

Alternative Power Report

December 9, 2024

News on Alternative Power Sources



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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.

World Moving On Without USA As Priorities Change

US Cedes Technology Lead To Others

By *Guy Youngs*, Forecast & Adoption Lead



The recent USA presidential elections suggest that the USA will embrace its status as the world's leading petrol state, while previous petrol states like Saudi Arabia plough vast sums into the energy of the future, renewables.

The USA ceded manufacturing of the technologies required for fighting climate change — solar panels, wind turbines, batteries, electric vehicles, heat pumps, transformers, and more — to other countries, mostly China, over the past 40 years.

Under President Biden, the USA enacted massive and unprecedented tariffs to protect the remaining industries, working to keep American money at home. But President-elect Donald Trump apparently will increase tariffs, according to statements he and other Republicans have made over the past year. These tariffs would be placed on imports from long-standing free-trade neighbors like Canada and Mexico.



Source: *Clean Technica* [Read The Article](#)

PSR Analysis: If President Trump does take America down this path, there is a suggestion that US alternative power/ renewables industries will follow the fate of US innovation. Until recently, the USA led the world in innovation, but now foreign students are returning to their countries and being welcomed to do research with big budgets, and now Chinese students are even bothering to come to USA to study. 18% of STEM PhD graduates were from China. **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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CATL Pushes Forward With All-Solid-State EV Batteries

The world's largest EV battery maker is advancing a new type of battery, which promises higher energy density. According to a new local report, CATL is investing heavily while ramping up its workforce to bring all-solid-state EV batteries to market.

The company's solution has an energy density of up to 500 Wh/kg for lithium ternary batteries, 40% more than current batteries. However, the report said charging speed and cycle life are not quite where they need to be

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

PSR Analysis: With trial production reportedly kicking off, we could see CATL launch all-solid-state EV batteries sooner than expected. The benefits of solid state batteries (higher energy density leading to longer range, rapid charging, safety and lower weight) are well known. **PSR**

VW Union Readies December Strikes After Wage Talks Slump

The third round of negotiations in the wage dispute at the ailing German automotive giant Volkswagen have ended without a breakthrough, a union official said. The IG Metall metal-workers' union is now preparing for possible strikes in December, said its negotiator Thorsten Gröger after five hours of talks.

He said progress could still be made when the sides meet this month, but described the differences between their positions as "huge."

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

PSR Analysis: Almost 100,000 workers have joined walkouts at Volkswagen's German plants in protest at management plans to cut wages and even close sites at Europe's biggest carmaker, the IG Metall union said, threatening further industrial action.

Volkswagen has threatened to close plants in Germany for the first time in its 87-year history to reduce costs and boost profit. European carmakers are struggling with weak demand, high production costs, competition from Chinese rivals and a slower-than-expected electric vehicle transition.

PSR

Chinese Electric Cars Moving Ahead of US Producers

With the US history as automobile leaders of the 1900s, it is easy to assume the US will continue being the automotive leader globally and especially domestically. However, the US is rapidly being outmaneuvered, out-innovated, and left in the dust by its Chinese competitors – particularly in the field of EVs.

This article brings together several stories relating to the automotive market with particular emphasis on BYD.



Overall, Chinese electric cars are leading the US auto industry, and it's hard to imagine that story won't get even more imbalanced in the coming four years with President-elect Donald Trump slowing US progress on EVs.

Source: *Clean Technica* [Read The Article](#)

PSR Analysis: In China, there seems to be a real appetite for innovation, change and growth which seems to be lacking in Europe and the US. Many western auto brands are overpricing their vehicles and cancelling the most affordable models. This short-term outlook may be the end of these brands, as they are struggling to be relevant in today's market. **PSR**

Mercedes' Solar Paint Could Make Plugging In EVs a Thing of the Past

Mercedes-Benz says it's developing a solar paint that would allow electric vehicle owners in places like Los Angeles to power their daily driving without ever plugging into charging units.

The German automaker teased the idea recently during a future technology showcase at its R&D center in Sindelfingen, Germany. The photovoltaic material starts as a paste and is applied to body panels in a layer that's just

5 micrometers thick—thinner than a human hair. Covering every body panel of a mid-size SUV with the material would create 118 square feet of sun-harnessing surface area, a more than three-fold increase compared to the 32 square feet available from a single flexible panel on the roof

Mercedes claims such a vehicle could capture enough energy to drive about 12,500 miles a year in sun-soaked Los Angeles

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

PSR Analysis: This is an interesting twist on vehicles with solar panels (Aptera, Sono Motors etc.) but most of these don't generate enough energy so I would question the figure of 12500 miles a year, but even if it's a quarter of that, its still some significant saving. **PSR**

Can the Rotary Engine Help Take Hydrogen Mainstream?

Hydrogen as a “clean” energy source attracts billions of dollars in public and private funding every year, but if hydrogen is to become truly mainstream, it will have to play a big role in transportation. However, despite all of the investment currently taking place, today that future seems far off

Hydrogen is more energy-dense than fossil fuels and is clean-burning, with few emissions or byproducts beyond water. If produced cleanly (i.e., using renewable electric energy) hydrogen can have a very low carbon footprint.

But while the piston engine is not well suited to burning hydrogen, the rotary engine is superior to piston engines in burning highly reactive fuels like hydrogen, and manufacturers and hydrogen proponents should support innovations in this area.

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

PSR Analysis: A hydrogen-powered future is technically very feasible with current internal combustion engine innovation, specifically in rotary engines. Assuming that distribution and storage infrastructure challenges are overcome, then perhaps one day in the not too distant future, we will see many hydrogen powered vehicles, from the family hauler to selected aircraft. **PSR**

Planned Mine Closure Puts Hundreds of Aussie Jobs at Risk

Mineral Resources Limited has announced it will cease operations at its Bald Hill lithium mine in Western Australia's Goldfields region 50km south-west of Kambalda. The mine will reduce its staff to just 10 to help transition the facility into a 'care and maintenance' shutdown in December.

In a statement, the publicly-traded company said it needed to stop mining for the lithium-rich mineral spodumene due to the low prices it currently attracts.

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

PSR Analysis: Mining lithium requires a lot of heavy equipment which costs a lot of money, at the same time the spodumene price has fallen more than 84% since March 2023 to around US \$1000 per ton making the mine uneconomic even though demand for lithium remains high. **PSR**

New Research Optimizes Energy Density in Sodium-Ion Batteries

A machine learning model has identified optimum composition to attain the highest energy density for sodium-ion (Na-ion) devices.



Scientists from Japan's Tokyo University of Science (TUS) and Nagoya Institute of Technology, and from Chalmers University of Technology, in Gothenburg, Sweden, have developed a machine learning method to optimize the energy density of Na-ion batteries.

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

PSR Analysis: This short article talks briefly about research that brings Na-ion batteries one step closer to becoming a commercially viable alternative to lithium-ion devices. **PSR**

A Final Note

Chery claims to have a 1 GWh solid-state battery production line – [Click Here](#)...The **Future of Hydrogen** energy incentives under a Donald Trump Presidency – [Click Here](#)...**Algae Biofuel** is booming without any help from ExxonMobil – [Click Here](#)...**CATL** Will put its second-generation sodium-ion batteries into production in 2025 – [Click Here](#). **PSR**



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About Power Systems Research

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