How awesome is that: A 3D-printed underwater jetpack

July 16 2018, by Nancy Owano

Credit: Archie O'Brien

What do we know about jetpacks. For one, we can easily think about sci-fi movies where Tony Stark needs to get at villains fast without the cumbersome aid of space vessels, and we see him flying over to crime scenes asap. Now consider underwater jetpacks. That gets even more rewarding for flights of imagination. Entertaining, check. Exhilarating,

check. Means of search and rescue attempts. Check.

One problem, though, price. Buying an underwater jetpack is unaffordable for many dreamers, but there is news that underwater propulsion might come on board at affordable prices. That would be thanks to a design student who found underwater jetpacks at high prices (one reports noted $15,000 for a personal under-water wonder) and wondered if he could devise a system far cheaper.

The rest is recent news.

Reports are calling attention to an underwater jetpack called CUDA, a standout effort to create an underwater jetpack with 3-D printed parts.

Archie O'Brien, a product design student in the UK's Loughborough University, created the underwater pack that can propel a swimmer. He worked with 3-D Hubs and the result is CUDA. Luke Dormehl in *Digital Trends* said this was the student's project at the university.

Credit: Archie O'Brien

For O'Brien, getting the price down on a system was not the only challenge. Looking at the offerings on the market, he wondered if he could come up with something lighter than 30kg so one could have a less cumbersome pack for travel.

Andrew Liszewski in *Gizmodo* noted the attempts to keep this affordable, and the student turned to no le than 45 3-D-printed components which could be modified and reprinted as the engineering of the CUDA was continually refined.

The predominant technology was indeed 3-D printing, and the propulsion system that O'Brien designed was "powered by a 3-D-printed impeller reinforced with carbon fiber." The blog entry further reported that SLS was used to create the impeller which ordinarily would have been machined. SLS is an acronym for Selective Laser Sintering (SLS). This is a technique that uses a laser as the power source to sinter powdered material.

The *3-D Hubs Blog* discussed how he worked to make sure the device could hold up under water—namely, what materials to use to keep the system working while submerged.

The 3-D printed parts are coated with a thin layer of epoxy resin that is slow-dried. The doors for access to the batteries and electronics, meanwhile, have silicone seals to keep the water out.

In testing, parts were left in water for months and in close to freezing condition. The blog said there were no leaking or deterioration issues.

To control the speed, the user holds a hand held trigger system.

What's next? How long do we wait before this student project is commercialized?

Further testing, for one, is in the wings. So far the CUDA has been tested in pools. Liszewski said that the various components "still need to be thoroughly tested to see if the 3-D-printed parts hold up, or if more expensive alternatives are needed before the public can strap these on."

O'Brien sees the first models becoming available next year. As for real-world applications, apart from recreation, the jetpack may be useful for underwater search and rescue. Reports said expectations are for the device to go into production next year.

More information: designshow.lboro.ac.uk/students/archie-obrien/