

The latest innovation from Horizon packs quite a punch in high power Fuel Cell stacks.

Horizon Fuel Cell Technologies' breakthrough in high performance graphite bipolar plates targets next generation automotive Fuel Cells

SHANGHAI, CHINA, October 16, 2018 /EINPresswire.com/ -- Scientists at Horizon Fuel Cell Technologies announce a breakthrough in ultra-thin, high performance graphite bipolar plate technology, laying the foundation to power next generation automotive Fuel Cells.

Bipolar plates play an important role in Proton Exchange Membrane (PEM) Fuel Cells, as they deliver the essential hydrogen and oxygen needed to create power, vent by-products, and provide the electrical connection between individual cells.



Bus in China - Powered by Horizon

The latest development from Horizon achieves plate thickness of 0.85mm, which was previously only possible with metal bipolar plates. This delivers Fuel Cell power density in excess of 4kW/L, representing 100-200% improvement over most graphite plate designs, and 20-40% over most metal plate designs.

Emerging requirements for PEM Fuel Cells lead inexorably to higher power systems, making the importance of Power Density obvious. This is often coupled with very demanding durability and lifetime expectations, which are hard to meet when relying on metal bipolar plates.

Graphite bipolar plates are widely used in stationary fuel cell systems, and have excellent conductivity and long lifetime. However, conventional graphite plates are typically two to three times thicker than metal plates. This limits adoption in automotive applications, where compact size and light weight are important.

Fuel Cell performance is impacted by the design of the "flow field", which describes the means by which reactant and waste gases move through the bipolar plates. Optimising the flow field is challenging for metal plates due to metal formation limitations; however, with molded graphite plates, flow field design is almost unlimited. This lays the foundation for next-generation automotive stacks with higher power density.

George Gu, Horizon CEO, commented "The ultra-thin graphite plates developed by Horizon eliminate concerns around plate assembly thickness in automotive applications, while delivering excellent electrical properties and system lifetime. Our customers don't need to compromise on any aspect of cost or performance."

With strong support from the national government, electrification of heavy vehicles in China is a driving force for ongoing innovation in zero emission vehicle technologies, including Fuel Cells and related materials technologies. Horizon couples its China base with strategic relationships around the world to deliver technology breakthroughs and penetrate global markets.

Horizon has ambitious plans for their liquid-cooled Fuel Cells, already moving beyond Automotive applications into stationary power generation. Gu promises "You can expect to see a lot more from Horizon in high power Fuel Cell systems."

About Horizon Fuel Cell Technologies:

Horizon is a world leader in PEM Fuel Cell systems, with a wide range of Fuel Cells, in both air-cooled and liquid-cooled designs, offering modules delivering up to 100kW net output. Horizon has recently commenced production and testing at their new PEM Fuel Cell manufacturing facility in Rugao, China, with stack capacity of 30MW per year.

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