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With innovative tire, Israeli start-up reinvents the wheel

Galileo's new dual-use design smooths a path for agricultural, military and other off-road vehicles

BY DAVID SHAMAH | November 4, 2015, 2:16 pm | 2



Alon Hayka (L) presents Galileo Tires to an audience at the Go4Israel event, October 26, 2015 (COurtesy)

Google and Apple are working on cars that drive themselves, and the rest of the auto industry is touting smart, Internet-connected cars. But while the upper part of the car – the engine, passenger compartment, and body – have been upgraded over the years, little if anything has been done to improve tire technology.

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But that is about to change, thanks to an innovation developed by Israeli start-up Galileo Wheel. According to CEO Alon Hayka, Galileo has “developed the first innovation in tire technology in five decades. One hundred years ago the bias (diagonal) ply tire was invented, and fifty years ago they developed the radial tire. We have a new design that will solve many of the problems with tires, especially for agricultural, industrial, and military use.”

Once Galileo conquers those fields, the company will turn its attention to the huge consumer market – specifically to owners of SUVs and recreational Jeep-style vehicles, said Hayka. “Our design is ideal for use on and off road, because it provides better control, a wider footprint, more stability, and the ability to transform between tire and track mode, depending on what terrain the vehicle is riding on.”

Using its proven technology – in the past, Galileo tire designer and Chief Technology Officer Avishay Novoplanski developed designs for tires that could climb stairs – the company recently turned its attention to the \$10 billion agriculture vehicle business, designing tires for tractors, farm trucks, and other other agricultural vehicles. Galileo, along with Mitas, a Czech company that is one of the world’s largest producers of tires for agricultural vehicles, produced a beta model for the commercial market, which Hayka believes will be on the market in the next year or so.

Galileo was one of a dozen start-ups that presented their technology at the annual Go4Israel conference in Tel Aviv Monday. Considered one of the most important gatherings of international investors in Israel, the conference discussed issues relevant to investors and start-ups, including raising funds and establishing strategic alliances between corporate, entrepreneurs and investors from around the world. Companies presenting at the event included firms in hi-tech, life sciences, renewable energy. Among the investors was a large delegation from Europe, particularly France, and from China.

The Chinese presence in particular was noticeable at the conference, said conference chairman Edouard Cukierman, who heads the Cukierman & Co. Investment House and is Managing Partner of Catalyst Funds. “With an increasing presence of Chinese investors at the Go4Israel conference, which are now the world leaders in investments in Israel, we can help open new global opportunities and create new relationships between entrepreneurs and international investors. Israel as a country and Israelis as business partners have a lot to offer worldwide.”

At first glance, the Galileo design looks somewhat flat because of the air pocket that seems to hang at its side. That pocket is essential to maintaining stability on different surfaces, said Hayka. “When the surface is rough and unstable, the tire rides flatter covering more surface, like a track, the solid belt tread under tractors, military vehicles, and the like.”

That's useful on rough surfaces, but on a normal, paved surface, a track does not provide the air cushion needed for a comfortable ride, he added.

That's been the choice until now, said Hayka – either a solid track for moving along rough surfaces, which provides greater flexibility for uneven surfaces, mud, rocks, etc., or a cushioned, air-filled tire which provides a stable ride on paved surfaces but is too rigid to allow for a comfortable ride on rough surfaces. In technical terms, that means that a Galileo tire can switch from between 17 psi (pounds per square inch, the standard measure of air weight for tire pressure) to zero psi.

“Unlike standard radials, the Galileo Wheel tire is able to alter its geometry. The new geometry provides significant increase in ground contact area. And unlike tracks and radial tires, the Galileo Wheel tire evenly distributes the machine's weight on the ground. Combined with its larger footprint, this can mean a major reduction of ground compaction,” he added.

“This is the third evolution of the tire, closing the gap between stability and comfort,” said Hayka. “We're starting with the agriculture market, but obviously this will be useful in many other areas, including forestry, mining, military applications, and of course off-road vehicles for the consumer market.”

Galileo's benefit is not just a matter of comfort – but a matter of money, too, said Hayka. By more efficiently hugging the ground's surface, the tires can more evenly distribute the weight of the vehicle they are carrying, resulting in less “rutting” and hence fewer difficult-to-cultivate areas in fields, Hayka said. “In addition, it provides for much better fuel consumption, since the vehicle doesn't have to work as hard to remain stable.”

The tires, produced by Mitas, are currently undergoing beta testing in several European countries, he added.

It sounds like a great idea not only for farmers, but for drivers as well, who sometimes get stuck in the mud, snow, and other surfaces that normal tires have a hard time dealing with. “The consumer market is definitely on our agenda, but that is going to take some time,” said Hayka, “Anything having to do with cars needs to be tested out very carefully, and that alone could take years. But I believe that this tire will eventually be on a lot of vehicles, in a lot of places. It's the first real advance in tire technology in a long time.”

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