conflicts. Worker shortages. Supply Chain Shortages. Russia-Ukraine Conflict.

The bottom line here is that consumers, investors, businesses, and governments are uncertain about what the future holds for the next several years, and this uncertainty makes it difficult to build multiple-year action plans, whether it's for purchases, manufacturing, marketing, or investing.

Uncertainty makes people nervous, and UNCERTAINTY is the name of the game in the U.S. for the foreseeable future.

However, we're still optimistic about the U.S. economy and we see 2022 production growing by 11.6% but that activity is likely to fall to 2.7% next year and drop again to 1.5% in 2024.

Inflation. This is a huge problem globally and in the U.S., and the Federal Reserve Bank (Fed) is taking very aggressive steps to control inflation even at the risk of creating a bumpy landing that could result in a recession.

The annual inflation rate in the US accelerated to 9.1% in June of 2022, the highest since November of 1981, from 8.6% in May and above market forecasts of 8.8%. Energy prices rose 41.6%, the most since April 1980, boosted by gasoline (59.9%, the largest increase since March 1980), fuel oil (98.5%), electricity (13.7%, the largest increase since April 2006), and natural gas (38.4%, the largest increase since October 2005).

Food costs surged 10.4%, the most since February 1981, with food at home jumping 12.2%, the most since April 1979. Core CPI which excludes food and energy increased 5.9%, slightly below 6% in May, but above forecasts of 5.7%.

This affects consumer's check books, spending plans of businesses and decisions of governments and politicians.

Unfortunately, the causes are not easily remedied in the short-term.

Interest Rates. The Fed increased interest rates three-quarters of a percent in June aimed at bringing inflation back down to its target rate of about 2%. This will

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North America Report

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PSR is estimating that construction equipment production will increase in North America by 8.2% in 2022 versus 2021.

reduce demand and spending by increasing the cost of goods and services from gasoline to food and housing.

Russia-Ukraine. The war in Ukraine has impacted economies and companies worldwide. The conflict has reduced markets for companies wishing to sell components and finished goods into these markets or to buy grain and foodstuffs as well as oil and fertilizer and components and manufactured goods from Ukraine or Russia.

Countries from Japan to Brazil and the U.S. have been affected, either as an exporter or importer or, sometimes, both. No one knows how long this four-month conflict will continue and how long the ramifications will ripple across the global economy.

AGRICULTURAL. This segment in North America is expected to increase 6.5% this year, but then it will slip in succeeding years, dropping to 3.9% growth in 2023, flattening out in 2024, and declining 6.4% in 2025. This is lower than our Q4 2021 estimate of 8.4% growth compared to 2021, but better than our forecast in March, when we revised our forecast downward to 5.8%. The war in Ukraine is showing no signs of a conclusion. Ukrainian exports of wheat, other grains and fertilizer are a potential concern.

CONSTRUCTION. PSR is estimating that construction equipment production will increase in North America by 8.2% in 2022 versus 2021. That is up from our estimate of 7.5% last quarter, but down from our estimate of 10.3% in the fourth quarter of 2021. Government expenditures should help from pandemic recovery and construction equipment demand for new equipment will remain this year.

INDUSTRIAL. This segment typically follows the general economy and the Construction Segment, with some minor exceptions such as forklifts. We forecast this segment to grow 8.4% in 2022 but slip to only 4.9% next year and flattening out in 2024. We had previously forecast this segment to be more robust, at 10.3% this year and 12.8% in 2023. We will see similar market drivers as seen with construction equipment.

PASSENGER CARS & MINIVANS/SUVs. Strong demand and lack of inventory at the dealer level is driving up retail prices and pushing production. In 2022, we see the MINIVAN/SUV segment growing 18.1% this year, before slipping to 3% in 2023. It will be virtually flat at 1.7% in 2024. Passenger Cars will be up 6.2% based upon demand and lack of inventory but will drop to 2.5% in 2023 before rebounding to 4% in 2024.

LIGHT COMMERCIAL VEHICLES. This segment will grow 4.4% this year from 2021 but then will drop to 1.7% in 2023 and 0.9% in 2024. These growth rates

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are lower than the 9% growth rate posted 2020 to 2021. Rising fuel costs, interest rates, inflation, and economic downturn threats are causing the forecast for LCVs to be static for the next years.

MEDIUM & HEAVY VEHICLES. Medium and heavy commercial vehicle production is expected to increase by 4.7% this year over 2021 as the OEMs continue to struggle with supply chain disruptions that are expected to continue through at least the end of the year. However, the threat of an economic slowdown is greatly increasing primarily due to significantly higher fuel prices, increasing interest rates and overall inflation. Even with an impending economic slowdown, freight should remain strong through at least the first quarter of 2023 as the fleets continue to reduce the supply chain backlog. We see this segment growing 7% next year, before falling 8.9% in 2024.

POWER GENERATION. Our outlook on this segment remains fairly consistent from recent quarters. For this year, we see growth of 10.9% (slightly better than the 10.0% we forecast in the first quarter) but we see a drop next year to 3.1% next year before flattening to no growth in 2024. Key drivers for this segment are data centers, healthcare, and infrastructure development, all of which are seeing demand softening.

RECREATIONAL PRODUCTS. Recreational Products follow similar patterns to other consumer products. The pandemic provided a solid growth burst for motorcycles, ATVs, and other power toys as consumers had time on their hands—working reduced hours from home—and had extra cash in their pockets. We have been aggressive with this segment in recent quarters, predicting 15% growth in 2022 in our Q4 2021 forecast and 12.3% in the Q1 2022 forecast. We have throttled that back a bit this quarter, and we are looking at growth of 11.5% this year before dropping to 6.0% next year and -0.7% in 2024. Slowing demand will level off in this segment as inflation and fuel costs will hamper production in 2023 and 2024. **PSR**

UTV & ATV Market Dynamics

By *Michael Aistrup*, Senior Analyst



*Michael
Aistrup*

MARKET OVERVIEW. The global UTV/ATV market size was US\$ 8.66 billion in 2021, with a compound annual growth rate (CAGR) of 6.13%. PSR forecasts the global market to grow to US\$ 11.67 billion by 2026

The North American UTV/ATV market was valued at US\$ 6.66 billion in 2021, and it is expected to reach US\$ 8.50 billion in 2026, registering a CAGR of about 5.00% during the forecast period (2022 – 2026).

APPLICATIONS. UTVs/ATVs were originally associated with sports and recreational activities. Application of these vehicles has diversified, and they are now being used in the agricultural sector and for patrolling, hunting, gardening, and other activities.

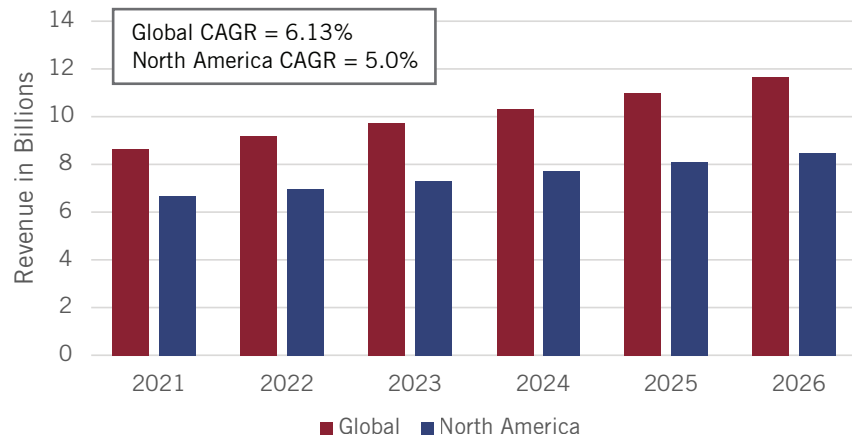
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The [United States] military has shown interest in acquiring UTVs/ATVs with features such as rapid transportation, the ability to carry nine fully armed soldiers, agility, and a minimum of 55 mph.

Global and North America ATV and UTV Revenue



A recent application is the United States Army. The military has shown interest in acquiring UTVs/ATVs with features such as rapid transportation, the ability to carry nine fully armed soldiers, agility, and a minimum of 55 mph.

DEMAND DRIVERS. There are many demand drivers; some of the more important ones are:

- With the gradual opening of economies, the demand is expected to return to normal.
- The robust design, versatile features, and side-by-side seating.
- The enhanced storage space to carry equipment and supplies.
- The growing trend of adventure sports and recreational activities, especially the youth.
- Government authorities increasing the budgetary allocations to build new off-road trails.
- Increase in the demand for UTV/ATV in military activities.
- Additional safety measures to avoid injuries and death.
- The number of UTVs/ATVs available on the market is growing
- The increasing recreational expenditure and the increasing number of off-roading events.

Major players in the UTV/ATV markets are expanding current products to gain market share. They are also enhancing the current products with improvements such as quality air suspension and multi drive mode functions.

The global UTV/ATV market is also witnessing customization trends in vehicles, led by increasing consumer demand. Newly introduced advanced vehicle capabilities such as hydrostatic transmissions and disc brakes have also raised consumer interest.

INDUSTRY CHALLENGES. Key factors challenging the market include:

- High labor and infrastructure costs
- Increasing tariffs and import taxes affect overall vehicle costs
- Increased prices for gasoline and electric UTVs/ATVs

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North America Report

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- High maintenance costs of UTVs/ATVs
- Bans on UTV/ATV in wildlife areas to prevent terrain damage

Increased accidents of powerful machines often are caused by driver failure. UTVs/ATVs are very useful in activities such as hunting, nature exploration, hiking, and other outdoor recreation, but these vehicles are often very risky and dangerous. The number of ATVs and UTVs available on the market is growing. This raises the number of UTV/ATV related incidents.

REGIONAL MARKETS. North America is the home to manufacturers, like Polaris, BRP, and Arctic Cat. These three, along with Honda and Yamaha, represent 90% of the total sales. owing to the high demand in applications, such as military, agriculture, sports, entertainment, hunting, forestry, mining, and construction activities.

This category is extremely diverse, and SEMA market research has identified three distinct vehicle types:

- Sport models are more commonly found in the Western United States. Owners of those vehicles tend toward social pursuits, often riding with passengers and in groups.
- Multipurpose vehicles, which comprise the largest segment of UTV sales, with the highest volume residing in the South. Owners seek ultimate versatility with their vehicles and their modifications.
- Utility models, whose sales are strongest in the South and Midwest. Owners perceive and use their UTVs as workhorses, focusing on practicality and durability. They are the least likely to upgrade their vehicles and are the most solitary, frequently driving their UTVs alone.

Players are focusing on new product launches, geographic expansions, strategic partnerships, and mergers & acquisitions to improve their product offerings, enhance their market presence, and gain a competitive edge. These initiatives also assist in creating awareness regarding driver safety among end-users and assist the companies in expanding their product portfolio and brand value. **PSR**

DATAPOINT: *Global Personal Watercraft* 90,350

By Carol Turner, Senior Analyst, Global Operations

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A PWC is a small pleasure craft that uses an inboard jet drive as its primary source of propulsion and is designed to be operated by a person or persons sitting, standing, or kneeling on the PWC rather than inside the pleasure craft. PWC Sit-Downs 3 People is defined as a type of vessel which is specifically designed to haul multiple passengers sitting on the vessel; commonly referred to as jet skis.

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Datapoint

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In 2021, production of PWCs in gained nearly 3%. Production is expected to increase 5% in 2022, based on high demand for recreational items that includes Personal Watercraft.

90,350 units is the estimate by Power Systems Research of the number of Personal Watercraft to be produced in North America during 2022.

This 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 30% worldwide.

Market Share: With combined plant totals of 51%, Yamaha leads in production of Personal Watercraft in North America. In second position with 41% is BRP; third place is held by Kawasaki with 8%.

Trends: In 2021, production of PWCs gained nearly 3%. Production is expected to increase 5% in 2022, based on high demand for recreational items that includes Personal Watercraft. Even though sales have skyrocketed, PWC builders experienced supply chain disruptions during the pandemic that impacted deliveries for calendar year 2021.

According to the National Marine Manufacturers Association (NMMA), this trend is here to stay – the boating industry is booming with demand at an all-time high as Americans plan for a summer on the water. As the country returns to a new normal, people are reassessing how they spend their quality time with loved ones, and many are continuing to choose boating as the preferred choice in recreation.

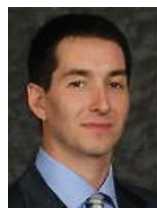
Sales of these recreational vehicles depend on disposable income and leisure time. Expect the production of Personal Watercraft to gain an additional 10% by 2025.

BRP plans to go electric by 2026. **PSR**

Read more about Sea-Doo electrics.

Europe Report

By Emiliano Marzoli, Manager – European Operations



*Emiliano
Marzoli*

Sustainability, Reliability Keys for Future eMobility Solutions

STUTTGART, Germany— One critical trend emerged during my conversations with many industry players during the Battery Show Europe and the Electric & Hybrid Vehicle Technology Expo Europe last month: battery thermal management.

The Battery Show Europe was held here June 27-30. Dalibor Sablic, PSR senior business development manager-Europe, attended the show with me.

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Europe Report

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An estimated 6,000 attendees walked the floor to review products and services with nearly 600 exhibitors at the show. There was a positive energy and outlook for the future eMobility industry, a refreshing atmosphere following many months of the COVID pandemic.

During the show, I had an opportunity to meet with representatives of Dow and learn about the products and services the company is developing. Dow presented a wide array of solutions geared to serve the electric mobility segment.

Luc Dusart, Marketing Manager Future Mobility EMEA at Dow and Esther Quintanilla Lujan, Global & EMEA Strategic mobility Leader at Dow discussed some of the latest industry trends and innovations.

With the development of more performing batteries and charging stations, heating and fire management have become critical issues. As part of its product portfolio, for example Dow has launched new solutions to better manage heat, and fire protection.

At the show, Dow also introduced its innovative best in class portfolio of VORATRON™ adhesives, gap filler, pottants, and battery enclosures solutions for EV batteries.

All these new products, in combination with other E solutions, are part of what Dow calls MobilityScience™. This is a platform that Dow created in 2020 to address the evolving needs of the industry through material science. According to Lujan, some of the critical focuses of this platform are developing safer products, more sustainable and with better performances.

Dusart also explained how this platform enables Dow to be very agile and at the forefront of development of new technologies and product for their customers. When discussing the segments that are showing the strongest push to electrification, for Esther and Luc was evident that passenger cars and e-bikes are ahead of the curve. But Trucks and particularly pick-up trucks will show very strong growth in the coming years. However, EV products remain expensive for the moment and not affordable for a vast part of the consumer market.

According to Luc this could change in the next five to seven years, when he expects purchasing prices for EV vehicles to be on par with combustion engines vehicles. That will be the tipping point that will radically change the market of light duty vehicles, with EV products becoming dominant.

This critical mass will result in millions of EV vehicles and batteries on the road, and eventually to scrap. That is why sustainability is becoming more and more central in the industry. Luc explained us that over the last 12 months, more OEMs are putting sustainability as a key requirement for collaborations. Providing performance products is not anymore enough.

OEMs require to have batteries that are designed with their full life cycle in mind including their recycling. MobilityScience™ offer another advantage in creating

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Europe Report

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products that have a close loop as one of the distinctive characteristics.

Amongst the most relevant collaborations of Dow, on display at the show there was the Jaguar Land Rover (JLR) formula E vehicle (picture below). This prototype race car is a showcase of the advance technologies that both JLR and Dow and other partners have developed for the EV industry.

If you are looking for more information on the Latest trends that are emerging in the electric vehicle technologies, subscribe to PSR PowerTALK and contact us. **PSR**

Brazil/South America Report

By Fabio Ferraresi, Director Business Development-South America

Mercedes Makes Fourth Production Shutdown in Brazil



*Fabio
Ferraresi*

Despite high demand, Mercedes announced its fourth temporary production stop at the plant in São Bernardo do Campo-SP, from July 4-15. In the announcement, Mercedes mentions the shortage of components and its effort to work with the supply chain to meet commitments with customers.

Source: *Automotive Business* [Read The Article](#)

PSR Analysis: The shortage of components, particularly semiconductors, is taking longer than expected and is affecting the MHV market more than expected. It may affect market projections if the supply chains do not recover 2H 2022.

Brazil Government Announces US\$ 65 Billion Agriculture Funding Plan

The Brazil government announced June 29 the new Safra Plan for 2022/2023 with a total of R\$ 340 Billion (US\$ 65 Bi) to fund business related to Agriculture, including Agricultural Machines and Trucks for product transportation. The amount is 36% higher than the previous year plan.

Source: *Automotive Business* [Read The Article](#)

PSR Analysis: While the volume of funds is higher, the interest rates are also higher. In addition, the prices of agricultural supplies are higher than in the previous cycle. Agricultural Machines should maintain its high production and sales trend while Trucks should grow due to pre-buy caused by Proconve P8 (Equivalent to Euro 6) by January 2023. **PSR**

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South America Report

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The heavy truck industry is a cyclical industry, and its development cycle fluctuates due to changes in environmental protection policies and the overall economy.

China Report

By *Jack Hao*, Senior Research Manager - China

Heavy Truck Sales Fall by More Than 60% in H1 2022



*Jack
Hao*

The heavy truck industry fell in the first half of 2022 by more than 63% from the previous year. According to the latest statistics from the China Automobile Association, for January to June this year, the overall sales volume of the domestic heavy truck market was about 380,000 units, a decrease of 63.6% compared with the same period last year.

In June, the sales volume of China's heavy truck industry was only 55,000 units, a year-over-year decrease of 65%. The main reasons for the decline in heavy truck sales this year are the upgrading of emission standard from "China V" to "China VI" last year, which caused a pre-buy in the market, and the impact of the epidemic this year, which depressed the logistics and transportation market, further curbing demand for new trucks.

The heavy truck industry is a cyclical industry, and its development cycle fluctuates due to changes in environmental protection policies and the overall economy. Following a 14 month decline in sales, the primary concern in the heavy truck industry is this: When will there be a turnaround?

In the first half of 2022, the automobile supply chains affected by the pandemic have been largely restored. At the same time, the imposition of the national purchase tax policy and the introduction of the heavy truck subsidy policies in many places, have created the foundation for the recovery of the heavy truck industry. This recovery is expected to accelerate in H2 2022.

Source: *Securities Daily* [Read The Article](#)

PSR Analysis: Affected by the pandemic and the international environment, China's economy is suffering an obvious downward trend; many types of investment and consumption have shrunk, enterprise efficiency has generally declined, social supply has significantly decreased, and the demand for heavy trucks in various industries has decreased.

The contradiction of "more vehicles, less goods and low freight rates" is more prominent, and the end users are unable to buy new vehicles. Many dealers are still overstocked with many China V trucks. Dealers sell at low prices through the second-hand truck market, impacting the new truck market of China VI heavy duty trucks which carry higher prices.

In the next few years, with the launch of China VII emission standards and the continuous impact of new energy heavy trucks, the traditional diesel heavy truck market will face further contraction. At the same time, with the decline of China's economic growth, investment and infrastructure will also decline. It is expected

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China Report

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that China's heavy trucks will maintain a volume of about 850,000 units per year in the next few years. **PSR**

Far East: Japan Report

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



*Akihiro
Komuro*

Venture Firm Raises 4.2 Billion Yen for Electrification Projects

PowerX, Inc. says it has raised 4.15 billion yen in funding for two electrification projects: one is to develop its own "Power ARK," a ship that carries electricity, and the other is to build a large-scale storage battery factory in Japan.

The idea behind the Power Transfer Vessel is to store electricity in container-shaped storage batteries and transmit it by ship, with an eye toward the expansion of offshore wind farms. Conventionally, power is transmitted from offshore wind farms to land via submarine cables, but the aim is to develop the Power Transfer Vessel that can replace submarine cables. This will make it easier to construct power plants offshore in windy distant seas. The construction of submarine cables that pass high-voltage electricity is environmentally hazardous, but the Power Transfer Vessels are cheaper than cables and will enable power transmission to be realized sooner.

Power Ark 100. The first vessel, the "Power ARK 100," will have a length of approximately 100 meters and will be equipped with 100 storage batteries in the form of shipping containers, enabling it to store 220 MWh of electricity. This is roughly equivalent to one day's worth of electricity for one city (22,000 households). In the event of a large-scale power outage or other disaster, the ship will serve as a contingency power source. Larger vessels are also planned, and a 220-meter-long vessel capable of carrying 3,000 containers would be able to transport 5,660 MWh of electricity.

The range of the ship is 100 to 300 km with Power ARK 100, but this is with electric propulsion only, and it is expected to be possible to sail 1,000 km by combining clean diesel and other fuels. The first vessel is scheduled for completion in 2025. PowerX's business mission is to take advantage of the explosive spread of renewable energy through the transportation of this electricity.

Battery Production. The construction of a storage battery factory, another pillar of the company's business, will be developed before the ship is constructed. The storage battery plant will require an investment of around 10 billion yen, and on May 23, the company announced that it had raised 4.15 billion yen through a third-party allocation of new shares as the first half of a Series A round of financing.

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Far East Report

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In addition to large container-type marine batteries (3,000KWh), the company will also manufacture grid storage batteries for building power transmission and distribution systems, and batteries for quick recharging of EVs

The construction site has already been decided in Tamano City, Okayama Prefecture. The plant will have a maximum production capacity of 5 GWh, making it one of the largest in Japan. Construction is set to begin in 2022 and test production will be done the following year. Prior to developing the ship, the company intends to get its operations off the ground by first manufacturing and selling storage batteries.

In addition to large container-type marine batteries (3,000KWh), the company will also manufacture grid storage batteries for building power transmission and distribution systems, and batteries for quick recharging of EVs (300-900KWh). The EV quick-charge batteries are about the size of a car and are envisioned to be recharging devices, allowing EVs to be recharged alongside them. The batteries are designed to be able to be quickly recharged at convenience stores, supermarkets, and other places where consumers visit during the 10 minutes, they are shopping, without the need for construction work.

All these storage batteries will be connected to a "mobile recharging network" that can be managed centrally on the cloud, including their operating status and remaining power levels. In other words, the storage batteries (i.e., EV rechargers) can be relocated to locations where demand exists. The storage battery factory will only assemble storage batteries but will not manufacture the cells that form the core of the batteries. The cells are supplied from an external source.

Source: *Norimono News*

PSR Analysis: PowerX was founded in March 2021. It is a company developing new businesses aimed at the development of renewable energy and the advancement of energy storage and transmission technologies. With the vision of "realizing the explosive spread of renewable energy," PowerX is pursuing two core businesses: the manufacture and sale of storage batteries (Project MAX) and the development and manufacture of the Power Transfer Vessels (Project ARK). Participating investors include the following companies.

Spiral Capital / NIPPON GAS / Imabari Shipbuilding / NYK / Mitsui & Co / Mitsubishi UFJ Bank / BEMAC / JAL Innovation Fund / Tokyo Century Corp / Mizuho Capital / Future Creation Capital (Mizuho Leasing CVC) And, outside directors include the co-founder of Northvolt, a former Google executive, and a partner at Goldman Sachs.

Their actions are very concrete, as if they are trying to dispel the negative voices saying that it is a pipe dream. They have already signed an LOI with DNV for the Power Transfer Vessel and are working with Imabari Shipbuilding for its construction. After construction, NYK will take the lead in vessel operation.

What makes their projects outstanding is that they are highly cost-conscious. For example, in the case of the Power Transfer Vessels, the construction and maintenance of submarine cable infrastructure for power transmission can be significantly reduced. In the case of quick-charge batteries for EVs, the

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Far East Report

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construction costs are eliminated in principle. Both measures are aimed at reducing the cost of energy infrastructure.

If this vessel were to be commercialized, there would be demand for it as a power-feeding vessel. If the goal is to achieve zero CO2 emissions during anchoring of large vessels, generators will not be available. If the Power Transfer Vessel can supply electricity in such a case, CO2 emissions during anchoring can be stopped.

The biggest challenge will be the development of batteries. Batteries themselves are very heavy, which is why the development of electric ships has not progressed as smoothly as that of automobiles. I will be keeping a close eye on whether they can develop a super high-capacity battery for a cruising distance of more than 100 km round trip.

Quite simply, their concept is amazing. It is one of the concepts that will propose an optimal solution that includes electric power infrastructure and EV charging and will have a significant impact on electric power companies, the shipbuilding industry, and the EV industry. Right now, they are still at the stage of news that one venture company has succeeded in raising a large amount of funds. Further investment is expected to ensure that this does not become a pipe dream. **PSR**

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「電気を運ぶ船」のベンチャーが42億円を調達

株式会社パワーエックスは2022年5月23日、41.5億円の資金調達を発表した。同社が掲げた事業は大きく2つあり、ひとつが、電気を運ぶ船「パワーアーク」の自社開発、もうひとつが、国内に大型の蓄電池工場を建設することだ。

電気を運ぶ船は、コンテナ型の蓄電池に電気を貯めて船で「送電」という発想で、洋上風力発電所の拡大をにらんだもの。従来、洋上の風力発電所から陸までは海底ケーブルで送電されていたが、海底ケーブルを代替する電気運搬船の開発を目指す。これにより風の強い遠洋の沖合に発電所を建設することが容易になる。高圧の電気を通す海底ケーブルの建設は環境面の負荷も大きい、電気運搬船はケーブルより送電コストも安く、早期に送電を実現することが可能だ。初号船に予定している「パワーアーク100」は船長約100m、船舶コンテナ型の蓄電池を100個搭載し、220MWhの蓄電が可能。これはおよそ1都市（2万2000世帯）の1日分の電気だ。災害時に大規模な停電などが発生した場合、船が有事の電源になるとのこと。より大型の船も計画しており、コンテナ3,000個を積める全長220m級の船であれば、5,660MWhの電気を運搬できる。船の航続距離はパワーアーク100で100～300kmだが、これは電気推進のみの場合で、クリーンディーゼルなどの燃料を組み合わせることで1,000km

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Far East Report

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の航行も可能になる見込みとのことだ。初号船は2025年完成予定。パワーエックスはこの電気の輸送により、自然エネルギーの爆発的普及を実現することを事業ミッションに掲げている。

それに先駆けて展開するのが、もうひとつの柱、蓄電池工場の建設だ。蓄電池工場は100億円前後の投資規模で、5月23日、シリーズAラウンドの前半として、第三者割当増資により41.5億円の資金調達を実施したことを発表した。すでに建設場所も岡山県玉野市に決定している。工場の生産能力は最大5GWhで、日本最大級となる。2022年に建設開始、翌年のテスト生産開始を目指す。船に先立ち、まずは蓄電池の製造販売で経営を軌道に乗せる構えだ。ここでは、船に積むコンテナ型の大型船舶用電池 (3,000KWh) のほか、送配電システムを構築するためのグリッド用蓄電池、EVの急速充電用電池 (300~900KWh) など、製造するという。特にEV急速充電用電池は自動車ほどの大きさで、それ自体が充電機器になり、傍らでEVを充電できることを想定している。電池を『持ってきて置くだけ』で工事も要らず、コンビニやスーパーなど、消費者が訪れる場所で、買い物をしている10分のあいだに急速充電ができる仕様を想定しているとのこと。これら蓄電池は全てクラウド上で稼働状況や残電量などを一括管理できる「移動できる充電ネットワーク」を構築する。つまり、需要がある場所へ蓄電池 (=EV充電器) を移設できるわけだ。なお、蓄電池工場は実際には蓄電池を組み立てるだけで、電池の核にあたるセルは製造しないとのこと。セルは外部から供給を受ける。

出典: 乗りものニュース (一部筆者により元記事内容を改編しました)

PSR 分析: パワーエックスは、2021年3月に設立された、自然エネルギーの普及および蓄電・送電技術の進化を目的とする新規事業を展開する企業だ。「自然エネルギーの爆発的普及の実現」というビジョンを掲げ、蓄電池の製造および販売 (Project MAX)、電気運搬船の開発および製造 (Project ARK) の2つの基幹事業を推進している。参加投資家には次のような企業が名を連ねている。

Spiral Capital / 日本瓦斯 / 今治造船 / 日本郵船 / 三井物産 / 三菱UFJ銀行 / BEMAC / JAL Innovation Fund / 東京センチュリー / みずほキャピタル / 未来創造キャピタル (みずほリース CVC) また、社外役員にはNorthvoltの共同創設者や、Googleの元幹部、ゴールドマンサックスのパートナーなどがいる。

夢物語だという否定的な声を一蹴するかのように彼らのアクションは極めて具体的だ。電気運搬船はすでにDNVとLOI締結をし、建造については今治造船と連携している。建造後の運航については日本郵船が主導することになるだろう。

彼らのプロジェクトが優れているのは、コスト意識が高い点にある。例えば電気運搬船においては、送電用海底ケーブルのインフラ構築と維持管理などの掛かる費用を大幅に低減できるという。EV用急速充電電池については、工事費用が原則不要になるという。どちらもエネルギーインフラにかかる費用を抑えることを狙ったものであることは明確だ。

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Far East Report

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Hyundai Motor Company unveiled in July its flagship EV model, the IONIQ 6, that has a driving range of 6.2 kilometers per kilowatt-hour, a 20% increase over the current 5 model.

もしこの船が実用化されれば、給電船としての需要もあるだろう。大型の船のアンカリング中のCO2排出ゼロを目指すなら、発電機が使用できなくなる。その際に電気運搬船が電気供給できれば停泊中のCO2排出をストップできる。

最大の課題はやはりバッテリーの開発になるだろう。バッテリー自体がとても重く、電動船の開発が自動車ほどスムーズに進まないのもこのためだ。往復100kmを超える航続距離を走るための超大容量のバッテリーの開発ができるかを注視していきたい。

端的に言っても彼らの構想はすごい。電力インフラや、EV充電を含めた最適解を提案するコンセプトのひとつであり、電力会社や造船業界、EV業界へのインパクトも大きなものになる

だろう。今はまだ、ベンチャー企業1社が多額の資金調達に成功したというニュースの段階だ。これを夢物語としないためにもさらなる投資が期待され **PSR**

Far East: South Korea Report

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

Hyundai Launches Flagship EV, the IONIQ6

Hyundai Motor Company unveiled in July its flagship EV model, the IONIQ 6, that has a driving range of 6.2 kilometers per kilowatt-hour, a 20% increase over the current 5 model. The cruising range was also increased by 22% to 524 kilometers or 326 miles, (based on Korean government certification standards). Hyundai Motor claims that its EVs have the world's highest level of electricity consumption efficiency.

The company called the IONIQ 6 "a 'mobile personal studio,' a space where you can rest and relax on your own. It offers a new experience that is different from existing EVs."

In Korea, pre-orders will begin in late July, with shipments starting in September. Pricing will start at 55 million won (approximately 5.8 million yen), and sales are expected to reach 12,000 units by the end of the year. It will be released in Europe by the end of the year and in the US in the first half of 2023. Sales in Japan have not yet been decided. The newly announced "6" has a lighter body, and the cruising range has been extended by improving the energy-saving performance of the drive components and semiconductors.

Source: Nikkei

PSR Analysis: The IONIQ series has already won very high acclaim as Hyundai's global flagship EV. The previous hatchback model, the IONIQ5, has won many awards in several countries. One reason for its popularity is its consumer convenience. For example, it comes standard with an adapter that allows the car

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Far East Report

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to draw 100 VAC power from the charging port, making it possible to cook food outdoors on a hot plate or in an electric pot without having to build a charcoal fire.

The newly released IONIQ6 is a 4-door coupe. 0 to 100km/h acceleration is possible in 5.1 seconds. The battery has a large storage capacity of 77.4 kWh, and a 350 kW quick charger can charge a battery with a 10% charge rate to 80% of the same level in 18 minutes.

Until now, EVs have been evaluated based on whether or not they can replace conventional engine-powered vehicles in terms of performance, but in the future, it may become important to propose new ways of using automobiles that were not possible with conventional engine-powered vehicles. The IONIQ6 announced this time is a model that strongly reflects such thinking of Hyundai Motor Company.

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

現代自動車、主力EV「IONIQ6」発表 航続距離524キロ

現代自動車は14日、EVの主力モデル「IONIQ 6」を発表した。1キロワット時あたりの走行可能距離は6.2キロメートルと、現行モデル「5」から2割伸長。航続可能距離も同22%増の524キロメートル（韓国政府認定基準）に引き上げた。現代自はEVの電気消費効率が世界最高水準としている。CEOはIONIQ 6について「『モバイルパーソナルスタジオ』という自分だけの安息空間がコンセプト。既存EVとは違った新たな経験を提供できる」と話した。

韓国内では7月下旬に事前予約を開始し、9月から出荷する。価格は5500万ウォン（約580万円）台からで、年内に1万2000台の販売を見込む。欧州では年内、米国では2023年上半期に発売する。日本での販売は未定という。今回発表した「6」では車体を軽量化し、駆動部品や半導体の省エネ性能を高めて航続距離を伸ばした。

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: IONIQシリーズは彼らのグローバルフラッグシップEVとしてすでに非常に高い評価を獲得している。ハッチバックの前モデル、IONIQ5は各国で多くの賞を受賞している。人気の理由はユーザー目線での開発だ。たとえば、V2Lとして充電口からAC100V電源を取り出すアダプターが標準装備されており、アウトドアで炭火を起こすことなく、ホットプレートや電気ポットを使って料理が作れたりもするなど、ユーザーにとっての新しい自動車の楽しみ方が評価されたわけだ。

今回リリースされたIONIQ6は4ドアクーペだ。ダッシュボードには、12インチのフルタッチインフォテインメントディスプレイを採用する。AWD仕様の場合、モーターは最大出力325hp、最大トルク61.7kgmを引き出す。0~100km/hの加速は5.1秒だ。バッテリーは蓄電容量が77.4kWhと大容量だ。350kWの急速充電

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VinFast, an automotive subsidiary of Vingroup, the largest conglomerate in Vietnam, announced that it ended orders for two types of gasoline-powered vehicles in early July.

器を使うと、充電率10%の電池を同80%まで18分で充電できるという。

従来のエンジン車を性能面で代替し得るEVかどうか、という見方がこれまでのEV評価の軸だったが、今後は今までのエンジン車ではできなかった新しい自動車の使い方をEVで提案することが重要になっていくのかもしれない。今回発表されたIONIQ6は現代自のそうした考え方を色濃く反映したモデルだ。 **PSR**

Southeast Asia: Vietnam Report

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

VinFast Ends Sales of Two Gasoline Vehicles

VinFast, an automotive subsidiary of Vingroup, the largest conglomerate in Vietnam, announced that it ended orders for two types of gasoline-powered vehicles in early July. The models covered are SUVs and sedans, and the company now will only sell the Fadil, a compact gasoline-powered vehicle. The company has announced its plan to withdraw from the production of gasoline-powered vehicles by the end of this year and is hastening its shift to EV production.

VinFast states that the reason for the suspension of orders for the two models is that "procurement of parts has become difficult and the number of units delivered to customers was not as large as expected." The company did not mention the timing of the suspension of orders for Fadil. The company began selling EVs in Vietnam in December 2021.

Currently, only small SUVs are available, but the company plans to add two large SUV models by the end of 2022. The company also began taking orders for EVs in the U.S. and European markets in January and is preparing to start operations of a new EV plant in the eastern U.S. state of North Carolina in 2024. VinFast announced that it sold 14,695 new vehicles in the January-June period. Of these, 2,141 were EVs.

Source: The Nikkei

PSR Analysis: Compared to EVs, gasoline-powered vehicles require more parts than EVs, and if even one of the thousands of parts is missing, the vehicle will not be completed. The switch to EVs is a rational decision at a time when parts procurement is becoming a problem worldwide. Of course, EVs also have parts shortage problems, but EVs can reduce parts procurement risks on a relative basis.

VinFast, a newly emerging manufacturer, has been steadily increasing its sales volume and is expanding its sales network to the U.S. and other countries. For the U.S. plant mentioned in the above article, the company revealed that the incentives it will receive from the North Carolina state government will be worth a

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Southeast Asia Report

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total of \$1.2 billion. The incentive package will include job development investment subsidies, infrastructure development at the proposed plant site, and human resource development costs. The state is actively promoting clean energy, and this will be the largest incentive offering ever. **PSR**

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

ビンファスト、ガソリン車2種受注終了 EVシフト着々

ベトナムの複合企業最大手ビンググループの自動車子会社、ビンファストは7月初旬にガソリン車2種の受注を終了したことを明らかにした。対象はSUVとセダンで、同社が販売するガソリン車は小型車のFadilのみになる。同社は年内にガソリン車の生産から撤退する方針を打ち出しており、EV生産へのシフトを急ぐ。

ビンファストは2車種の受注停止の理由について「部品の調達に困難になり、顧客に納入した台数が予想より多くなかったため」としている。ファディルの受注停止の時期には言及していない。同社は2021年12月にベトナム国内でEVの販売を始めた。現在は小型SUVのみだが、22年内に大型SUV2車種を加える予定だ。欧米市場でも1月からEVの受注を開始しており、米国東部のノースカロライナ州ではEVの新工場を2024年に稼働させる方針で準備を進めている。ビンファストが発表した1〜6月の自動車の新車販売台数は1万4695台。このうち、EVは2141台だった。

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: EVと比較して部品点数が多いガソリン車は、何千とある部品のうち、たったひとつでも不足すると完成しない。世界的に部品調達に問題が出ている今、EVへの切り替えは合理的な判断と言えるだろう。もちろん、EVにも部品不足の問題はあるが、相対的に見てEVの方が部品調達リスクを低減できることは明らかだ。

新興メーカーであるビンファストの販売台数は順調に伸長しており、米国などにも販売網の展開を行っている。上記記事にもある米国工場については、ノースカロライナ州政府から受け取るインセンティブが総額12億ドル相当になることを明らかにした。インセンティブパッケージには雇用開発投資補助金や、工場建設予定地のインフラ整備、人材育成費用などが含まれる。同州はクリーンエネルギーを積極的に推進しており、過去最大のインセンティブ提供になる。彼らの米国での存在感は増していく。 **PSR**

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India Report

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

CNG Vehicles Are Moving in Cruise Mode



*Aditya
Kondejkar*

Sales of CNG vehicles in India are set to scale a new peak, driven by robust double-digit expansion in 2023 demand, with lower total ownership costs decidedly tilting the scales in favor of gas-powered cars instead of those running on liquid automotive fuels.

“We are seeing excellent traction for CNG vehicles,” says Tarun Garg, Director – Sales, Services and Marketing, Hyundai Motor India. “CNG provides a very good option to customers in terms of reduced total cost of ownership. Not only is the price of

CNG fuel less than petrol/diesel, the fuel efficiency, too, is relatively better and emissions are lower.”

Currently, the country has more than 4,500 operational CNG stations, compared with fewer than 1,000 in 2014. To push adoption of CNG vehicles in the personal mobility space, in 2019, the petroleum and natural gas ministry announced plans to set up more than 10,000 CNG stations over the decade. It is anticipated that the country will save approximately Rs 2 lakh crore in oil imports if personal car users switched to CNG vehicles. **[Read The Article](#)**

PSR Analysis. From a customer's point of view, other than the environment-friendliness of CNG, a CNG-powered vehicle provides considerable savings compared to its petrol or diesel powered counterpart. Running and maintenance costs are also significantly lower compared to gasoline or diesel-powered vehicles, since CNG fuel gives better fuel economy.

A few challenges remain though. Refueling takes longer because there are fewer CNG stations, and highway driving requires additional planning to take a route with a CNG station. But vehicle buyers, who have more day-to-day usage are choosing the CNG fuel option.

However, to tackle this issue, the government plans to set up 3,500 CNG stations in two years.

“As compared to 2014, when there were about 900 CNG stations, currently the number of CNG stations now exceeds 4500, and will be ramped up to 8,000 in the next two years,” according to Hardeep Puri, Minister of Petroleum and Natural Gas & Housing and Urban Affairs

Considering the high promotion from OEMs, government's support and customer's increasing inclination towards CNG vehicles, we believe, for the next few years, CNG vehicles will drive the show of clean mobility in India. And once OEMs reduce battery pack costs, and expand vehicle range, the Indian automotive market will be propelled by a multiple drivetrain solution. **PSR**

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Russia Report

By *Maxim Sakov*, Market Consultant, Russia Operations

Editor's Note: Power Systems Research has paused all research and business development activities in Russia. We have maintained a presence in Russia since 2013 to bring important updates to our clients about the powered equipment markets within Russia. We are monitoring the current situation on a daily basis 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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