

Alternative Power Report

February 17, 2023

News on Alternative Power Sources



www.powersys.com | +1-651-905-8400 | info@powersys.com

Moving from ICE To Alternative Power

As manufacturers continue to shift their equipment production from ICE to alternative power sources, they need the latest information. That's why analysts at Power Systems Research continue to revise our global data and forecasts to provide the freshest picture available.

240 Ton Electric Mining Truck Can Charge in 30 Minutes



By *Guy Youngs*, Forecast & Adoption Lead

A 240-ton mining haul truck is about to be fitted with a 1.4 megawatt-hour (MWh) prototype battery system that global green energy company Fortescue has developed with equipment maker Liebherr.

*Guy
Youngs*

UK-based engineering company WAE Technologies, (acquired by Fortescue in March 2022), completed and delivered the battery system to Fortescue's workshop in Perth, Australia. The battery will be assembled and installed in the mining haul truck before it's transported to the Pilbara in Western Australia for onsite testing this year.

The battery system marks several firsts for an electric mining haul truck battery: In addition to having energy storage of 1.4 MWh, it also has the ability to fast-charge in 30 minutes, and it can regenerate power as it drives downhill.

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

PSR Analysis: This is a good view of the potential for all mining trucks, but it should be noted that a lot of these huge mining trucks are diesel-electric to start with, (a diesel generator powering electric drives), so this is a matter of



replacing the generator with the battery pack. They also can recharge on the way down, so the battery size can be relatively smaller.

Another Study Shows Plug-in Hybrids Dirtier than We Thought

Plug-in hybrids pollute up to three times more than advertised, even when fully charged, and emit five to seven times as much CO2 when the engine is running, according to a new study commissioned by Belgian NGO Transport & Environment (T&E) and conducted by the University of Technology in Graz, Austria

Editor's Note: This monthly report includes news and analysis about EV and alternative power sources such as batteries and fuel cells from analysts at Power Systems Research.

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The study measured emissions from three popular models: the BMW 3 series, Peugeot 308, and Renault Megane. Like many plug-in hybrids, these cars started as gas/diesel-powered models and then a battery was added on to improve emissions testing performance and mileage

Each of the vehicles were tested in real-world situations, in and around Graz, Austria. In all of the tests, the cars performed worse than official WLTP ratings would indicate and in fact T&E tested the cars in their all-electric modes as well and found them lacking. This is not the first time T&E has done a similar study. In 2020, it commissioned another test on the BMW X5, Volvo XC90 and Mitsubishi Outlander, all of which, again, polluted much more than official testing suggests

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

PSR Analysis: The article concludes (amongst other things) that PHEVs should not be treated as zero emission and that privately owned PHEVs should not receive purchase subsidies. PHEVs are an attractive solution for automakers and drivers because they represent a middle-ground which allows for emissions reductions but doesn't require nearly as many manufacturing or habitual changes from those respective groups, and they reduce emissions as compared to gas- or diesel-only cars when used correctly. However, both ICCT and T&E's recommendations point out – it still seems apparent that BEVs are the better choice.

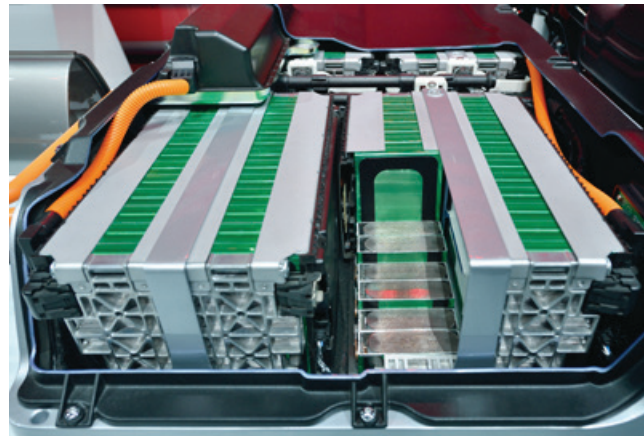
From Diesel to DC

For a long while, it looked as if hydrogen fuel cells would be the technology of choice for emissions-free road transport. However, truck manufacturers and freight forwarders recently turned their attention to battery-electric vehicles.

For logistics companies, the shift to zero emissions will be difficult. While it only takes a few minutes to top up the tank of a truck with diesel, it takes hours to fully charge the battery of an EV, which presents a real challenge for logistics businesses with zero-emission aspirations.

Changing the type of drive unit and expanding charging capacity at the depot are associated with these high risks for freight forwarders; not least, because the companies often lack expertise in this area.

The consumption of a tractor unit shows that electricity is also no longer a minor issue. On average, the vehicle



covers just over 200,000 km per year. Logistics company, Dachser moves around 4,000 such trucks. If they were all battery-powered, annual consumption would amount to 700 GWh.

Source: *PV Magazine* [Read The Article](#)

PSR Analysis: This articles examines the move to battery powered trucks which is potentially very difficult with current high energy costs. Solar panels on the roofs of depots will potentially mitigate part of this cost but they themselves have an up front capital cost too.

Volvo Unveils Electric Concrete Mixer Truck

Best known for its world-class transport solutions, Volvo unveiled its first commercial electric truck –the Volvo FL Electric – in 2019, this was followed by the Volvo VNR Electric in 2020. Volvo introduced three 44-ton electric trucks this past September, some of the heaviest in its line up, bringing its portfolio to six commercial EV trucks, designed to cover everything from city distribution and handling to construction transport and regional hauling.

Volvo's latest zero-emission heavy-duty solution, the FMX electric concrete mixer truck, is a big step toward eliminating emissions in the construction industry. Volvo says the EV truck will begin operating at a ready-mix concrete plant in Spandau in Berlin this month

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

PSR Analysis: The construction industry (and cement in particular) is one of the biggest culprits of toxic CO2 emissions due to the strenuous demands that are required in the industry, so Volvo's latest electric concrete mixer is massive news for the construction industry. Electrifying

concrete transportation has been challenging due to the heavy loads and continuous mixing demands. **PSR**

Europe's First Electric Truck Charging Corridor Goes Live

Six public charging locations specifically designed with electric trucks in mind are now online, and they're strategically sited along a 600-km (373-mile) stretch of the Rhine-Alpine corridor, across Germany. The stretch of road is part of one of the busiest road freight routes in Europe connecting key North Sea ports in Belgium and the Netherlands with the Mediterranean port of Genoa, Italy. It also connects a network of roads that stretch 1,300 km (808 miles) in total.

Each charging location features ultra-fast 300 kW charging stations that can charge an electric truck up to 200 km (124 miles) in around 45 minutes. In the next six months, two more EV charging locations are scheduled to open at Aral retail sites (the German arm of BP) to complete the new charging corridor.

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

PSR Analysis: Creating a logistical convenience for medium and heavy-duty truck drivers is necessary to make the conversion to electric trucks work. This is an important development for a major logistics corridor – electric truck drivers will have peace of mind, knowing that they're going to reach EV chargers at regular intervals, and they'll be paired with convenient amenities.



Volvo CE Makes Milestone Investment in Electric Wheel Loaders

The Volvo Group is making a US\$6.3 million (SEK 65 million) investment which will allow their Arvika factory in Sweden to expand its facilities by adding a new building to handle the phased introduction of new electric wheel loaders. Arvika will erect a new building, approximately 1,500 sq m, which will allow the facility to free up areas inside its assembly factory to be able to build electric wheel loaders

This announcement comes on the heels of a previous announcement to invest in electric haulers from the company's production facility in Braås (Volvo announced its intention to invest approximately US\$32.7million (SEK 360 million) into its production facility in Braås, Sweden between now and 2027.

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

PSR Analysis: Volvo is showing its commitment to achieve net zero value chain emissions by 2040 as part of an investment strategy allowing Volvo CE to advance electric solutions across its production facilities, which include the Konz facility in Germany, Belley in France and Changwon in South Korea, where other electric machines are made.

Pininfarina with Swappable Hydrogen Bottles Set for Production

Car manufacturing startup Namx has revealed a prototype version of their debut hydrogen-powered vehicle which will be able to get nearly 500 miles out of just one charge. The vehicle, known as the HUV, is the first model to be partially powered by a patented removable tank system created to make hydrogen fuel widely available.

Six interchangeable hydrogen tanks are added to the HUV's main tank to provide 500 miles of range. All six of the tanks are located to provide convenient access.

Source: *Hydrogen Central* [Read The Article](#)

PSR Analysis: This is an interesting spin on the successful business model the Taiwanese scooter manufacturer Gogoro uses with its swappable batteries. However, it remains to be seen whether this startup will take off. The promise of a great product doesn't necessarily mean success.

Solid-State Lithium-Air Battery With High Energy Density Reported

Researchers at the Illinois Institute of Technology, the University of Illinois-Chicago, and Argonne National Labs, have succeeded in producing a practical demonstration of a lithium-air battery that achieves an energy density of 685 Wh/kg at room temperature.

The researchers claim their new battery will be inexpensive to produce and safer than a conventional lithium-ion battery because it is solid-state, meaning it contains no liquids that can leak or catch fire.

The battery design has the potential to store one kilowatt-hour of electricity per kilogram — four times greater than current lithium-ion battery technology.

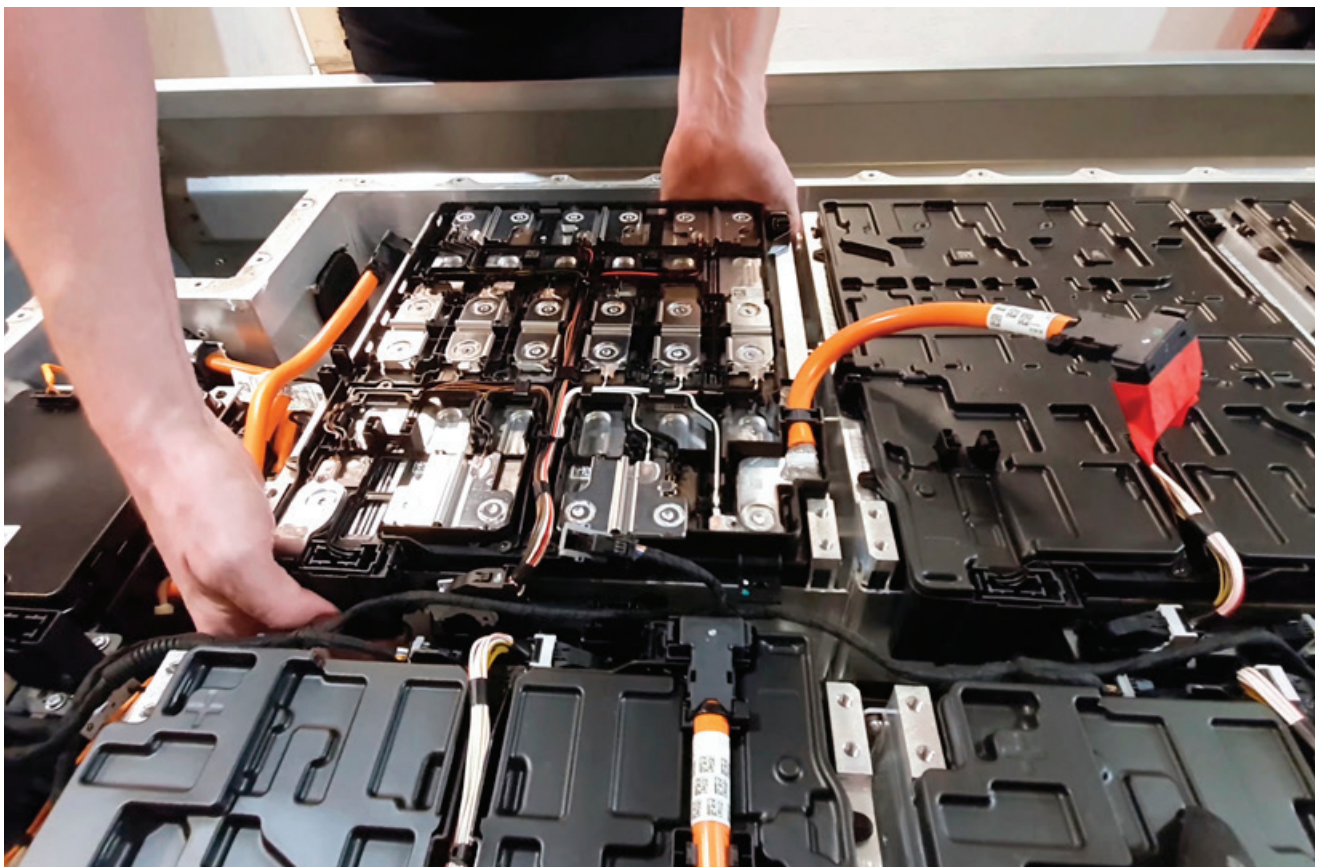
Source: *CleanTechnica* [Read The Article](#)

PSR Analysis: The upshot of all of this is that we may have the basis for super-efficient car batteries and for storage of renewable energy — all because of a material that lithium ions like to zoom through at room temperature. That would represent a transformation for electric transportation,



especially heavy duty vehicles such as airplanes, trains, and off highway vehicles of all types.

But, typically, the path from laboratory to production is five years or more. However, if proven to be true, this would move the “electrify everything” movement one giant step forward. **PSR**





LOCATIONS

Headquarters

St. Paul, USA

+1 651 905 8400

info@powersys.com

Beijing, China

+86 10 5737 9201

infocn@powersys.com

Brussels, Belgium

+32 2 643 2828

infofr@powersys.com

Campinas, Brazil

+55 19 3305 5657

infosa@powersys.com

Detroit, USA

+1 734 545 0474

infode@powersys.com

Moscow, Russia

+32 2 643 2828

inforu@powersys.com

Pune, India

+91 20 25671110

Mobile: +91 9960641110

infoin@powersys.com

Tokyo, Japan

+81 90 9139 0934

infojp@powersys.com

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