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Portable inflatable tank could reduce eco impact of fracking

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A UK company hopes to reduce the impact of fracking on the environment using new technology adapted from its blast protection system.

Newport-based Cintec has created a portable, inflatable polymer tank for storing water and waste from the hydraulic fracturing gas drilling process, developed from the company's novel Waterwall technology used to isolate and safely detonate bombs.

The 64,000-litre hexagonal tank is designed as a way to store the huge amount of water needed for fracking rather than digging a permanent reservoir, which would otherwise be needed even for test sites that may only be used for a short time.

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It can also be used to drain the debris produced by fracking by fitting it with porous bags that allow the water to be collected and recycled in the pool below.

'The beauty of it is that it's a completely inert material,' Cintec managing director Peter James told *The Engineer*. 'You can fit all this [water] in and afterwards you just pack it away and the site's left as it was before.'

Cintec developed the prototype tank from its blast protection system, which uses self-inflating structures made from a PVC-coated material that are internally reinforced with a specialised stitching technique and filled with water to absorb the energy from exploding bombs.

Source: Cintec
The 64,000-litre tank takes less than two hours to inflate and fill

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The company, which began by specialising in building anchoring and reinforcing, first adapted this technology to help support the central chamber of Egypt's oldest stone pyramid while it was being restored, filling the bags with air rather than water.

This idea was then transferred to the creation of the giant water tanks, using the reinforced internal stitching of the inflated bags to provide the necessary strength to hold tens of thousands of litres of water.

'The challenge was to make it because it's such a huge thing,' said James. Although its design principles are the same as those of the Waterwall, the tank is more than four times as large as Cintec's biggest blast protection system.

The angle of the stitches mean the bags that make up the tank's sides must be straight in shape so the tank is built as a hexagon rather than the ideal circular form.

This also creates potential weakness at the corners so Cintec is planning to reinforce them before the tank is launched commercially. James estimated the company could eventually produce even bigger pools to store up to 100,000 litres.

The tank was designed to be able to withstand increased pressure on one side so it can be placed on uneven ground. The company also plans to install a heater in the side of the pool to prevent the water freezing in cold climates.