

Hoverbike could be a reality in three to five years, creators say

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Credit: Steve Mandel

Inside a lab in this city outside Baltimore, a small 3-D printer bleeps, passing black plastic through a needle to slowly build the feet of a mannequin named Buster.

Once assembled, Buster will ride a drone that's a one-third-scale model of a "Hoverbike" - essentially a variation on a quadcopter - being developed by engineers here and in the United Kingdom. In just a few years, they imagine, soldiers will fly Hoverbikes over treacherous terrain while consumers could glide around their backyards.

The bike, reminiscent of the speeder bikes from the "Star Wars" film "Return of the Jedi," was first developed by Chris Malloy in his garage in Australia. In June, Malloy Aeronautics announced it had partnered with Belcamp-based SURVICE Engineering Co. to develop the bike for the U.S. military under a research and development contract with the U.S. Army Research Laboratory.

Malloy teamed with SURVICE due to its experience dealing with the Department of Defense and for its proximity to U.S. military facilities. Founded in 1981, SURVICE built its business providing services to improve combat system safety, survivability and effectiveness.

Grant Stapleton, Malloy Aeronautics' sales director, said the Hoverbike's developers hear about the "Star Wars" resemblance often.

"We enjoy science fiction, we all appreciate it," he said, laughing. "I can't speak for Chris (Malloy), but it wasn't our intention originally."

The full-sized Hoverbike model - currently housed at the Malloy labs outside London but coming to the United States later this year - can fly carrying up to 200 pounds, its developers say.

A workable military version would need to carry two to four times that weight - 400 to 800 pounds, or a soldier plus his or her gear.

The Malloy and SURVICE engineers believe they can create a workable model in three to five years, and a commercial version for civilian use

also is in the works.

Timothy Vong, a project coordinator with the Army Research Laboratory protection division, said in an email that the Hoverbike passed a recent initial feasibility study and that the military would help fine-tune it once a prototype was delivered in the next few years.

The Hoverbike "has shown the potential to unburden soldiers while increasing their capabilities regardless of the conditions, in manned and/or unmanned field operations," he wrote. "Additional possibilities for the concept could include aiding in communication, reconnaissance, protection, sensing danger or lighten the load soldiers carry."

The Malloy and SURVICE engineers envision soldiers riding the Hoverbike to their destination, then using it for unmanned surveillance once the soldier is on the ground. It also could transport supplies without a soldier on board.

The Hoverbike has sparked some skepticism over its developers' claims.

"Every once in a while someone comes up with a claim that we can come up with a better way of transporting troops in the field, and the military says they want something that can help with areas that are impassable, terrain that's not normally crossable," said Tim Brown, senior fellow at the think tank GlobalSecurity.org. "So they come up with these systems and this stuff almost never survives."

To be useful for the military, Brown said, it would have to meet a need that couldn't be filled by a helicopter, all-terrain or other type of vehicle. He said it also would face stiff competition for shrinking federal dollars in a Pentagon budget littered with programs that "already have defenders."

"When the military gets ahold of this thing, they're not going to fake it," Brown said. "If they can't take this thing through terrain that an all-terrain vehicle can't cross, they're not going to go with it."

Malloy began developing the first Hoverbike while taking classes to get his helicopter pilot's license in 2009, figuring he could develop a low-flying aircraft that didn't have the safety concerns that helicopter rotors evoke, Stapleton said. On his own time and with about \$60,000 of his own money, Malloy assembled the first version featuring a carbon-fiber frame with rotors in the front and back and a seat for a rider in the middle.

For the most recent model, the designers chose an overlapping quadcopter design because they believed it would be cheaper and more stable.

Mark Butkiewicz and Robert Baltrusch, who are helping to develop the Hoverbike for SURVICE, recently took out a one-third-scale model of the device for a test flight outside the company's offices in Belcamp. In the shimmering summer air, the drone did not shift with the wind or when Baltrusch shoved it with his hands - it's designed for stable flight no matter the conditions.

The drones, which have the same overlapping quadcopter design as the full-size model, sell for nearly \$2,000, or just over \$1,100 for a stripped-down version.

"They found that selling these is a business in and of itself," Butkiewicz said.

Butkiewicz and Stapleton say they are monitoring regulations regarding drones and other aircraft being developed by the Federal Aviation Administration and similar agencies in other countries, though it's not

yet clear how such regulations would apply to a civilian Hoverbike.

Stapleton estimated a commercial version would cost about the same as an SUV or executive car, comparing the commercial and military versions to the difference between Humvees and Hummers.

The Hoverbike developers now are experimenting with motorbike handlebars.

"This was designed from the ground up to have someone on it," Butkiewicz said.

The Hoverbike's potential ability to carry soldiers over any terrain is what intrigued the Army.

"The Army is interested in disruptive-technology solutions that would keep soldiers away from ground threats," Vong said. "The Hoverbike is one of many potential solutions the Army is exploring. It is not being evaluated as a replacement for a vehicle ... but this kind of technology could serve as an alternative."

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