Alternative Power Report

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News on Alternative Power Sources

Power Systems Research
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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.

Brazil Law Ties Data Center Incentives To Renewable Energy Use

Program suspends federal taxes on some data centers equipment

By Guy Youngs, Forecast & Adoption Lead



Brazil's Senate has approved "Redata", a tax incentive regime requiring data centers to meet their electricity demand with renewable or low-emission energy. The conditions for receiving the tax benefits include data centers meeting their electricity demands by using renewable or low-emission energy sources.

"Redata" suspends federal taxes on equipment and components acquired domestically or imported for use in data centers. The tax suspension will cover import duties and the Tax on Industrialized Products. It will apply for five years.

In return, companies claiming "Redata" must allocate at least 10% of their data processing, storage and handling capacity to the Brazilian market; comply with sustainability criteria; meet contracted electricity demand through supply agreements or self-generation using renewable or low-emission sources; comply with water-efficiency limits for cooling systems; and invest in Brazil an amount equivalent to 2% of the value of products acquired under the tax incentive



Source: *PV Magazine* **Read The Article**

PSR Analysis: This legislation is significant in that Brazil's data center market is expanding rapidly and this legislation commits data center owners to strict conditions that should mitigate some of the less desirable data center outcomes. **PSR**

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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New power source installations vary across industry segments. Contact PSR for data on your specific application needs.
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Electric Equipment Is Saving Job Sites BIG MONEY

For some time now, construction fleet managers have been debating whether or not having an electric fleet gives you real world savings that are worth the higher up-front costs of the equipment.

Canadian Groupe Bellemare has partnered with the Institut du véhicule innovant (IVI) on a three-year program called Plug-In Fleet Heavy Equipment. The purpose of this program is to test and document the equipment's performance on a functioning job site.

The results are outstanding – Groupe Bellemare says it's spent less than $54,000 for roughly 15,000w hours of operating costs. It's added that the diesel machines it replaced would have burned an estimated $423,000 of diesel over the same period, giving the company more than an 87% drop in fuel costs.

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

PSR Analysis: Despite claims by some organizations (like the Wall Street Journal) that electric machines would struggle to compete, even if Diesel was $8 per gallon, it is very clear that there are some significant savings to be made by fleet electrification.

New Electrode Design Boosts Battery Energy Density

Fraunhofer ISE and its partners have developed thicker electrodes that could increase battery cell energy density by 10% to 15% without adding weight. The electrodes are a PFAS-free, solvent-free concept has been demonstrated in lithium-ion, sodium-ion, and zinc-ion cells and is designed for cost-effective mass production.

PFAS or Per- and polyfluoroalkyl substances are a group of synthetic organofluorine chemical compounds that have multiple fluorine atoms attached to an alkyl chain and are often referred to as forever chemicals. Being PFAS free is important because PFAS contamination threatens public health, wildlife and the quality of our natural environment.

Source: *PV Magazine* **Read The Article**

PSR Analysis: Capital costs and production costs are expected to be much lower as this production



process doesn't use toxic solvents. A 10% or even 15% improvement in energy density of a battery is a big plus, leading to improved range or weight reduction. However, as usual with this new technology, it will be some time before it appears in your battery powered machine.

VW Plans To Slash Models and Reduce Workforce By 100,000

Volkswagen Group CEO Oliver Blume had a plan to close four factories in Germany and eliminate 100,000 workers, both in Germany and around the world, by 2030. The plan was initially rejected before being approved in early September.

The company already had plans in place to reduce its workforce by 50,000. The new plan adds another 50,000 to that number, bringing the total to 100,000. The plan also calls for eliminating half of all the models currently offered and the plan leaves the fate of four factories in Germany (Emden, Zwickau, Hanover and Neckarsulm plants) undecided.

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

PSR Analysis: Most of the legacy auto makers are suffering in one way or another, and this move by VW is all about cost reduction via model simplification. Whether the plan survives (and actually, whether VW survives) will largely depend on how the powerful auto unions respond to this.

Netherlands Cuts 2040 Hydrogen Forecast By Almost 60%

The Netherlands has long had an ambitious Hydrogen energy plan – in fact, in 2023 its National Energy System Plan projected roughly 460 petajoules of gaseous hydrogen demand in 2040. This policy was built around hydrogen production, imports, pipelines, storage and manufactured demand--all at the same time.

Its 2026, the National Energy System Plan update cuts that central estimate to about 200 petajoules, a reduction of roughly 57%. In this plan Hydrogen largely disappears from electricity generation. It has been pushed out of low- and medium-temperature industrial heat, barely appears in buildings beyond pilots, and remains only a small direct energy carrier in road transport, aviation and shipping.

Also, much of the production previously imagined inside the Netherlands also shifts toward imports of energy-rich intermediates and finished fuels from regions with cheaper renewable electricity.

The big winner in all of this is electricity, with electricity moving from 25% of total final energy in 2023 to 52% now.

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

PSR Analysis: This plan still leaves hydrogen as a large part of the Dutch energy system but it is a blow to hydrogen enthusiasts. The change is not a result of an ideological turn against hydrogen but rather that the economics of hydrogen has changed as projects, financing and competing technologies provided better options.

Norway's Bastø Electric Shows Five Years of Ferry Electrification

Bastø Electric entered service in Norway in March 2021. At 139.2 meters long, with room for 600 passengers and 200 cars and a 4.3-MWh battery, it was the world's largest all-electric ferry at the time. Bastø Electric was never supposed to be a demonstration boat but rather a fully operational ferry on the Moss-Horten route to do the same work as the diesel ferries.

Five years later, that is still what it does. It is no longer the world's largest electric ferry, but Bastø Electric's ferry has something the newer vessels don't have--Five years of doing the job



The ferry's electric propulsion makes precise control easier, particularly during docking and low-speed maneuvering. The vessel's power demand can be adjusted directly rather than managing a conventional engine and drivetrain.

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

PSR Analysis: The choice for using an electric ferry on this route is clear. The crossing is only about 10 kilometers and takes around half an hour. That is a useful distance for battery propulsion because the ferry knows where it is going and where and when it will be charged next. Since commencing operations, it (and its two sister ships) have saved around 6million liters of fuel per year.

Self-loading Bulk Cargo Vessels Cut Freight Emissions by 50%

Moving millions of tons of bulk cargo is a serious, time consuming and energy intensive business, so decarbonizing it presents a number of unique challenges – especially when loading and unloading are concerned. The new MV Yampu is the world's first self-loading and unloading bulk cargo vessel.

The MV Yampu is a 125 meter (~410 ft) vessel powered by a locomotive-style diesel-electric drive system backed by an immense, 131-ton 6,758 kWh marine battery system developed by Wärtsilä and capable of putting out more than 600 kW (~800 hp).

The battery-electric system runs the ship's massive self-unloading equipment, allowing it to move cargo from hold to shore without relying on diesel generators or mobile conveyors while, at the same time, helping to speed up the loading and unloading process.

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

PSR Analysis: While the vessel is a hybrid, and as a result still uses diesel, the marine battery system will help. Every little bit of decarbonization is important, and especially as this replaces overland truck transport.

BEI lithium-metal Cell Achieves 504Wh/kg in Test

Battery testing and energy modelling company "About:Energy" has measured a specific energy of 504Wh/kg in BEI's MUL20A lithium-metal cell, the highest figure it has recorded in its independent testing.

About:Energy is globally recognized as the world's premier third-party verifier of cell technology by both battery pack designers and cell manufacturers.

The point to stress about this is that the test is completely independent and that South Korean firm BEI did not pay for these test.

Source: *Bestmag* **Read The Article**

PSR Analysis: Improving energy density is one of the key improvements to make batteries last longer and give greater range – this is the highest energy density recorded by About:Energy in its testing.

A Final Note

Inside the grid, thermal, and interconnect challenges limit **data center growth**. **Click here**… This new **battery breakthrough** could get your next EV over the 1,000 mile mark. **Click Here**… GM's new **EV battery tech** will cut costs without sacrificing performance or range. **Click here**… **South Korea** marks major shift to sodium-ion batteries to regain market. **Click here**… Are **Electric Trucks** Cheaper To Operate Than Diesel? **Click here**. **PSR**





CONTACT US

Purchasing and Inquiries

Headquarters
St. Paul, USA
+1 651 905 8400
info@powersys.com

Detroit, USA
+1 248 444 0545
infode@powersys.com

Beijing, China
infocn@powersys.com

Campinas, Brazil
+55 19 97120 2285
infosa@powersys.com

European Headquarters
Brussels, Belgium
+32 2 643 2828
infobr@powersys.com

Frankfurt, Germany
+49 160 1807 044
infoge@powersys.com

Pune, India
infoin@powersys.com

Tokyo, Japan
+81 90 9139 0934
infojp@powersys.com

About Power Systems Research

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