

Watershed moment

Say hello to Hydraloop: the money-saving, planet-saving gadget that all self-builders should install. By **Martina Lees**



Marc ter Kuile and Suzanne Hillen installed Hydraloop at their East Sussex home.

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Marc ter Kuile has the world's best gadget in his East Sussex utility room. It is slightly smaller than a double fridge-freezer, with a red cover and — writ in large purple letters — a name you've probably never heard of: Hydraloop.

Two years ago Hydraloop was named best among all 20,000-plus electronics at the world's biggest tech exhibition, the Consumer Electronics Show in

Las Vegas, Nevada, and featured in the Netflix documentary *Brave Blue World*, narrated by Liam Neeson and featuring Matt Damon. Why all the excitement?

In what *Time* magazine called a “no-brainer of an invention”, Hydraloop lets you use water twice. The appliance (from £4,250, excluding installation) cleans grey water from baths, showers and washing machine

for re-use in loos, pools and garden irrigation. That reduces both mains water and sewage run-off by 45 per cent — saving the average family more than 57,000 litres a year.

Ter Kuile, 69, a clockmaker, and his wife, Suzanne Hillen, 65, were among the first people in Britain to fit a Hydraloop — it needs special plumbing, which makes it uneconomical to fit unless you build from scratch or





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redo all the bathrooms — when they built their four-bedroom eco house near East Grinstead. “Before I knew it, the phone rang. And I had the CEO of this company on the line to see if everything was working,” Ter Kuile recalls. They tested the water system through Hydraloop’s internet connection. “He said, ‘Mark, one of your four toilets is leaking.’ I was incredibly impressed.”

Since autumn 2020 the Hydraloop has recycled 42,969 litres of the couple’s water without a hitch. It has no filters

or membranes that would require regular cleaning. “It really runs itself,” Ter Kuile says. “I think it’s the future. Look at all the droughts that we’ve had [this summer]. It’s so clear we need to use water twice and every new-build house should have a system like this.”

The invention of Hydraloop is “a husband and wife in a garage story”, says Sabine Stuiver, its co-founder, from the Netherlands. For “many years”, she and her husband, Arthur Valkieser, had helped a friend to develop a patent to collect shower water and clean it for

flushing toilets. They even replumbed their home to test it out. But the design did not take off.

The couple wondered why nobody had built a better system. “It’s not 21st-century that we’re still flushing the toilet with pure tap water,” Stuiver says. Yet other water recycling systems had “bulky tanks you have to put in the shed with filters and membranes that clog”. Maintaining that is “dirty work”.

Valkieser came out of retirement to find a solution that “looks sexy, has a small



footprint and is self-cleaning”, Stuiver says. “For two years I lost my husband in the garage . . . We’ve had every single prototype in our house. Sometimes I was not allowed to wash my hair for a couple of days and then I had to wash my hair lots. We always had loads of people showering and staying. It’s been fun.”

In 2017 they exhibited a prototype. “People were queuing up so we knew it’s something they wanted,” she says. “It reduces energy, carbon footprint, waste water. It’s crazy that we don’t do it already.” The Las Vegas award catapulted their small start-up into a business operating in 50 countries.

Valkieser’s tinkering devised a six-step process. Anything heavy sinks to the bottom of the Hydraloop’s inner tank and, once a week, that is sent to the sewer. Air is injected to collect suspended solids, which stick to the skin of the tiny air bubbles as they rise up. This is skimmed off the top, along with floating dirt such as hair and foam from soap and shampoo — much like Europeans scoop the froth off their beer, Stuiver says.

The water then moves to an outer tank, where billions of aerobic bacteria eat the remaining nutrients. Finally, in a third tank, an ultraviolet light kills any germs before the water is pumped out for re-use.

Lisa Farnsworth, managing director of Stormsaver, one of Britain’s biggest retailers of water recycling systems, says Hydraloop is “really well

designed”. “The only thing with it is that there will be a small lifestyle change.” Bleach and hair dye kills the Hydraloop bacteria. If you need to use either, first activate the system’s temporary bypass to send the chemicals straight to the sewer.

For more than 20 years Lisa and her business partner, Michael Farnsworth, have been trying to solve the same problem as their Dutch counterparts. Their solution is to recycle rainwater rather than grey water. As a Nottingham Trent University student in the 1990s, Michael invented Britain’s first commercial rainwater recycling system, now fitted across more than 2,000 properties.

Lisa says: “If I handed you a bottle of drinking water and said, ‘Go flush the toilet with it,’ you’d say, ‘No — what a waste.’ We’ve gone backwards. In the 19th century people used to collect the rainwater at home.” Beneath her own Victorian house she discovered a big old rainwater tank. “With the advent of mains water, that got disbanded. Now we take the clean rainwater from our roof, mix it in with the sewage and send it to a treatment plant miles away to clean it when it’s already clean. Then we pump it back to the house that we took it from. It seems completely against what we’re trying to do with the environment.”

Charlie Luxton, an architect and TV presenter, fitted a Stormsaver system in a top-to-bottom refurbishment of his family’s grade II listed Cotswold

cottage 12 years ago. A 2,000-litre tank buried in the garden catches rainwater from the roof and from a little spring on their land, and then it is pumped to toilets and garden irrigation. They also fitted Mira low-flow showers and toilets.

“It’s halved our water consumption over the years,” says Luxton, who estimates the system paid for itself in about eight years.

Twice a year he cleans leaves and debris from the tank’s two filters. “Rainwater harvesting is brilliant but it takes a bit of work. It’s a no-brainer if you’re doing a new-build or a whole-house refurb. You need to plumb a separate water supply to your washing machine and toilets.”

While rainwater kit such as Luxton’s would cost £2,950 (plus £1,000-£1,500 for installation), Lisa says a smaller version (£2,500-£2,800 excluding installation) to supply just your downstairs loo and washing machine is simpler to fit. “That’s quite feasible for many homes.”

New homes could be plumbed at little extra cost to allow owners to fit water recycling systems later. “We need building codes to change so that water saving becomes standard,” Stuiver says. Water should be priced at two or three levels, as in Belgium, with higher rates for “luxury” use above a basic threshold, she adds. “Everybody needs to understand the value of water much better. It’s not an infinite source.” ■

