



Non-metallic pressure vessel

A novel composite pressure vessel has been developed at UCT, which can be used as a high powered water rocket. The invention combines relatively simple parts to form a light weight pressure vessel capable of containing 10 MPa. It is unique amongst other pressure vessels of the same pressure capacity in that there are no metal parts. The technology was used for the Ascension III water rocket, which on 26 August 2015 shot to an altitude of 835 meters, beating the previous world record by 217 meters. Currently other applications of these novel pressure vessels are being investigated and developed.

Benefits

- Light weight with no metal parts
- Easy to manufacture at a low cost
- Exceptional pressure to weight ratio
- The size and length/diameter ratio can be adapted to suit particular applications

Market

- The technology can be marketed to the global water rocket community. Students, inventors, hobbyist and enthusiasts from around the world can either use the patented invention or procure a pre-manufactured kit to realise their own world record water rocket
- Applications where lightweight, non-metallic pressure vessels are required.

Technical description

The composite pressure vessel has a rubber liner to make it air tight. The water rocket had a volume of 12.2 litres, a pressure capacity of 10 MPa and weighs 1120 g. The design comprises an off-the-shelf thin walled carbon fibre epoxy tube, plastic end caps and a thin rubber liner. The liner is 0.2 mm thick and is coated on as a liquid and hardens due to a chemical reaction. A quick release mechanism is fitted to the filler end, which also has a conduit to pressurise the vessel.

Keywords:

MRI, patient tracking, MRI orientation, image correction

Intellectual Property Rights:

UK(priority founding): PPA 1517711.6

Technology Readiness Level:

6 - Advanced Prototype

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