

Alternative Power Report

August 21, 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.

Safe, Long-Cyclable Lithium Battery for High Temperatures

New generation of batteries promises long life, greater safety

By Guy Youngs, Forecast & Adoption Lead

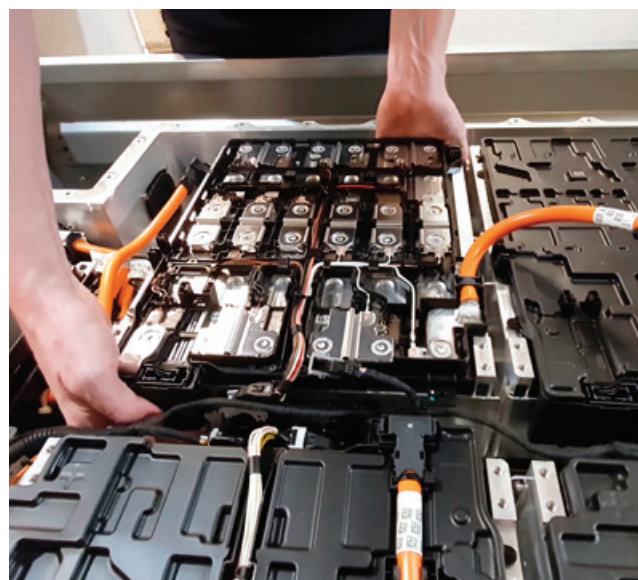


A research team at the University of Hong Kong (HKU) has developed a new generation of lithium metal batteries, with the innovation centering on microcrack-free polymer electrolytes, which promise extended lifespan and enhanced safety at temperatures as high as 100 degrees Celsius

The microcrack-free polymer electrolytes are synthesized via a straightforward one-step click reaction, exhibiting notable attributes including “a remarkable resistance to dendrite growth and outstanding non-flammability,” the researchers reported

Dendrite growth is a tree-like structure of crystals that grows on metal cathode and has large consequences regarding material properties as it causes the loss of active lithium inside batteries, which leads to capacity loss.

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



PSR Analysis: Dendrite growth has been a key component of the duration of battery life (in terms of the number of cycles and battery degradation), so any move in this area holds great promise. **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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Toyota Mirai Drivers File Class-Action Lawsuit Against Automaker

A number of people who own and lease the Toyota Mirai hydrogen car have filed a class action lawsuit against the automaker because of their dissatisfaction with the vehicle.

According to the lawsuit, the automaker misled Toyota Mirai customers when it came to the reality of owning the hydrogen powered vehicle. The complaint states that the Japanese company and its sales teams led potential customers of the fuel cell cars to believe that “hydrogen refueling is available, seamless, and comparable to refueling with gasoline.” The complaint also states that this was not the experience of those customers.

Each of these issues have been cutting into the resale value of the hydrogen car, which has dropped to only 19.4% of its value after five years of use.

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

PSR Analysis: The Mirai has been the jewel in Toyota’s hydrogen crown for some time now and this class action could be the beginning of the end for this model. This matter has been compounded by Toyota’s confusing strategy over Alternative Power vehicles. Only time will tell whether this proves to be the end of Fuel Cell vehicles (certainly at Toyota) or whether it will encourage more Hydrogen fueling stations. **PSR**

Wastewater Is Needed by the LFP Battery Supply Chain

Many people are talking about lithium iron phosphate batteries, especially auto industry stakeholders who are eager to get their hands on a higher-performing, lower-costing and safer battery. If the supply chain doesn’t get its act together soon, this may be problematic.

81% of the global supply of phosphate rock is produced by just six countries, with China and Morocco in the lead, but the real problem is further up the supply chain. Regardless of the source, an LFP battery can’t use phosphate rock straight from the mine. It has to be purified with only 3% of total phosphate production currently suitable for lithium ion battery applications, given its refinement needs



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

PSR Analysis: Gathering phosphates from wastewater sludge could be a solution, but as with most new tech, investment is need. A side effect of this could be improved water quality. **PSR**

Diesel Demand Drops as Commercial EV, Electric Semi Markets Grow

This article is a link to a podcast by Electrek which explores the historic drop in global diesel demand. It examines whether it is inflation and a slowing economy or the rapid rise in EV sales that’s displacing millions of gallons of oil demand..

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

PSR Analysis: The podcast gives a useful background to this story and is only 14 mins long. **PSR**



Has Tesla Figured Out Longer-Lasting Manganese-Rich Batteries?

Manganese-rich cathode active materials such as LiMn_2O_4 have long been considered an interesting option for their low cost, high voltage, and relatively low environmental impact, but they haven't been seriously considered for electric vehicles due to a tendency for rapid degradation

Now, Tesla has patented new 'doped manganese-rich cathode active materials' that it claims increase the longevity of those battery cells.

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

PSR Analysis: These ultra-cheap batteries won't be powering electric cars anytime soon. But someday they might, and when they do, this may be as critical to the success of the EV revolution as any technological breakthrough we have seen so far. **PSR**

This Carbon Fiber Battery Might Hold the Key to Our EV Future

We've seen tons of advancements in the realm of EV batteries in the past few years, but this just might be one of the biggest. A startup from Sweden by the name of Sinorus has developed special carbon fibers that work as battery electrodes.

Carbon fiber has become pretty much ubiquitous in the powersports and automotive industries thanks to its light weight and high durability. However, this development marks a significant leap forward when it comes to producing more efficient, lighter-weight batteries.

Apart from storing energy, this specific type of carbon fiber can also be used as structural components of machines and vehicles.

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

PSR Analysis: Presently, carbon fiber battery technology is being used to replace AAA batteries in small electronics. The real test of this technology is whether or not they can commercialize this technology for larger machines such as smaller Off Highway vehicles or passenger cars. **PSR**

Is Hydrogen Combustion a Viable Clean Electricity Production Method?

Automakers and industries aren't the only polluters looking to decarbonize using hydrogen combustion. Utilities have been looking at this as a possible opportunity for them as well.

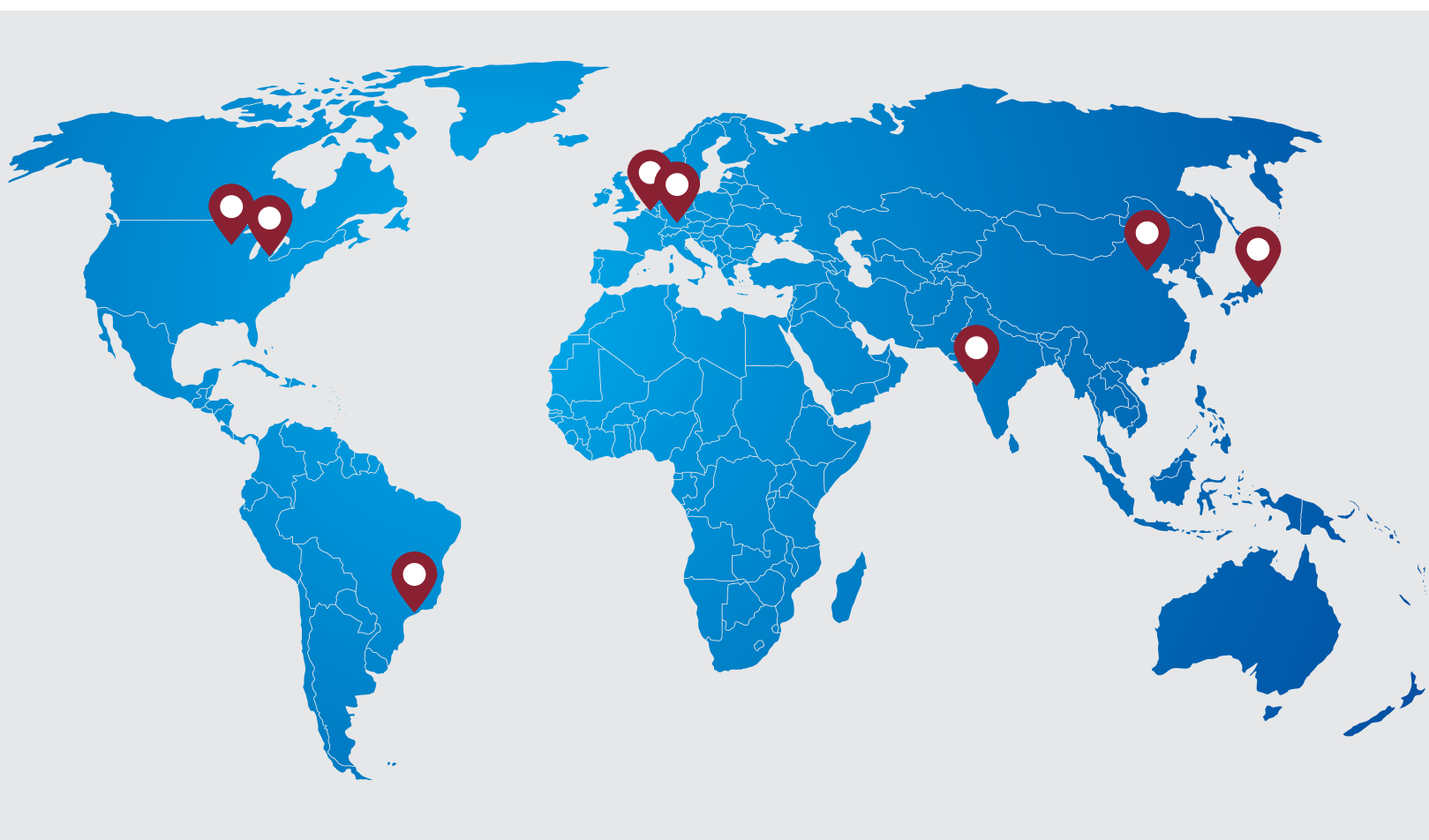
The appeal of hydrogen combustion for utilities is that it can be burned as a low-carbon or even carbon emission-free electricity generation. However, it is not entirely clear whether this is the fuel source they have been looking for, or if H_2 is best left to other industries that can use fuel cells or internal combustion engines (ICEs) in a different way.

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

PSR Analysis: The main problem with hydrogen is the lack of suitable infrastructure. If there isn't a demand from Utilities, this reduces the general level of demand for hydrogen as a whole – if there is no investment from Utilities then hydrogen will struggle to develop the infrastructure it needs. **PSR**

A Final Note

Battery Minerals: A Common Fight Over Uncommon Things– [Click Here...](#) **New “Supercell” EV Batteries Have All The Energy Density For 20% Less Cost– [Click Here...](#) Tesla gives encouraging update on 4680 battery cells– [Click Here...](#) Is the off-highway industry ready for hydrogen vehicles?– [Click Here](#) **PSR****



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About Power Systems Research

Power Systems Research (PSR), established in 1976, is the leading source of data, analysis and forecasting on the global production of engines and engine-powered equipment, including class 8 vehicles. One of its databases, EnginLink,TM includes production figures down to the model level for OEMs in key market segments, such as commercial vehicles. PSR's global research network includes eight offices and stretches across 200 countries and four continents.



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