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PSR Database Update Report

By *Joe Zirnheld, President and CEO*

Enhancements Made in MHV Segment Data



Joe Zirnheld

As we move through the 2021 year, we at Power Systems Research are working to include enhancements within the data for our Medium and Heavy Vehicles segment that is available in **OE Link™**, **CV Link™** and **PartsLink™**.

We have added several new fields to increase the value of the data to users as they analyze and further segment the markets. These enhancements, now available as of March 31, 2021, include:

- **OEM Assembly Information for Knockdown (Kit) Production.** New fields including OEM Assembly Type (Kit vs. Full), OEM Assembly Plant and OEM Assembly Country which will help in the analysis of OEMs involved in knockdown production (i.e. Kit) where initial production of the engine and chassis are different from the final OEM Country.

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Database Update Report

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- **Truck Configuration and Engine Location.** OEM Configuration denotes the engine location, either Cab-Over-Engine (COE) or Conventional as well as OEM Engine Location as either Front or Rear.
- **OEM Platform.** The OEM Platform field for Medium and Heavy Vehicle ties together groupings of current generation vehicles and their future replacement(s) based upon the commonality of their components and systems. The addition of the OEM Platform field allows for a more streamlined analysis for individual models within a given platform.

GVWR and GCWR Ratings. Another item in progress is to provide the GVWR and GCWR ratings for the models within Medium and Heavy Vehicles segment which help users further analyze this important segment. We plan to have this available in our next quarterly update at the end of June 2021. **PSR**

DATAPOINT: NA Scooters

431,900

By *Carol Turner*, Senior Analyst, Global Operations

431,900 units is the estimate by Power Systems Research of the number of Scooters to be produced in North America (Mexico and the U.S.) in 2021.

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.

Market Share: Dominating the NA market for Scooter production is Mexico-based Italika with 89% of total units produced. In second position is Honda-Mexico with 11%; third is US-based Go-Ped with 178 units.

Trends: 2020 production of Scooters in NA increased 10.5% over 2019 production despite Covid-19 uncertainties. It is expected that production will gain an additional 4% from 2020 to 2021.

Honda reported record low production in 2020, when it posted the sharpest decline in its 72-year history, declining by more than 5 million sales globally or 24.4%. Italika rallied after a bleak start to boost total production for the segment. Italika was founded in 2005 as a new emerging motorcycles manufacturer headquartered in Toluca, Mexico.

Increased demand for efficient and eco-friendly vehicles--along with the threat of rising gas prices--will boost the electric scooter market. Not only are scooters convenient and offer independence, but they also make for faster commutes as opposed to using other modes of transportation; electric models are also extremely popular. Expect production of scooters to increase 15% by 2025. **PSR**

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The anticipation of the stimulus spending and increasing vaccination rates for Covid-19 are also driving optimism in the economy.

North America Report

Forecast: Component Shortages and Supply Chain Disruptions

By *Chris Fisher*, Senior Commercial Vehicle Analyst

Since the latter part of last year, North American heavy commercial truck orders have been extremely strong as freight rates remain very high. Both contract rates and spot rates are in record territory, primarily driven by consumer spending, a strong housing market and an improving manufacturing sector.



*Chris
Fisher*

The anticipation of the stimulus spending and increasing vaccination rates for Covid-19 are also driving optimism in the economy. However, rising inflation could derail the improving economy.

Supply chain issues, particularly with regard to semiconductors, will be the biggest obstacle for sustainable production this year. Relatively low production capacity and high demand in numerous applications outside of the automotive segment are primarily driving this disruption.

The semiconductor shortage was spurred by chip manufacturers who pivoted toward consumer electronics during the worst of the pandemic as truck and auto sales sharply declined. Vehicle orders rebounded quicker than expected, leaving a shortage within the automotive segment. It can take several weeks – if not months – for semiconductor manufacturers to switch between production of different types of chips.

According to a survey by the Technology & Maintenance Council of American Trucking (TMC), respondents claim the ongoing shortage of semiconductors along with scant availability of other parts and supplies are causing delays for trucking fleets. The survey found that 73% of respondents have experienced delays in taking delivery of new vehicles due to the semiconductor shortage. The shortage is affecting light, medium and heavy-duty vehicle classes.

The TMC report found that the shortages are extending beyond microchips. One respondent said a shortage of foam for reefer bodies is impacting deliveries of new units and repairs to existing equipment. Exhaust gas recirculation coolers are also reportedly in short supply.

While the pandemic brought the semiconductor issue to light, the increased demand for these components not only in the automotive segment but also other industries such as consumer electronics will continue to be a risk moving forward. Most of the OEMs believe the semiconductor shortage will impact all of Q2 2021 and likely extend into Q3 2021. However, it is uncertain what the total impact will be.

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North America Report

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The ports of Los Angeles and Long Beach continue to be a bottleneck to the supply chain. While backlogs at the ports are not uncommon, the result of the pandemic has significantly increased this problem. Not only are the ships delayed in reaching the ports, freight is being further delayed after being off-loaded onto trucks or railcars to exit the ports. The West Coast Ports account for one-third of U.S. imports and this problem is expected to last until late this year or even early 2022.

Supply chain disruptions are not uncommon when demand quickly goes from very low levels as seen during the first three quarters of 2020 to very high demand which started in the fourth quarter of last year.

The OEMs have implemented strategies to cope with the supply chain disruption. In March, Volvo implemented “stop days” across its global truck manufacturing operations. According to Volvo, their New River Valley plant in Virginia, is affected by the supply chain constraints facing the industry, including semiconductor shortages, as the truck demand is exceeding the supply. Mack believes there will be non-production days in the second quarter. Volvo production was also disrupted by a two week strike in April which affected shipments in the second quarter.

Daimler has implemented a process of revolving downtime for medium duty production in Mount Holley and Santiago Mexico due to the global shortage of semiconductors. The revolving downtime is used to maintain a reduced level of output, maintain employment levels and allow the company to move back to full-scale production immediately when needed.

Navistar and PACCAR are facing the same issues and are adjusting production schedules accordingly. The semiconductor shortage reduced PACCAR’s truck deliveries in the first quarter of 2021 by approximately 3,000 vehicles. However, these deliveries will likely rebound later this year.

Basically, the OEMs currently plan to maintain employee and capacity levels to be prepared for an uptick in production when the supply chain disruptions improve.

Gen-Set Sales Plateau as Supply Chain Catches Up in Q1 2021

By Joe Zirnhelt, President and CEO

Read the entire Q1 2021 PowerTracker™ report here.

SUMMARY: Our **PowerTracker™** dealer and distributor survey of 200 respondents reported that overall gen-set sales declined in Q1 2021 down 7.4% from Q4 2020 levels. This decrease follows three consecutive quarters in 2020 where dealers reported overall sales increases of 4.5% in Q2 2020 followed by 11.9% in Q3 2020 and 6.3% in Q4 2020.

Although sales were down 7.4% in the first quarter this year, the results were unique in that there was a different story depending on the fuel and power range being considered.

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North America Report
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Joe
Zirnhelt

The data comes from the proprietary **PowerTracker™** series of syndicated surveys conducted each quarter by Power Systems Research. A total of 300 interviews are completed each quarter with gen-set dealers and distributors and businesses across North America.

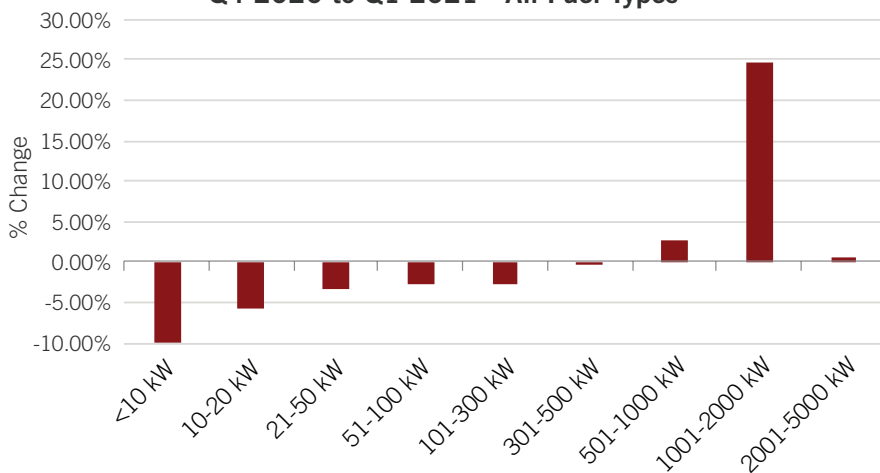
Within gaseous fueled gen-set ranges, the <10 kW range had a first quarter decrease of 9.6% while the 10-20 kW range experienced a decrease of 3.6%. Rounding out the <50 kW power range the 21-50 kW range for gaseous fuels was level with Q4 2020 levels. Keeping in mind that the 10-20 kW range and 21-50 kW ranges had experienced quarterly growth of greater than 10% in each Q3 2020 and Q4 2020 the slightly negative and flat growth in Q1 2021 still represents a strong sales level.

Other power ranges within gaseous fueled gen-sets from 50-500 kW experienced quarterly increases ranging from 1.9% to 2.6% in contrast to Q4 2020 where quarterly sales were down 3% on average. Finally, the 501-1000 kW range experienced 9.6% growth in Q1 2021 – rebounding from two consecutive quarters of flat to slightly negative growth.

Sales of diesel fueled gen-sets improved slightly from the sharp declines of Q4 2020 but were still in negative growth territory for Q1 2021. Quarterly change across diesel <300 kW ranged from -4% to -9% while the 300-1000 kW range was flat.

Finally, in the upper power ranges things were more positive with 1000-2000 kW reporting a 33% quarterly increase after four quarters of negative to slightly positive growth. The highest reported range of 2001-5000 kW reported an 8.3% increase after a similar scenario as the 1000-2000 kW range consisting of four previous quarters of negative to slightly positive growth.

Percent Change in Each kW Range from Q4 2020 to Q1 2021 - All Fuel Types



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In Q1 2021, dealers reported overall that inventories declined by 16.7% from Q4 2020 levels. The large quarterly decline in inventories for Q1 2021 follows a Q4 2020 where inventories fell 19.1%.

Looking by application, portables were down 11% from Q4 2020 levels reflecting a shortage and backlog of available units in the smaller gasoline units. Base Load was up 6.5% from Q4 2021 levels which aligns with the quarterly increases observed in the gaseous (i.e. natural gas) type of gen- sets >500 kW.

In Q1 2021, dealers reported overall that inventories declined by 16.7% from Q4 2020 levels. The large quarterly decline in inventories for Q1 2021 follows a Q4 2020 where inventories fell 19.1%. As demand remains at high levels (despite the negative Q1 2021 sales growth) for residential standby units an overwhelming number of dealers reported they cannot maintain supply to meet customer demands.

Year-on-Year, inventories were down 39% in Q1 2021, which reflects the inability dealers are facing to replenish inventory during this time of high demand and longer lead times. This is from a Year-on-Year change of -26% in Q3 2020 representing a total 12.9% shift in one quarter when considering Year-on-Year inventory levels in Q1 2021 relative to Q4 2020. Again, this seems to be due to dealers not being able to replenish needed inventories and not the case that dealers are hesitant towards placing orders for new inventory.

METHODOLOGY: Since 1998, Power Systems Research (PSR) has been continuously maintaining its **PowerTracker™** series of syndicated surveys, conducting at least 300 interviews each quarter among two key respondent groups in North America: gen-set dealers and distributors, and business consumers.

We conduct 200 interviews each quarter among dealers and distributors; the focus of this survey is on recent sales and market observations for the current quarter as well as expectations for the coming quarter.

Our Business Consumer survey consists of 100 interviews per quarter among a wide cross section of businesses to gather their input concerning ownership, usage trends and motivating factors for purchase, including any concerns about the reliability and availability of electric power.

Dealer/Distributor Outlook for Q2 2021

Expectations of quarter-to-quarter sales growth for Q2 2021 varied depending on the power range and fuel type. Sales for diesel fueled sets are expected to continue to improve in Q2 2021 with growth between 2-6% for power ranges above 20 kW.

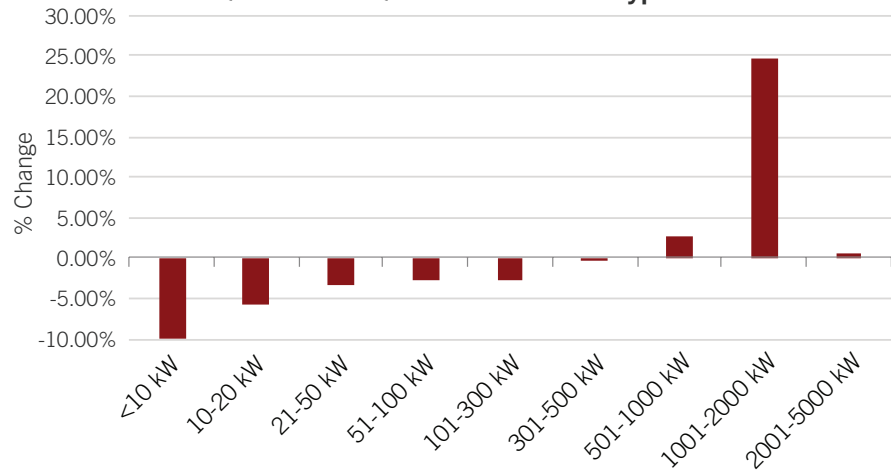
Diesel fueled units less than 20 kW will see greater increases with 23% for the <10 kW units and 15.5% for 10-20 kW range. This continues our belief from last quarter that dealers seem to feel that the declines in diesel may have bottomed out and we will start to see some growth coming out of COVID and now into the peak of construction season.

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Percent Change in Each kW Range from Q4 2020 to Q1 2021 - All Fuel Types



Sales expectations for gaseous fueled gen-sets are expected to see a quarterly increase of 9% in the power ranges <50 kW. We see this as a positive sign that dealers believe lead times will improve and product will become more readily available. The outlook for gaseous fueled units above 50 kW is positive – ranging from 2% to 6% for Q2 2021. **PSR**

Powersports Recreational Equipment Update

By *Michael Aistrup, Senior Analyst*



Michael Aistrup

EDITOR'S NOTE. Power Systems Research tracks the global trends powersports recreational equipment, especially the electrification of these units. This is one of a series of reports on these trends.

HARLEY-DAVIDSON LAUNCHES LIVEWIRE - Harley-Davidson has announced the launch of LiveWire as an all-electric motorcycle brand. With LiveWire, H-D hopes to redefine electric, delivering a better experience for the urban rider. The first LiveWire branded motorcycle is scheduled to launch on July 8, 2021, and to premiere at the International Motorcycle Show in Irvine, Calif., on July 9, 2021.

Harley-Davidson’s LiveWire strategy includes these key take-aways:

- **Unique lineage:** LiveWire draws on its DNA from the lineage of Harley-Davidson, capitalizing on a decade of experience in the EV sector.
- **Motorcycles + beyond:** with an initial focus on the urban market.
- **Virtual HQ:** LiveWire will be headquartered virtually, with initial hubs in Silicon Valley, CA (LiveWire Labs) and Milwaukee, WI.

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North America Report

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Polaris released first quarter 2021 results with reported sales of \$1,951 million, up 39% from reported sales of \$1,405 million for the first quarter of 2020.

- **Marketplace:** LiveWire will work with participating dealers from the Harley-Davidson network as an independent brand. A go-to-market model will blend digital and physical retail formats.
- **Dedicated showroom:** LiveWire will operate dedicated EV showrooms in select locations, starting in California.
- **Technology focus:** LiveWire plans to develop the technology of the future and to invest in the capabilities needed to lead the transformation of motorcycling. LiveWire expects to benefit from Harley-Davidson's engineering expertise, manufacturing footprint, supply chain infrastructure, and global logistics capabilities.
- **Technology sharing:** Harley-Davidson and LiveWire intend to cooperate and share their technological advancements to ensure an industry leading application in their respective core segments.

POLARIS FIRST QUARTER 2021 EARNINGS RESULTS - Polaris released first quarter 2021 results with reported sales of \$1,951 million, up 39% from reported sales of \$1,405 million for the first quarter of 2020. The company reported first quarter 2021 net income of \$134 million compared with a net loss of \$5 million for the 2020 first quarter.

Gross profit increased 64% to \$481 million for the first quarter of 2021 from \$293 million in the first quarter of 2020. Reported gross profit margin was 24.6% of sales for the first quarter of 2021.

Polaris Product Segment Highlights:

- **Off-Road Vehicles ("ORV") and Snowmobiles totaled** \$1,232 million for the first quarter of 2021, up 50% compared to \$824 million for the first quarter of 2020. PG&A sales for ORV and Snowmobiles combined increased 51% in the first quarter of 2021 compared to the first quarter last year.
- **Motorcycles totaled** \$166 million, up 31% compared to the first quarter of 2020, driven primarily from increased sales of Slingshot, Indian Motorcycles.
- **Global Adjacent Markets** segment sales, including PG&A, increased 27% to \$125 million in the 2021 first quarter compared to \$98 million in the 2020 first quarter driven by increases in demand in North America and EMEA.
- **Aftermarket** segment sales of \$230 million in the 2021 first quarter increased 14% compared to \$202 million in the 2020 first quarter. Transamerican Auto Parts (TAP) sales of \$193 million in the first quarter of 2021 increased nine percent compared to \$177 million in the first quarter of 2020.
- **Boat** segment sales increased 29% to \$199 million in the 2021 first quarter compared to \$155 million in the 2020 first quarter, driven by sales growth in all three brands, Bennington, Godfrey and Hurricane.

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North America Report

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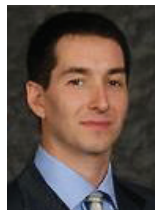
POWERSPORTS MARKET ANALYSIS. The powersports market observed a slowdown during the first two quarters of 2020 driven by the spread of the COVID-19. Shortages of labor and materials in the first quarter led to many industry challenges. Governments began lifting the lockdown restrictions to stabilize the economic activities in the third quarter of 2020. During this period, the powersports industry witnessed steady growth owing to the rising inclination of individuals toward participating in outdoor recreational activities while complying with social distancing norms.

Powersports market size exceeded \$34 billion in 2020 and is expected to grow at around 6% CAGR between 2021 and 2027. The global power sports unit sales are anticipated to reach over 3 million units by 2027. **PSR**

Europe Report

By *Emiliano Marzoli*, Manager European Operations

European EV Buses Under Market Pressure



*Emiliano
Marzoli*

After three years, Alstom is halting their EV bus production. By the end of 2021, the production lines will be stopped, and unless a buyer will take over, most of the operations will be shut down. Twenty employees will remain active to assure maintenance for the existing vehicles in operations with RATP. Just two years ago, Alstom was one of the winners of a contract to supply electric buses to the French operator. However, this was not enough to maintain profitability.

Read the Article

PSR Analysis: We believe that electric buses have a great future, particularly in Europe. According to our database **CV Link™**, alternative drive buses, including Hybrid, Fuel Cells and Battery Electric, will grow at a 22% CAGR between 2020 and 2030.

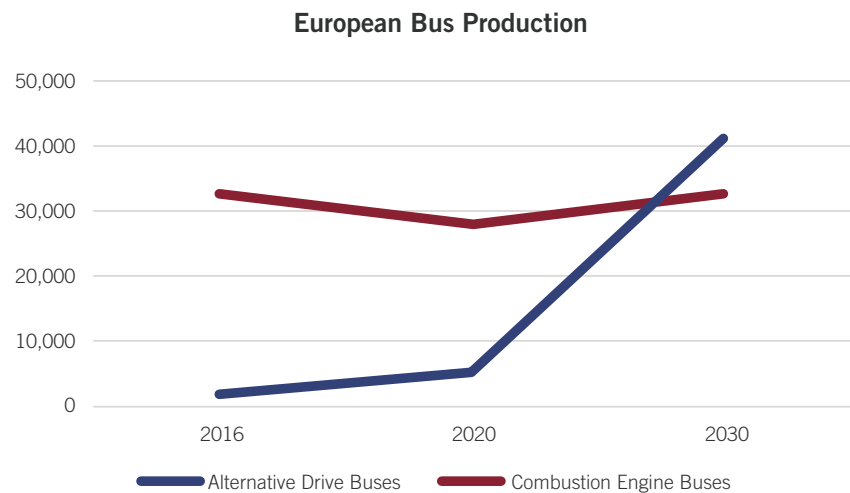
In the same time frame, buses powered by combustion engines will grow at a modest 2% CAGR. This will redesign the European market, with Alternative drive buses representing up to 55% of the units produced by 2030.

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Despite the positive outlook, pressure on European bus manufacturers is already very high.



Source: **PSR CV Link™**

Despite the positive outlook, pressure on European bus manufacturers is already very high. The competition is fierce, with the likes of Chinese manufacturer BYD with a strong footprint in the old continent and hundreds of buses produced every year in Europe.

Volvo is the leader in Hybrid buses and it's working on increasing its share in full electric products. VDL, Solaris and CNH Industrial are amongst the most recognised European manufacturers of electric buses.

With such strong players already operating in the market, it's critical to be able to meet operators and customer needs to prosper and survive. Currently, 20 companies are producing alternative drive busses in Europe (most probably 19 as of January 2022). We fear, that in the coming years, we won't have so many, with smaller companies unable to keep up with the big players investments and technology development.

Continental Wins First Order for CV High-Performance Computer

Frankfurt, Germany--For the first time, Continental has won an order to supply the commercial vehicle sector with telematics units that include high-performance computers. This means that the technology company now also offers a solution that can master the increasing requirements for connectivity, complexity and functional scope in trucks.

Continental will use its telematics know-how – already proven in the passenger car sector – to complete this order from Volkswagen. Last year, Continental was the first supplier to put a high-performance computer with software into serial production. The computer connects the electronics architecture, controls data streams, and enables over-the-air updates for VW's all-electronic ID series.

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Europe Report

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In its solution for trucks, Continental combines the telematics unit with a high-performance computer, enabling the mapping of a large number of additional functions and different applications. Particularly in the efficiency-driven transportation industry, this entails competition-relevant applications ranging from the digitalization of the logistics chain and remote diagnostics to secure over-the-air software updates.

Continental says its solution can manage the large data streams generated in the vehicle much better than conventional computers. As a result, it not only can create opportunities for even more innovative functions and services, but also can ensure a high degree of flexibility for the customer.

Founded in 1871, Continental offers safe, efficient, intelligent and affordable solutions for vehicles, machines, traffic and transportation. **PSR**

Brazil/South America Report

By *Fabio Ferraresi*, Director Business Development South America

Müller Launches Rigid Off-Highway Truck MDT430 in Brazil



*Fabio
Ferraresi*

The Brazilian group that acquired Randon Veículos, the division of Randon group that produced OH Trucks and Construction Equipment, at the end of 2020 launched the first model under the Müller brand. It has a 350 HP Turbo Intercooler produced by Scania and an Allison Automatic Transmission.

Source: *M&T* [Read The Article](#)

PSR Analysis: Whether lucky or visionary, Müller is well positioned to produce positive results in coming years. While mining activity in Brazil is growing with record commodities prices and public bids for new exploration areas are expanding, competitors are mostly imported and suffer from exchange rate effects.

VWCO Exports Grow 130% in First 4 months of 2021

VWCO reported exports of 2527 units from January to April 2021, versus 1084 units in the same period of 2020. Most of the growth came during April; the month was very negatively affected by the pandemic in 2020.

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

PSR Analysis: As with other OEMs, the export volumes of VWCO have been better than expected considering only Q1 2021 vs. Q1 2020, period without pandemic effect in 2020. During our forecast planning in Q4 2020, we expected a lower

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South America Report

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GM hopes to follow the success history of Stellantis in Brazil with a smaller, yet not compact pick-up.

recovery of exports because of a slower recovery from the pandemic effects in 2021. However, the currency depreciation in Brazil, and special variables in each market caused the positive effect.

GM Announces LCV To Be Produced in Brazil

This pickup truck will be produced at the São Caetano plant using the GEM platform, the leader in the compact car segment with Chevrolet Onyx. This vehicle will be smaller than the GM S-10, produced in São José dos Campos, Brazil, and bigger than the old Montana. It should compete with Fiat Toro, leader in sales and the Pick-up segment.

Source: *M&T* [Read The Article](#)

PSR Analysis: GM hopes to follow the success history of Stellantis in Brazil with a smaller, yet not compact pick-up. The successful history of GM with pickups in Brazil, since the 70's with the C-10, D-10, D-20 and more recently with the S-10, in addition to sales leadership and brand recognition puts GM in a good position to get market share from Stellantis. In addition, the use of the GEM platform is a competitive advantage. The volume forecast in our databases will be about 50,000 units per year for this model. **PSR**

Taiwan Report

By *Erik Martin*, Director – Asia Region



Erik Martin

Parched Taiwan Prays for Rain as Sun Moon Lake Hit by Drought

TAIWAN — Taiwan's Sun Moon Lake is so low that parts of it have dried and turned to grass. Jetties that normally float are sprawled awkwardly on dry land, and tour boats are crowded at the tail ends of pontoons still in the water.


Usually one of the island's most famous tourist destinations, the lake has recently become a star of a different kind. Following the worst drought in 56 years, it is now famous for all the wrong reasons. These days, Instagram influencers photograph themselves posing in a dust-colored, dinghy half-buried in a cracked and cratered lakebed...

But away from the quirky headlines, the situation is dire. Other reservoirs across central and southern Taiwan are effectively empty, down to 5% or less.

Taiwan has had drought before, but observers are hoping the severity of this one – which has lasted 18 months and threatens Taiwan's economic lifeblood of semiconductor production – is enough to prompt real action on climate change.

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Taiwan Report

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Taiwan relies heavily on seasonal typhoons to top up reservoirs, but in 2020 not one made landfall. And it could happen again.

Source: *The Guardian* – Helen Davidson in Taiwan [Read The Article](#)

PSR Analysis: PSR participated in April HDMA Pulse Webinar to examine global commercial vehicle markets (**PSR News: HDMA Pulse Webinar April 2021**). One area of focus was the impact that supply chain fragility is having throughout commercial vehicle markets in China, India and Japan. At the center of this discussion was the role played by natural and man-made disasters in curtailing the supply of semiconductors employed in the automotive industry.

Examples cited in the webinar included an unusual cold wave which impacted chip production at NXP, Infineon & Samsung semiconductor plants in Austin, Texas. In addition, a fire at the Renesas Electronics plant in Japan specifically targeted the domestic market as many Japanese OEMs had placed chip orders with Renesas. As our Research Analyst in Tokyo, Komuro Akihiro, pointed out, “Of the MHV models manufactured in Japan, there is not a single model that does not require semiconductors.”

Missing from my presentation was mention of the severe ramifications the current historic drought is having on Taiwan – both its people and its industries.

During my time living in Taiwan, typhoons were something you could count on. Some years brought many; some years brought few. No matter what, they always came. It is hard for me to imagine a year without a typhoon. Now, with reservoirs approaching all-time low levels, water rationing impacting farmers and consumers alike, and rolling power outages due to a heat wave and reduced hydroelectric power, the question is how to balance the needs of these diverse groups.

As Davidson points out in her article, Taiwan Semiconductor Manufacturing Company (TSMC) “...is a major user of water and power resources that makes a large percentage of the world’s semiconductors (used in electronics ranging from cars to phones) and contributes 4% of GDP. The drought has prompted international concern about supplies.” For farmers and citizens who lack the resources of corporations like TSMC, the Taiwan government is being called upon alleviate the burdens being faced.

Indications are that TSMC has developed a plan to conserve its water usage and is investing in greater water recycling efforts. To help meet global semiconductor demand, they are also looking to expand their investment in new fabrication facilities in Arizona. While those will take time to bring online, and precautions are being taken to prevent disaster – both man-made and natural – expanding water-intensive industries in a desert can be viewed as risky.

Amidst these challenges, global markets continue to depend on the movement of products, parts, raw materials and components from one region to another. The continuing vulnerability inherent in global logistics means reliability will remain uncertain at best. This in turn forces us to continue addressing the root causes of the factors that result in continual disruptions. **PSR**

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A new international system for rating the fuel efficiency of ocean-going vessels will be established under Japanese leadership, it has been announced.

Far East: Japan Report

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



*Akihiro
Komuro*

New System To Be Established for Rating of Ship Fuel Efficiency

A new international system for rating the fuel efficiency of ocean-going vessels will be established under Japanese leadership, it has been announced. A draft amendment to the relevant treaty will be adopted at an international conference in June, and the system is expected to be introduced in 2023.

The fuel efficiency rating system will be applied to large ocean-going vessels such as container ships, oil tankers, and cruise ships. Once a year, ship owners and operators will submit fuel efficiency data to the government where the ship is registered and rate it on a five-point scale (A-E). CO2 emissions are converted from the distance traveled, the weight of the ship, and the amount of fuel consumed and compared. The lowest E, or three consecutive D's, will require the owner to submit an improvement plan to the government where the ship is registered. They are required to add devices to improve fuel efficiency or reduce the speed at which they sail. If the ship cannot be improved, it will not be allowed to sail.

Last year, the Japanese government and 19 other countries, including China, South Korea and Germany, jointly proposed a rating system for existing ships to a committee of the International Maritime Organization (IMO).

The aim is to encourage the retirement of ships with poor fuel efficiency and increase the number of ships with high environmental performance, with the aim of improving the fuel efficiency of ships by an average of 40% or more compared to 2008 levels by 2030 and halving CO2 emissions by 2050.

Source: The Yomiuri

PSR Analysis: Environmental regulations in the shipping industry have been aggressively enforced in the past, especially in the area of measures to prevent water quality deterioration due to ballast water. These are now expected to be enforced in earnest in the area of measures to prevent CO2 emissions.

Currently, China boasts the largest number of merchant ships in the world, followed by South Korea, which ranks second with its strength in building LNG carriers and offshore vessels, and Japan, which ranks third. These three countries together account for more than 90% of the world's total. Over the past decade, the world has been in a state of oversupply relative to demand, and as a result, the market has shrunk, and the shipbuilding business has suffered.

The shipbuilding industry is a business that is greatly influenced by capital strength, and China is gaining strength with strong government backing, while South Korea has a strong business scale with Hyundai, Samsung and Daewoo. Japan's shipbuilding

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industry has been pushed back by China and South Korea, and has tried to compete by restructuring the industry, including mergers of major shipbuilding companies, but the gap between Japan and the top two countries is widening.

It has been argued that "this new system will be a positive for Japan's sluggish shipbuilding industry, because Japanese shipbuilding is strong in high performance," but I disagree with this approach. In fact, Japan's technological advantage over China and South Korea is not that great. Even if Japan's technology is superior to that of China and Korea at this point, it will not take long for China and Korea to catch up.

The details of the system are still to be worked out, and there are many issues to be addressed before the system goes into effect, such as who will certify fuel efficiency, what penalties will be imposed on false applications, and how the initial cost of shipbuilding will be borne.

Recently, in addition to the green economy, which is about the environment in general, the blue economy, which is about balancing business with environmental protection of the oceans, has started to become a hot topic. While research on the blue economy has just begun in Europe and the United States, Japan, as a maritime nation, would like to take the leadership in this field.

CO2 emissions from the construction of new ships may become an issue in the near future, and in light of this, the question of whether it is better for the environment to build new ships or to operate existing ones may come up. In any case, shipping and shipbuilding companies will not be allowed to continue with the status quo and will be increasingly required to be environmentally conscious. The question is who will bear the cost so as to maintain the industry as a sustainable one. **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

大型船の燃費に国際格付け、新制度創設へ

外航船の燃費性能を格付けする国際的な新制度が、日本主導で創設されることが明らかになった。国際会議で6月に関連条約の改正案が採択され、2023年に導入される方向だ。

燃費の格付け制度は、コンテナ船、石油タンカー、クルーズ船など大型外航船が対象となる。毎年1回、船の所有者や運航会社が、船籍を置く政府に燃費データを提出し、5段階 (A-E) で評価する。運航距離と船の重さ、燃料消費量からCO2の排出量を換算して比較する。最低のE、もしくは3回連続でDになると、所有者は船籍のある政府に改善計画を提出する必要がある。燃費を改善する装置を追加したり、航行速度を抑えたりすることが求められる。改善できなければ航行できなくなる。

日本政府は昨年、既存船の格付け制度を、中国や韓国、ドイツなどと19か国

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で、国際海事機関 (IMO) の委員会に共同提案した。燃費が悪い船の退役を促し、環境性能の高い船を増やすのが狙いだ。2030年までに船の燃費を2008年比で平均40%以上改善し、2050年までにCO2排出量の半減を目指す。

出典: 読売 (一部筆者により元記事内容を改編しました)

PSR 分析: 海運業界の環境規制はバラスト水による水質悪化対策などを筆頭にこれまでも積極的に取り組まれてきたが、CO2対策の分野でも本格化する見通しとなった。

現在、商船建造においては中国が世界一の建造隻数を誇り、次いで韓国がLNG船やオフショア船の建造を強みに世界2位の位置を占め、日本は世界3位というパワーバランスとなっている。そしてこの3国で世界の9割以上を占めている。過去10年以上にわたり、世界は需要に対して供給過剰な状態が続いている結果、市場が縮小し、造船ビジネスは苦境に立たされている。造船業は資本力が大きく影響するビジネスであり、中国は政府の強力な後押しを背景に強さを増し、韓国は現代・Samsung・大宇の3社を中心に、強固な事業規模を持っている。日本の造船業は中韓勢に押されており、大手造船会社の合併をはじめとする業界再編で対抗しようとしてきたが、上位2国との差は拡大しつつある。

「この新制度は、低迷する日本の造船業にとってはプラスになる。日本の造船は高性能に強みがあるからだ」と論じられているが、筆者はこの意見には同意しない。実態として、中韓勢と比較しても日本が持っている技術的なアドバンテージはさほど大きくはない。仮にも現時点で日本の技術が中韓より優位であったとしても、中韓が追い付くまでに長い時間はかからないだろう。

制度の詳細はまだこれから詰められることになり、誰が燃費を証明するのか、虚偽申請にどのような罰則を行使するのか、造船時のインシャルコストをどう負担するか、など、制度発効までの課題は多い。

最近、環境全般のグリーンエコノミーに加えて、海洋の環境保全とビジネスを両立させるブルーエコノミーが話題になり始めている。欧米でこのブルーエコノミーの研究が始まったばかりのなか、海洋国家である日本としてはリーダーシップを取りたい。

新造船建造時のCO2排出量も近い将来課題化することもあるのかもしれない、それを考慮すると、新造船を建造するのと既存の船を運行させるのとどちらが環境に良いか、という視座も出てくるだろう。いずれにしろ、海運造船共に現状のままでは許されず、環境への配慮を求められる傾向は強まっていく。問題はそのコストを誰がどのように負担して、持続可能な産業として維持していくか、だ。PSR

Komatsu Unveils Concept of Fully Electric Compact Excavator

On May 13, Komatsu announced that it had developed a fully electric compact excavator equipped with lithium-ion batteries. This is Komatsu's first excavator that does not use cylinders or other hydraulic equipment in the drive unit. In addition to

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emitting no exhaust gas, the new excavator can be operated remotely and can be used in dangerous places.

Komatsu, which celebrated the 100th anniversary of its founding on May 13, announced this concept model as a response to a decarbonized society.

For the time being, the company does not plan to sell it to the general public. This model is connected to the outside world via wireless LAN, and the driver can operate it remotely without boarding the machine. The remote operation makes it suitable for indoor demolition, disaster rescue, and other dangerous work sites.

Source: The Nikkei

PSR Analysis: The model presented is a concept and will not be sold to the general public, but it is significant from the perspective of visually realizing the future of power excavators. Komatsu has already launched a battery-powered compact excavator in Japan in 2020, but the cylinders that move the excavator's arms were hydraulic. This model does not use any hydraulic equipment, which improves energy efficiency and reduces the burden of maintenance.

On the same day, Komatsu also announced the success of a demonstration experiment in which a single driver can switch between multiple construction machines, including hydraulic excavators and bulldozers, from a remote location using 5G high-speed communications.

These efforts by Komatsu, a leader in the industry, are in line with what is required in the field, and the market is calling for the early introduction of new technologies.

PSR

コマツ、フル電動の小型ショベル 排ガスゼロで遠隔操作

コマツは13日、リチウムイオン電池を搭載したフル電動の小型ショベルを開発したと発表した。シリンダーなどの駆動部にも油圧機器を使わないショベルはコマツとして初めて。排ガスを出さないほか、遠隔操作方式も採用し、危険な場所での作業にも対応できる。

13日に創立100周年を迎えたコマツが、脱炭素社会に対応したコンセプトモデルとして公表した。当面、一般販売は予定していないという。ショベルは無線LANで外部と接続し、運転手は建機に搭乗せずに遠隔地から操作する。遠隔操作が可能のため、屋内での解体や災害救出など危険な現場での作業にも適している。

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: 発表されたモデルはコンセプトであり一般に販売はされないということだが、将来のパワーショベルの在り方を視覚的に実現させているという観点からもその意義は大きい。コマツは2020年にも電池駆動式の小型ショベルを国内で市場投入したが、ショベルのアームなどを動かすシリンダーは油圧式だった。今回のモデルは油圧機器を使用しておらず、省エネ性能が向上し、そ

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Doosan Heavy Industries & Construction (DHIC) announced on May 6 that it has signed a memorandum of understanding (MOU) with Libotec, which has a continuous pyrolysis technology for waste plastics, to develop hydrogen production technology using waste plastics.

れはメンテナンス負担の軽減にもつながる。

また、コマツは同日、5Gの高速通信を活用し、一人の運転手が遠隔地から、油圧ショベルやブルドーザーなどの複数の建設機械を切り替えながら操作する実証実験が成功したことも公表した。業界をリードしているコマツのこうした取り組みは現場に求められている内容とマッチしており、早期の新技術の市場投入が求められている。**PSR**

Far East: South Korea Report

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

Doosan To Produce Hydrogen from Waste Plastic

Doosan Heavy Industries & Construction (DHIC) announced on May 6 that it has signed a memorandum of understanding (MOU) with Libotec, which has a continuous pyrolysis technology for waste plastics, to develop hydrogen production technology using waste plastics.

Libotec will produce gas from waste plastic through continuous pyrolysis, while Doosan Heavy Industries will be in charge of developing equipment to reform the pyrolyzed gas into hydrogen and building the plant. Doosan Heavy Industries has developed a hydrogen reformer capable of producing about 300 kilograms of hydrogen per day, which will be installed and operated at Libotec's plant. The company plans to conduct demonstrations and commercialize a technology that can produce more than three tons of hydrogen per day from waste plastic.

The vice president of Doosan Heavy Industries said, "The amount of waste plastic generated in Korea every year reaches about 8 million tons. It is possible to develop a technology that is equivalent to about 4 million tons of that waste, which is landfilled, incinerated, or turned into solid fuel (SRF). The conversion of waste plastic into hydrogen will contribute to resource recycling and carbon neutrality, and the hydrogen produced can be used in fuel cells and hydrogen gas turbines."

Doosan Heavy Industries, which is strengthening its eco-energy business, is also expanding its hydrogen business: it is building a hydrogen liquefaction plant in its headquarters plant, which is scheduled for completion in 2022, and is also producing green hydrogen through water electrolysis in conjunction with wind power generation in Jeju Island.

Source: **Wow! Korea**

PSR Analysis: Hydrogen-related news reports are becoming more prominent in South Korea, too. In March, the SK Group announced a massive investment of 18 trillion won (1.7 trillion yen) over the next five years in the development of hydrogen infrastructure. SK has also announced that it will invest 1.6 trillion won in Plug Power, a US fuel cell manufacturer, to absorb its hydrogen business know-how.

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South Korea's Ministry of Land, Infrastructure, Transport and Tourism has designated Ulsan, a city of 1.15 million people where Hyundai Motor Co. has its flagship plant, as a model city for hydrogen, and is trying to build an infrastructure using 820,000 tons of hydrogen per year from the oil refining process.

There has been a lot of discussion about whether hydrogen can be the next generation of energy, but I feel that the CO2 generated in the production of hydrogen and the high cost of the infrastructure are the main points of attack for the hydrogen critics. The hydrogen production announced by Doosan at this time will also generate CO2, but the waste plastic used as fuel is an environmental pollutant, and this is an attempt to effectively process it to obtain clean energy.

Not only this project in Doosan, but many other hydrogen-related projects are still in the process of exploring the possibility of commercialization. There is still a long way to go before hydrogen can be used by the general public. **PSR**

極東 > 韓国レポート:

斗山重工業が廃プラスチックから水素生産へ

斗山重工業は6日、廃プラスチックを活用した水素生産技術の開発に向け、廃プラスチックの連続式熱分解技術を持つリボテックと覚書 (MOU) を交わしたと発表した。リボテックは廃プラスチックを連続式熱分解によりガスを生産する一方、斗山重工業は熱分解したガスを水素に改質する設備開発と工場造成を担当する。

斗山重工業は、1日あたり約300キログラムの水素を生産できる水素改質機を開発し、リボテックの工場に設置、稼働する。実証を行い、廃プラスチックから1日あたり3トン以上の水素を生産できる技術を商用化する計画だ。

斗山重工業の副社長は「韓国で毎年排出される廃プラスチックが約800万トンに達するなか、埋め立て・焼却されたり固形燃料 (SRF) になる計約400万トン分に相当する技術の開発が可能だ。廃プラスチックの水素化が資源循環とカーボンニュートラルの実現に寄与するのはもちろん、生産した水素を燃料電池や水素ガスタービンなどに活用できる」と話した。

エコエネルギー事業を強化している斗山重工業は、水素事業も拡大している。2022年の完成を目指す本社工場内に水素液化プラントを建設中であるほか、済州島では風力発電と連携した水電解によるグリーン水素生産を行っている。

出典: Wow! Korea (一部筆者により元記事内容を改編しました)

PSR 分析: 韓国でも水素関連の報道が目立ってきた。3月にはSKグループが水素インフラ整備に今後5年間で18兆ウォン (1兆7,000億円) という巨額な投資を発表した。SKは米国の燃料電池メーカーであるプラグパワーにも1兆6,000億

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ウォンを出資し、水素事業ノウハウを吸収すると発表している。韓国国土交通省は現代自動車が旗艦工場を置く人口115万人の蔚山市を水素モデル都市に指定し、石油精製の過程で出る82万トン/年の水素を使ってインフラ化しようとしている。

水素が次世代のエネルギーになり得るか、という議論は盛んに行われているが、水素を製造する際に発生するCO₂と、インフラを含めた高コストが、水素否定派の攻撃材料になっているように私は感じている。斗山が今回発表した水素生産でもCO₂は発生するだろうが、燃料とする廃プラスチックは環境汚染物質であり、これを有効に処理してクリーンなエネルギーを得ようとする試みだ。この斗山の事業に限らず多くの水素関連のプロジェクトはまだ商用化の可能性を模索している段階だ。一般に水素が使用されるまでの道のりはま **PSR**

SouthEast Asia: Vietnam Report

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

Vinfast Begins Taking Orders for EVs

Vinfast, an emerging Vietnamese automaker, has started taking orders for its first EV, the VFe34. The VFe34, a C-segment SUV crossover type, uses a 42kWh battery and can travel 300km on a full charge. The domestic sales price is VND 690 million (about 3.31 million yen). The battery will be provided on a subscription basis (fixed fee service). The monthly fee is set at VND 1.45 million, the same level as the cost of running on gasoline. When the battery's charge performance drops below 70%, it can be replaced with a new one. This is said to reduce the initial cost for customers and at the same time guarantee the quality risk of the battery.

As a promotion until the end of June, the company will offer a discount of VND100 million and a free battery subscription service for one year. In addition, customers who replace their gasoline-powered cars will receive VND30 million per car from the Vin Group's Green Future Fund. If they cancel the purchase, the deposit of 10 million dong will be fully refunded. According to Vinfast, 3,692 orders were recorded in 12 hours after the start of orders on the 24th.

The company plans to install more than 20,000 charging stations in 63 provinces and cities across the country by the end of 2021 and is seeking partners for the project. The company is also promoting technical cooperation and signed a memorandum of understanding with Taiwan's PLG on March 3. The company will establish a joint venture in Vietnam to manufacture all solid-state battery packs for EVs using PLG's patents and technologies.

Source: *JETRO*

PSR Analysis: Vietnam's VINFAST is a home-grown automobile brand that has been long awaited by the Vietnamese people and has attracted a lot of interest. The company is under the Vin Group, which has many businesses including consumer electronics with real estate at its core, but the Vin Group has announced that it will

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Southeast Asia Report

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The EV recharging station network in Vietnam is still in its infancy, and in order for them to increase their EV sales, they need to improve their domestic stations.

discontinue the development and production of smartphones and televisions. In the future, the organization is expected to focus on the automotive business with Vinfast as the core, and consumer electronics with advanced technology for smarter homes.

They have been restructuring their business in recent years, selling off their retail business and cancelling projects to enter the airline business. In 2020, net sales fell by 15.5% YOY to VND110.5 trillion, and net income by 43.0% to VND4.4 trillion.

The mainstay real estate business was strong, but the tourism and entertainment sectors were down due to COVID-19. This is a critical moment for them to get their automobile business, which involves a large investment, back on track. The EV recharging station network in Vietnam is still in its infancy, and in order for them to increase their EV sales, they need to improve their domestic stations. The success of Vinfast in the domestic EV market is very important because it will prove to other EV manufacturers that they can sell EVs in Vietnam. **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

ビンファストがEV受注開始、バッテリーはサブスク

ベトナムの新興自動車メーカー・ビンファストは、同社初となるEV「VFe34」の受注を開始した。「VFe34」はCセグメントのSUVクロスオーバータイプ。42kWhのバッテリーを使用し、フル充電で300キロ走行できる。国内販売価格は6億9,000万ドン（約331万円）。バッテリーはサブスクリプション方式（定額利用サービス）で提供する。月間利用料は145万ドンと、ガソリンでの走行にかかる費用と同水準に設定されている。バッテリーは充電性能が70%を下回ると、新品と交換できる。顧客の初期費用を抑えると同時に、バッテリーの品質リスクを保証するという。6月末まではプロモーションとして、1億ドンを値引きし、バッテリーの定額利用サービスも1年間無料で提供する。また、ガソリン車から買い替える顧客は、ビングループの「グリーン・フューチャー・ファンド」から1台当たり3,000万ドンを贈呈。購入をキャンセルしても、保証金1,000万ドンを全額返金する。ビンファストによると、24日の受注開始から12時間で3,692件の受注を記録したという。

ビンファストは現在、充電施設の整備を進めており、1月に首都ハノイ市内のビンホームズ・オーシャン・パークに最初の充電スタンドを設置した。2021年内に全国63省・市に2万を超える充電スタンドの設置を計画しており、協力先を募っている。

技術提携も進めており、3月3日には台湾のPLGと覚書を締結。ベトナムに合弁会社を設立し、PLGの特許と技術を用いたEV用全固体電池パックの製造を進める。

出典: JETRO (一部筆者により元記事内容を改編しました)

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PSR 分析: ベトナムのVINFASTは、ベトナム国民が待望していた自国製の自動車ブランドであり、多くの関心を集めている。不動産を軸に家電などの多くの事業を持つビングループ傘下の企業だが、スマートフォンとテレビの開発と生産を中止することを発表した。今後はビンファストを軸にした自動車事業と、住宅のスマート化向けに先端技術を取り入れた家電に注力すると思われる。

ビングループは近年、小売り事業を売却し、また、航空事業へ参入プロジェクトを中止したりといった事業再編を進めてきた。2020年の純売上高は前年比15.5%減の110兆5,000億ドン、純利益は43.0%減の4兆4,000億ドンだった。主力の不動産事業は好調だったが、COVID-19の影響で観光・娯楽分野などが落ち込んだ。多額の投資を伴う自動車事業を軌道に乗せられるかの正念場だ。ベトナム国内のEV充電ステーション網はまだまだこれからという状況で、彼らがEV販売台数を伸ばすためには国内のステーション整備が必要だ。輸出な米国での製造も検討しているという情報もあるが、まずは足元の国内市場でどこまで健闘できるかが問われている。彼らが国内EV市場で成功することは、他国のEVメーカーにとっても販売の土壌ができることを意味するため、非常に重要だ。 **PSR**

India Report

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

Mahindra To Set Up New Plant for Farm Equipment




*Aditya
Kondejkar*

Mahindra and Mahindra Ltd (M&M), market leader in the Indian tractor industry, is betting on **farm equipment** because of increasing demand. The decision is greatly influenced by the healthy agricultural output, record sales for tractors and reverse migration since last year. **Read The Article**

PSR Analysis: The company is trying to enter the untapped farm mechanization segment in the country. According to Mr. Hemant Sikka (President Farm Equipment Sector Mahindra) this market has very high potential as India has only 1% share of the global farm equipment market vs. 10% of the global tractor market.

This segment of off-road vehicles has been an exceptional performer in 2021. Sales have beat expectations and have hit historic highs. The supply side situation is normalizing. Demand is strong due to a better monsoon forecast, outstanding Kharif procurement season, bumper Rabi sowing season, which is 3% more than last year.

The agricultural segment wasn't impacted significantly by the pandemic in the first wave; however, the second wave is spreading wider and deeper into the rural areas and might dampen the segment's growth.

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India Report

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Despite the COVID related conditions, the market continues to be strong on the back of positive macro-economic factors and strong rural cash flows. As a result, the segment experienced healthy growth of 6.3% during 2020 and will further grow by 13.7% in 2021, a trend that will continue in 2023. **PSR**

Russia Report

By *Maxim Sakov*, Market Consultant, Russia

Russian AG Machinery Exports Double in Q1 2021



*Maxim
Sakov*

Exports of Russian AG machines more than doubled in Q1 2021 versus the same period in 2020; exports have reached US\$ 53 million (3.9 billion rubles).

Rospetsmash, the Russian Association of Manufacturers, notes that Russian OEMs showed record high figures for 2020, reaching US\$ 214 million (15.9 billion rubles). For Q1 2021, Russian AG machines were shipped to 23 countries. Exports of AWD tractors are up by 2.8 times, and combines, by 46%.

The exports to Germany have increased by five times, to Bulgaria by 65%, and to Poland by 49%.

Rospetsmash says one important reason for export growth is the high prices for grain on the world market. AG businesses have gotten additional resources, which can be spent on fleet renewals. Besides this, many farmers postponed the purchase of machines because of the pandemic, and now we are seeing the realization of this postponed demand.

Another reason is that Russian OEMs are not having big problems with components supply because of the high localization level in Russian AG machinery. Also, Russian OEMs did not suspend operations in 2020 and 2021. State support measures also play a role in stabilizing demand.

However, according to some observers, one problem for the industry is the increases in metal prices. The price increases started last year. Metal products have increased in price by 50-80% for the year. Russian OEMs cannot maintain export growth if this issue is not resolved, say association representatives.

Read The Article

PSR Analysis: The growth picture for Ag Equipment production, caused by a number of favorable factors, could be interrupted by the increase in metal prices. Actually, it's an old problem, which was discussed even five years ago. But now the government has started working out the measures, which are very unpleasant for local metallurgic companies. Among the measures are compulsory sales of metal under fixed prices, increased taxes, export restrictions among others.

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Russia Report

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Statistics show that now we are seeing the realization of pent-up demand, which is especially active for commercial vehicles.

GAZ Increased LCV Production by 19% in Q1 2021

The GAZ plant in Nizhny Novgorod has made 11,300 LCVs in Q1 2021, according to the Trade Ministry of Russia. That's 18.7% higher than the same period of last year.

HD truck production by the GAZ Group increased by 29% in Q1 2021, from 1,700 to 2,200 units.

In total, according to the Russian Statistic bureau "Rosstat", production growth of Russian on-highway vehicles increased by 13.7%. OEMs have made 402,800 units. LCV output has grown by 37.7%, trucks by 27.1%, and passenger cars by 12.1%.

Read The Article

PSR Analysis: Statistics show that now we are seeing the realization of pent-up demand, which is especially active for commercial vehicles. For passenger cars, this process is also visible (four times sales growth during April), but already it is coming to an end, and after few months we can expect to see negative figures in this segment. **PSR**

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