



Global Energy Solutions

For Prosperity and Climate Neutrality

This is the Global Energy Solutions newsletter for the month of April 2021.

Our topics:

- **Climate-neutral driving thanks to methanol**
- **H2Global: Boost for international hydrogen markets**
- **GET H2: Private-sector project picks up speed**

The HYPERHYBRID from Voralberg

By Bert Beyers

In Austria, there is an exciting car prototype on display that fits the Global Energy Solutions concept. It is powered by an electric motor. The electricity comes from a generator. It is fed by an internal combustion engine that is fueled with e-methanol (green methanol). This makes the hybrid vehicle climate-neutral. Its hardware combines all the advantages of modern automotive engineering. However, the infrastructure for the fuel, e-methanol, only exists on paper so far. Initiator Frank Obrist believes that the two together make an interesting business case.

The vehicle

In Lustenau, Austria, where the Obrist Group is based, there are no long hesitations. This is how a modern hybrid vehicle is produced there: Take a Tesla and first remove the batteries. The vehicle is then fitted with a new, much smaller battery. It is fed by a two-cylinder internal combustion engine. The engine is fueled with e-methanol. Frank Obrist, CEO of the Obrist Group, is convinced of his solution: "light, inexpensive, resource-saving, and thus affordable for ordinary people worldwide."



Frank Obrist, CEO of the Obrist Group

Obrist describes commercially available hybrid cars as "08/15 vehicles" powered by a sophisticated four-cylinder, and then there's "a bit of electrification" on top of that. "We come at it from the other side, the electric side, and make it smarter and more efficient." Because an electric car has many advantages for Obrist. It drives in urban areas with zero emissions, it has a continuous acceleration, without a transmission, and the braking energy ends up back in the battery via recuperation and not in glowing brake discs. Lustenau calls its own vehicle HyperHybrid or Electric Vehicle 2.0.

Zero Vibration Generator

Obrist's 54 hp two-cylinder engine is a proprietary development. It does not have to rev up like a conventional car engine, but runs in the optimum speed range, if at all. Therefore, it is more efficient and designed to run smoothly. "What one cylinder does wrong on the left, the other does wrong on the right." It is also encapsulated and therefore barely audible. The job of the zero vibration generator is to produce electricity for the electric motor, charge the battery and, if necessary, feed the air conditioning system.



Obrist Zero Vibration Generator

And because it essentially only buffers, it is designed to be relatively small at 17.3 kilowatt hours. The original Tesla batteries, which have several times that capacity, play in a different world. In Obrist's overall system, replacing the battery is the crux of the matter. "That's where costs come down, that's where the most resources are saved." Consequently, the rebuilt Model Y is also significantly lighter than the original Tesla. In mixed driving mode, the vehicle makes do with two liters of fuel, according to Obrist. The CEO gives the range of the HyperHybrid prototype vehicle as 1000 kilometers. "With it, I can drive from Lindau to Hamburg without refueling."

E-fuels from the desert

The prototype is currently fueled with normal gasoline. But that is only an intermediate stage. When it comes to fuel, Vorarlberg's thinking is downright visionary. The goal is nothing more and nothing less than to lead global mobility into a CO₂-neutral future.

To achieve this, Obrist is relying on a scientific concept called "The Modern Forest". This is a factory for e-methanol based on the principle of "everything in one place." Namely, the production of electricity, hydrogen and methanol - in that order. In the sunbelt of this world, the energy is available at extremely favorable prices. Obrist refers to the Al Dahfra photovoltaic plant in Abu Dhabi with a price of 1.14 cents per kilowatt hour. The CEO is fascinated by the surge in innovation and price that PV technology has experienced over the past few decades: from around 50 cents per kilowatt hour down to the aforementioned price of just over one cent.

In the further production steps of these plants in the sunbelt of the earth, Obrist relies on the electrolysis and extraction of CO₂ from the atmosphere. For Frank Obrist, however, direct air capture is only one possibility among many. It is clear to him that the use of CO₂, for example from cement production, is more cost-effective. In any case, the end product is methanol, which is to be transported via pipelines and tankers. Obrist makes explicit reference to Siemens Energy's Haru Oni project in southern Chile, which Global Energy Solutions reported on in its March newsletter. "This package differs only in nuances from that of Siemens Energy and Porsche. They're just doing electricity via wind and ultimately a gasoline substitute. We, on the other hand, want to build a global energy carrier. And that is e-methanol."

The solution in the drawer

Obrist puts the pure production costs for a ton of e-methanol at \$240 to \$280 per ton. That's about the current price level of fossil-derived methanol. "If this pays off, it means that oil-exporting countries, such as Saudi Arabia, which are located in the Earth's sunbelt, will also develop high-level interest. That's assuming a

positive business case comes out of this." In fact, Obrist says there are already talks with partners in the Arab region.

Unlike Siemens Energy, whose project is about to be implemented, "The Modern Forest" only exists on paper so far. Of course, Frank Obrist also knows that a medium-sized company alone cannot revolutionize the global energy system. "But this is the package now. We have it in the drawer. We don't have the billions now, but we at least have the solution in hand."

Meanwhile, Frank Obrist has written a letter to American entrepreneur Elon Musk explaining his ideas. Musk, too, wants to contribute to solving the climate problem. Just like Frank Obrist, he sees himself as having a "duty to contribute" to the solution of this human problem.

Next steps

The Obrist Group comes from the automotive supply industry. It works with Audi, BMW and Daimler, for example. For the Mercedes S-Class, it developed the first environmentally friendly air conditioning system using R744 refrigerant. Now Obrist is betting on the HyperHybrid. "We will build a whole fleet of these vehicles this year." And it will be based on the Tesla Model Y. The car has a number of advantages for Frank Obrist. It has a particularly streamlined shape and a good length. "And we're combining that with e-methanol for the first time in history, so it's a continuous look into the future." The vehicle and the visionary fuel belong together for Frank Obrist. In Vorarlberg, these questions are approached in a practical way: How does such a car drive? What emissions are produced? Why is it CO₂-neutral? "We want to bring these things to the attention of politicians, legislators and associations. Because they don't yet see that such solutions really exist." The partners for the development have already been secured.



Obrist Group, HyperHybrid

Frank Obrist does not see his HyperHybrid as competing with battery-electric vehicles. There is of course a market for these high-quality cars, for example in Europe and the USA. But as a technician, he also has a responsibility to supply vehicles to people in Siberia, India, Africa or South America. "Elon Musk's fast-charging station in the Congo, that's going to take a few more days." Elon Musk is right, he says, that it won't work without renewable electricity. But ultimately, a global solution is needed. And that's why Frank Obrist believes that transporting and storing energy using e-methanol is the key strategy. Ultimately also for trucks, ships and airplanes.

When will it be possible to buy the car from Vorarlberg? Frank Obrist says he is currently negotiating with my major licensee. And if all goes well, he plans to start production in 2025. "Of course, as a 45-man operation in Vorarlberg, we can't do it alone. But by showing what we can do, by developing the engine to production readiness and by driving the car, it will get out to the public." [To the Interview.](#)

Further news from the environment of Global Energy Solutions

H2Global: Boosting international hydrogen markets

As part of the National Hydrogen Strategy, the program aims to efficiently promote a market ramp-up of green hydrogen and hydrogen-based PtX products. This competes with the currently still cheaper gray hydrogen from fossil sources. Within the framework of development cooperation, energy partnerships are to be established with countries that show great potential for a long-term cost-effective and supply-secure green hydrogen supply. In addition to exports, local use of hydrogen and its derivatives is also intended. The same regulatory conditions are to be applied locally. The planned auctions will be handled by an intermediary: HINT.CO. Supply and demand are to be brought together with a double auction mechanism. The H2Global Foundation, which has yet to be established, is responsible for implementation.

Global Energy Solutions believes that Germany and Europe will have to import large quantities of green hydrogen in the future. At the same time, this opens up potential for value creation in the global South. H2Global is an important step on this path. Read more [here](#).

GET H2: Private-sector project picks up speed

This initiative also aims to strengthen the hydrogen economy. GET H2 is supported by seven companies: BP, Evo-nik, Nowega, OGE, RWE, Salzgitter Flachstahl and Thyssengas. The consortium intends to establish a value chain from the production of green hydrogen to transport and industrial use. From Lingen in Emsland to Gelsenkirchen and from the Dutch border to Salzgitter. Implementation of the cross-border project is planned for the period from 2024 to 2030.

With an investment sum of 660 million euros, GET H2 is one of the major European hydrogen projects. Electrolysis plants with a total of 300 MW are planned. However, this corresponds to only about 0.1 percent of the annual primary energy consumption in Germany. Here, too, it is clear that today's and tomorrow's energy needs can only be met through smart cooperation. Global Energy Solutions is convinced that Germany and Europe will remain energy importers in the future. Read more [here](#).

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