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Ultrasonic hose attachment boosts water's cleaning power

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Scientists at Southampton University have developed an ultrasonic attachment for taps and hoses that can enhance water's ability to clean.

It is reported that the bubbles and ultrasound generated by the nozzle travel down the water stream to the dirty surface, where the bubbles then proceed to act as microscopic 'smart scrubbers', seeking and entering crevices to remove dirt using shear forces.

Prof Tim Leighton, a lead scientist on the project, told *The Engineer*: 'When the bubbles reach the surface, the ultrasound causes them to undergo shape changes and wobble.

'This produces shear around the bubble walls on the microscopic scale, which generates a powerful cleaning effect without having to use the brute-force cleaning approach that a pressure washer does,' he explained.

Prof Tim Leighton and Dr Peter Birkin's device, which they have been working on for 15 years, works with cold water, minimal additives and consumes the same amount of electrical power as a light bulb.

'The device uses approximately two litres per minute compared with 20 litres per minute and less than 200W compared with 2KW,' said Leighton, comparing the device to similar pressure washers. He added that a battery of a similar size to those found in portable vacuum cleaners could power it.

The run-off produced using the nozzle is reported to be minimal and, as a result, the amount of potentially hazardous water generated when hosing down abattoirs or nuclear reactors could be reduced. In nuclear industry this could lead to cost savings too, as it costs around £10,000 per cubic metre to purify run-off in such environments.

Licenses to enable companies to bring the technology into their product lines have been negotiated with a number of companies to explore cleaning products for hospital hygiene, dentistry, food preparation, manufacturing and the power industries.

The technology was yesterday awarded the Royal Society Brian Mercer Award for Innovation 2011.

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