

Alternative Power Report

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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.

CATL Expands Battery Market Share Lead in 2023

BYD Gains Market Share



By Guy Youngs, Forecast & Adoption Lead

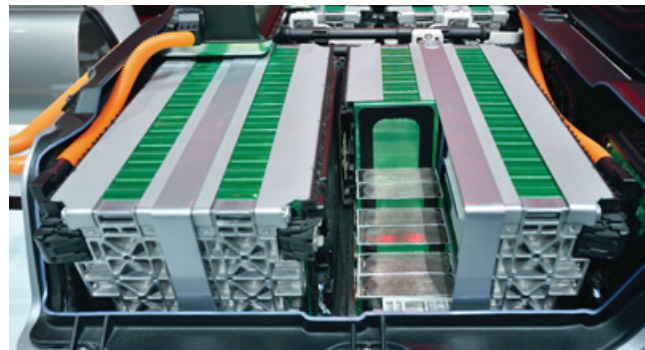
CleanTechnica's 2023 provisional report shows a 40% growth in demand for lithium-ion batteries in the automotive sector, reaching 712 GWh. CATL and BYD lead the market, with CATL holding a 34%

share due to its successful partnerships and innovative battery technologies. BYD moved into second place with 16% share, up from 14% in 2022, replacing LG, which slid to third place with a 15% share. It had 17% in 2022. BYD grew 59% YoY.

CATL produced 243,000 units in 2023, up from 164,000 units in 2022. BYD produced 116,000 units in 2023, an increase from 73,000 in 2022.

LG lost share in 2023 due to the lack of new orders, GM's troubled ramp-up of its new EVs, the end of life of some important volume models, and also the fact that volume from some clients, like Mercedes or Ford, is being diverted to the competition.

The sector's growth is driven by larger battery capacities in new EV models, and the top three manufacturers account for two-thirds of total battery deployment.



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

PSR Analysis. The global battery industry is expected to continue its rapid growth, driven by the expanding EV market and technological advancements. Companies like CATL and BYD are well-positioned to capitalize on this trend, but the industry must address challenges such as material scarcity and environmental impacts.

However, market dominance by a few companies could limit competition and innovation, and recent rapid growth may strain raw material supplies and manufacturing capabilities. The future success of the battery sector will hinge on balancing growth with sustainability and innovation.

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 Trucks Can Haul 100 Tons

Caterpillar and CRH have collaborated to test electric mining trucks capable of hauling up to 100 tons, aiming for sustainable heavy equipment solutions and decarbonization. It's the first time a truck this size has been used in the aggregate business. The electric 793 mining truck, capable of carrying 265 tons, features advancements such as autonomous hauling and regenerative braking, emphasizing its potential in safety, performance, and operational efficiency without immediate recharging needs. Electrek's analysis underscores the significant reduction in carbon emissions and noise, highlighting the move towards a greener future in heavy machinery and mining industries.

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

PSR Analysis. The integration of electric trucks in mining and heavy industries is a promising step towards sustainability. As technology advances and costs decrease, adoption is likely to increase, making electric heavy machinery a cornerstone in achieving net-zero emissions. The effectiveness of these trucks will depend on continuous improvements in battery technology, charging infrastructure, and regulatory support. In the long run, electric heavy trucks are poised to become a standard in the industry, significantly contributing to environmental conservation and operational efficiency.

Electric trucks significantly reduce carbon emissions and noise pollution, aligning with global decarbonization goals. Features like autonomous hauling and regenerative braking enhance safety and efficiency, potentially reducing operational costs over time. However, the initial high cost and infrastructure requirements for electric heavy trucks may hinder widespread adoption in the short term. There also may be challenges in reliability and performance in extreme conditions.

Daimler Aims for Hydrogen Milestone

Daimler's GenH2 hydrogen trucks, powered by liquid hydrogen for an electric motor, are set to hit German roads in 2024. These trucks, boasting a hauling capacity of about 25 tons for over 1,000 kilometers on a full tank, integrate a propulsion system delivering 300 kilowatts, supplemented by a battery for an additional 400 kilowatts during high-demand situations like hill climbs. This initiative represents



a collaborative effort with Air Liquide and Linde for H2 refueling services, leveraging advanced storage technology for higher energy density and operational efficiency.

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

PSR Analysis. Hydrogen trucks provide environmental benefits since they produce zero emissions during operation, contributing significantly to reducing carbon footprint in the transportation sector. And with a range of over 1,000 kilometers on a single fill, these trucks can meet long-haul requirements, making them competitive with traditional diesel trucks.

There are infrastructure challenges associated with the deployment and success of hydrogen trucks which depend on the availability of hydrogen refueling stations. Building this infrastructure will require substantial investment and time. The initial costs of hydrogen fuel cell technology and infrastructure development are high compared to electric and diesel alternatives.



In the future, as hydrogen production becomes more sustainable and costs decrease, hydrogen trucks like Daimler's GenH2 could play a crucial role in decarbonizing freight transport. The collaboration with companies like Air Liquide and Linde to expand refueling infrastructure is a positive step towards this. However, the pace of adoption will depend on overcoming the current challenges of cost and infrastructure. Effective government policies and technological advancements could accelerate the transition, making hydrogen trucks a viable and environmentally friendly option for long-haul transport.

Toyota Maintains EV Market Skepticism

Akio Toyoda, Toyota's chairman, has expressed skepticism about the widespread adoption of electric vehicles (EVs), estimating they will achieve only a 30% market share despite evidence of higher adoption rates in countries like Norway and China. This stance aligns with Toyota's continued focus on hybrids and fuel cell vehicles, contrasting with the rapid EV market growth and the aggressive EV strategies of competitors. Toyoda's comments reflect a cautious approach to EV adoption, diverging from industry trends favoring more substantial EV penetration.

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

PSR Analysis. Toyota's strategy might pose challenges in maintaining its market position as the automotive industry shifts towards electrification. Adapting to EV trends and expanding their electric lineup could be crucial for Toyota's long-term success.

Toyota's emphasis on hybrid technology may cater to markets with insufficient EV infrastructure, but Toyota's conservative EV market share estimate may limit its competitiveness as global EV adoption accelerates.

Wireless Charging in Extreme Cold

Ideanomics' WAVE division has developed a 500kW wireless charging system for electric trucks, designed to function efficiently in extremely cold environments. This system, which allows for charging without physical connections, is particularly beneficial for maintaining operational efficiency in challenging weather conditions. Deployed at significant locations like the Ports of Long Beach and Los Angeles, this technology demonstrates a potential leap forward in the practical application of electric heavy-duty vehicles.

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

PSR Analysis. Wireless charging enables continuous operation of electric trucks in cold weather, overcoming the limitations of traditional charging methods. And it also reduces the need for physical charging infrastructure, lowering maintenance and operational costs.

However, the initial setup cost and technological complexity could hinder widespread adoption. Compatibility with existing and future electric truck models remains a challenge.

As the electric vehicle industry evolves, wireless charging technology could become a critical component, especially for commercial and heavy-duty applications

in harsh environments. Its success likely will depend on balancing cost, efficiency, and widespread infrastructure development. This technology promises to enhance the feasibility and attractiveness of electric trucks, potentially leading to broader adoption and a significant reduction in emissions from the transportation sector.

CATL Plans \$1.83B Wind Power Move

Contemporary Amperex Technology Ltd. (CATL), the leading EV battery manufacturer, plans to build a \$1.83 billion offshore wind farm in Fujian Province, China, aiming to power its operations with renewable energy. The 800-megawatt project underscores CATL's commitment to sustainability and reducing its carbon footprint.

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

PSR Analysis. While this shift to wind power could reduce the company's reliance on fossil fuels and enhance CATL's green credentials. However, one challenge might be the initial high investment costs. This move is likely to set a precedent for energy-intensive industries, showing effectiveness in merging renewable energy with manufacturing operations for a sustainable future.

Toyota's Hydrogen Car Push

Toyota's push for hydrogen cars is explored in this article, but it raises questions about whether these cars will ever be as cost-effective to run as electric vehicles (EVs). The top two features highlighted in the article are the potential for zero-emission driving and quick refueling times offered

by hydrogen cars. Despite these advantages, one of the most significant challenges facing hydrogen cars is the cost efficiency compared to EVs.

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

PSR Analysis. Hydrogen-powered cars include zero-emission operation, which can contribute significantly to reducing greenhouse gas emissions and combating climate change. Additionally, the quick refueling times of hydrogen cars provide a more convenient experience for drivers compared to the longer charging times of EVs. However, some cons discussed in the article include the high costs associated with producing and distributing hydrogen fuel, as well as the limited infrastructure for refueling stations.

In the future, hydrogen cars may find niche markets where their unique advantages, such as quick refueling and longer driving ranges, are highly valued. However, widespread adoption may be hindered by the challenges of cost efficiency and infrastructure development. To increase effectiveness and competitiveness, advancements in hydrogen production technologies and infrastructure expansion will be crucial. Overall, while hydrogen cars have potential benefits, their success in the market will depend on overcoming cost barriers and establishing a robust refueling network.

A Final Note

CATL plans battery swapping. [Click Here...](#) **CTL** partners with **Orange EV**. [Click Here...](#) **Ethiopia** may ban gas-powered cars. [Click Here...](#) **Ultrafast Li-ion** battery charging. [Click Here...](#) **PSR**





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