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#RevvedUp

Super hybrid car is heading down the road

Aquarius Engines aims to add advantages of hybrid and electric cars cheaply to regular autos; raised \$8 million in 5 days and now is in second round.

By [Abigail Klein Leichman](#) | JUNE 29, 2016, 7:20 AM



Image via shutterstock.com

Why do hybrid and electric cars account for less than 3 percent of the 89 million cars sold every year across the world? It's mainly because hybrids are expensive and 100% electric cars can't go far between battery charges.

While others scramble to design smaller, lighter combustion engines, or better fuel-cell and

battery technologies, an Israeli startup is totally reinventing the combustion engine to power the hybrid car of the future – a smart electric vehicle.

Chief Marketing Officer and cofounder Gal Fridman tells ISRAEL21c that after just two years in business, [Aquarius Engines](#) has filed three patents and signed a deal to test the Aquarius engine in a major European automaker's concept car at the beginning of 2017.

Because Aquarius uses so little fuel to power the engine and charge the battery, drivers would have to fill the 50-liter (13-gallon) tank only about every five or six weeks.

Whereas conventional automobiles can go 600 kilometers (372 miles) on 50 liters of gasoline, and an electric car can go 350 kilometers on a single charge, a car fitted with the Aquarius engine has a range of 1,200 kilometers (745 miles) per tank.

What's more the company claims that vehicles made with 20-kilogram (44-pound) Aquarius engines – instead of conventional 160-kilo engines – will be less expensive to buy and to operate than are the regular, hybrid or electric cars of today.

And although it would cost billions for automakers to build new assembly lines to accommodate the Aquarius engine, the founders are banking on the fact that automakers are desperately seeking new technologies to comply with ever stricter pollution regulations.

"The car industry is huge and it's under threat," says Fridman. "Manufacturers cannot meet today's regulations and those regulations will be much tougher in two to five years. In fact, when we started, we wanted to go into generators because we thought cars would be too slow an industry to break into, but the doors opened really fast."

Though many others are also scrambling for solutions to offer the industry, Aquarius technology is unique in the world, say cofounders Fridman, CEO Ariel Gorfung and CTO Shaul Yaakoby.

"We are the hottest startup in the area right now," says Fridman. "We raised \$8 million in five days in our first funding round, and we had a line of investors to choose from. That never happened in any other company I was involved with. I think that's because we can make a really big impact. You don't have to be an expert to understand that we can make a global change."

A farfetched idea

In early 2014, automotive industry inventor and adviser Shaul Yaakoby presented his revolutionary combustion engine concept to Fridman (owner of the global branding company Design and Shoot, and formerly an executive with Keter Plastic and ZAG Industries) and Gorfung (a successful serial entrepreneur and managing partner of clean-tech VC Oris Investments).

While a typical combustion engine converts fuel to electrical power with the help of a constantly revolving alternator, Yaakoby imagined an internal combustion engine with a linear alternator needing no crankshaft. A cylinder would move the fuel from side to side to generate electrical current, much like sea waves can do through an up-and-down movement.

This small, lightweight and unusually efficient engine would be made of only 20 parts and only one moving part, compared with 150 to 200 mostly moving parts (crankshaft, rods, pistons, cylinders

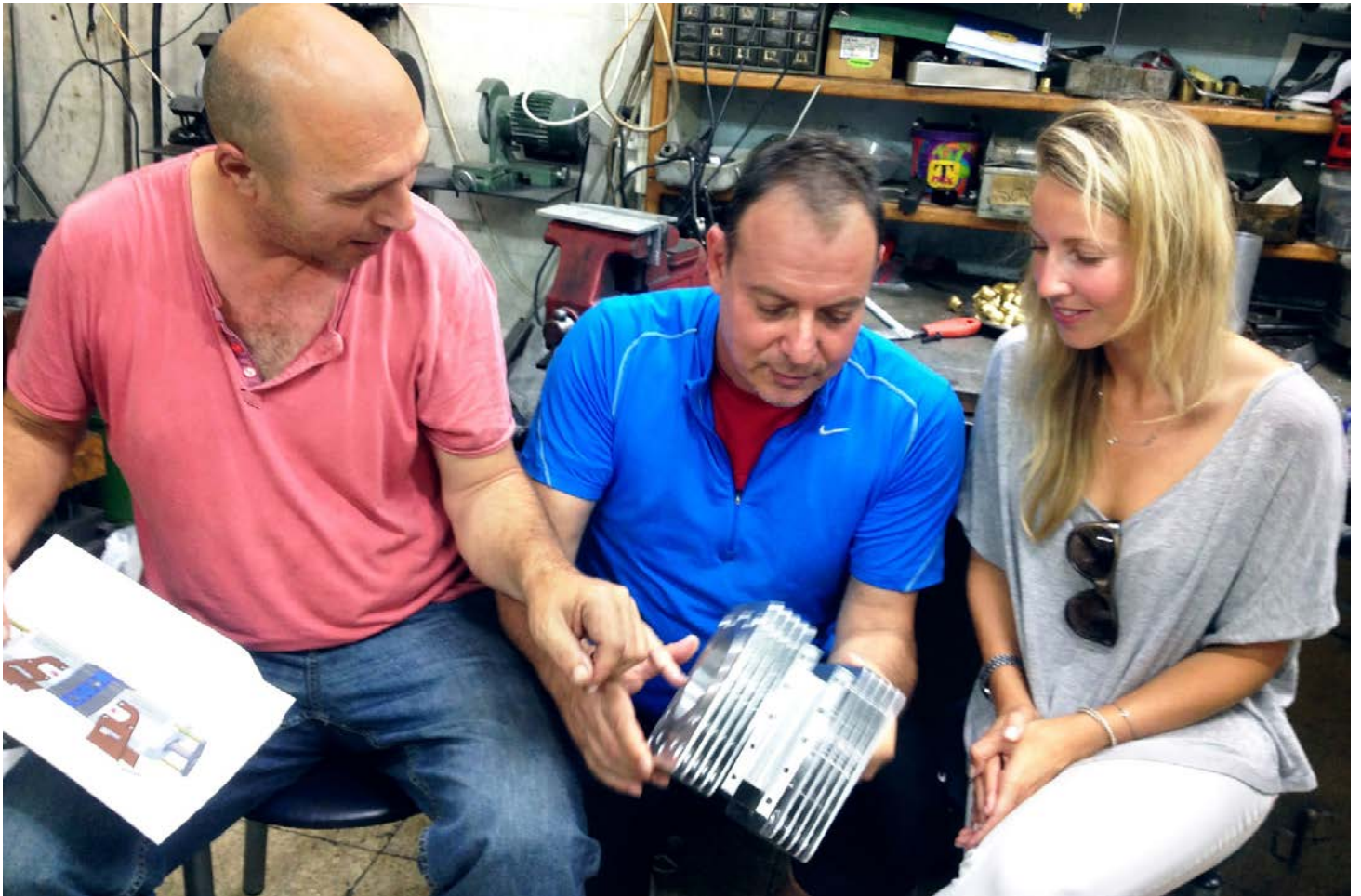


Photo: courtesy of Shaul Yaakoby, CMO Gal Fridman and Director of Business Development Maya Gonik with the Aquarius engine.

and valves) in a regular 80-horsepower engine.

Fridman thought Yaakoby's idea sounded farfetched, but Gorfung was enthusiastic.

"Ariel said, 'If there's a 1% chance this could come true, we can't afford not to be there. 'So we met again and decided to invest our own money to build a prototype because we didn't see any other way,'" Fridman tells ISRAEL21c.

They named the company Aquarius in a nod to the futuristic theme song from the 1967 musical "Hair."

Gathering speed

In less than a year, Yaakoby built a working engine. "Ariel and I left everything to work full time in Aquarius because we never had the opportunity to work on such an exciting venture," Fridman says.

Fast-opening industry doors and investor wallets allowed the Rosh HaAyin-based company to pick up speed quickly.

"We are now building a commercialized engine that will be very durable and ready to be mass produced," says Fridman, adding that Aquarius would ideally be produced in Israel.



This is what your car engine may look like in the near future. Photo courtesy of Aquarius Engines

A second round of funding aims to raise “tens of millions of dollars” toward building an assembly line to make the Aquarius-powered smart electric vehicle.

“To come to an industry that needs to invest billions to adopt a new technology is something that usually does not happen,” concedes Fridman. “In this case, we see that we don’t even have a commercial product yet but we have partners ready to test and develop it with us.”

For more information, click [here](#).