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# This Israeli company seeks to revolutionize engines around the world

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Gal Friedman, Co-Founder, Chairman & CMO alongside Ariel Gorfung, Co-Founder and CEO (photo credit: DAVID KATZ)

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Unarguably, Nikolaus Otto's four-stroke internal combustion engine (ICE) is a first-rate staple in the automobile engineering industry. With its invention, a real transition from time and resource-consuming steam engines to hyper-efficient and more reliable ICEs began.

Fast forward to over 150 years later, and [more than 90%](#) of the vehicles on global highways will not run without them. According to Grandview Research, an expected compound annual growth rate of [9.3% from 2022 to](#)

2030 is enough evidence that the demand for ICEs will continue to grow exponentially.

However, since the Otto Cycle was developed in 1876, the ICE has seen very little development in its structure and key components. This is not for lack of flaws. ICEs are associated with unflattering drawbacks like disturbingly high levels of environmental pollution across the board, an impractical size, a high maintenance cost, and even mechanical issues like their multiple moving parts and complex structure.

But here's the good news: an Israeli company seeks to disrupt this 150-year-old ICE market by dawning a linear energy technology set to roll out in 2023. This company is [Aquarius Engines](#) (TASE: AQUA), which has developed what it calls "a ground-breaking tool that seeks to be more compact, cost-effective, fuel-efficient and technologically advanced than the original Otto Cycle."

### **A mechanical revamp**

Otto's invention is riddled with nuts and bolts and a thousand moving parts, while Aquarius Engines creates a streamlined build housing a [single-action piston](#). Furthermore, as opposed to the bulkiness of Otto's invention — which weighs between 400 lbs and over 800 lbs — the Aquarius engine's 23 lbs size is the definition of lightweight. The ability to run multi-fuels (synthetic, bio, and fossil fuels) within the same engine is yet another plus to this upgrade.

Aquarius' engines are also integrated into a 16kw generator set that incorporates the firm's user-friendly interface management system. To transition this product into a 'smart, remotely operated and optimized energy asset that can be monitored and managed from anywhere, at any time,' the company partnered with the Israeli-tech Galooli. This partnership with Galooli led to the fusion of their artificial [intelligence](#) remote management module into Aquarius' backup generators to deliver real-time data insights for the machines.

### **Powered by hydrogen**

According to [experts](#), transportation accounts for 25% of greenhouse gas emissions globally. Mainly, ICEs are responsible for about [10% of the world's greenhouse gas emissions](#). As a result, world leaders are vigorously addressing this issue and implementing measures to mitigate the [increasing greenhouse emissions](#) worldwide.

Recently at the United Nations Summit's [annual climate conference](#) (COP27) in Egypt, US President Joe Biden called on world leaders to 'step up' their efforts in reducing emissions. Following the firm's existing commitment to do just that by producing a cleaner alternative to carbon-emitting engines, Aquarius Engines has been conducting testing with a [hydrogen-fueled engine](#). In a [news report](#), Chairman and Founder Gal Fridman revealed that "Initial testing shows that [the] hydrogen engine can be the perfect green,

sustainable solution for transport globally and for remote power production." Once developed, this engine will emit gasses at [negligible to zero levels](#). It seems this development could not have come at a better time.

### **Now and in the future**

Aquarius' revolutionary development has also garnered attention worldwide, including from Japanese auto parts manufacturer TPR, which produces engine components for the automotive industry worldwide. In early 2022, TPR committed \$5 million in capital to further Aquarius' production of the generators. "The investment of TPR in the company is a significant expression of confidence in the company's operations and strategic development," Ariel Gorfung, co-founder and CEO of Aquarius, said in a [press release](#). "TPR will help through its status and connections to promote our activities in the world and in Japan in particular." Besides TPR, Aquarius Engines, has partnered with Nokia and a few other research institutions. However, it continues to seek other collaborations with partners and investors to further its developments, especially in the telecommunication and auto industries.

Between 2025 and 2030, the company also projects entering the auto market, supplying an auxiliary generator to power the cabin of trucks and the refrigerated areas of cooling trucks when the engine cannot operate. Plans equally include using generators to charge the battery and electric engines in hybrid auto powertrains and supporting electronic systems on yachts. The aviation sector also made the target list. Aquarius Engines plans to expand its technology into this sector, among others.

As technology advances and governments across the globe move towards a greener world, Aquarius Engines is building towards that trend with its innovative engine that incredibly aids transportation in an environmentally-conscious way.

*This article was written in cooperation with The Institute for Mechanical Innovation*

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