Focus on reducing urban water leakage

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Credit: AI-generated image (disclaimer)

No resource is more fundamental to life and human society than water. Yet, globally, 25 to 30 percent of drinking water is lost every year due to leakages in urban water distribution systems.

The EU-funded project LEAKCURE ('Intervention for curing pipeline leakage in urban water mains') is proposing an innovative solution for the automatic detection, sealing and curing of typical network pipes,

without digging up pavements and roads.

"The majority of network water leaks are not easily detectable by conventional means," says project coordinator Peter Paz of Israel's Curapipe System Ltd. "Traditional find-and-fix methods are inefficient, while eliminating several leaks all at once by replacing entire mains is expensive and disruptive."

Water stress, reflecting the balance between water supply and demand, is now showing up in areas where it was not generally seen before, such as in the UK, says Paz. At the same time, water stress is worsening in other areas, including parts of Southern Europe. This is partly due to climate change and partly due to other factors, such as increased urbanisation and industrialisation.

"In the past," he says, "pipeline leakage was not always considered a priority. Now, with water stress on the rise and a lack of readily available new water supplies, leakage levels in Europe and worldwide have started to draw more attention."

The LEAKCURE solution, dubbed 'Trenchless, Automated Leakage Repair' (TALR), involves launching special devices known as 'pigs', linked together in a 'pig train'.

A pig is essentially a plug-like device that can be made to move through a pipe, controlled via pressure and flow. Two pigs linked together can block the water in front and behind, while leaving a void in between. In the LEAKCURE pig-train, that void is filled with a special viscous curing substance, which travels down the pipe between the pigs.

"The train moves in a continuous fashion, never stationary," Paz says, "sealing leaks automatically as the curing substance comes into contact with a leak at any orientation within the pipe. The substance hardens and

the leak is permanently cured as the train continues along the pipe."

Paz says current repair practices have tended to focus on damage control - keeping leakage from increasing rather than actually reducing it. "Our solution is geared to reducing current unacceptable levels of leakage by a significant amount, which in Europe means close to a third of the supplied water."

The LEAKCURE project is testing its new system in the UK, setting up local partnerships and field trials. Following the trials, and once the necessary adaptations are made to suit local contexts, the project will expand its activities beyond the UK.

Paz says Curapipe will market the TALR service to water utilities in partnership with local partners already active in water pipeline repair and maintenance.

"So far," he says, "our results indicate that we can repair the kinds of leaks that are responsible for most of the water loss. We are talking about leakages ranging from 40 to 3000 litres per hour. Extending that, if we can treat 40 kilometres of leaky pipeline, we could potentially save 1.7 million litres of pure drinking water every day."

According to the UK's Water Services Regulation Authority (OFWAT), the benefits of water leakage reduction will be significant, including more usable water left in the environment for other users, such as farmers, or to sustain natural habitats. Businesses and municipalities will spend less on new water supplies, saving on treatment and pumping costs, and, by rendering these operations more efficient, they will be able to reduce their energy expenditure and greenhouse-gas emissions.

LEAKCURE received over EUR 700 000 in EU funding under the Eco-Innovation Programme and will run through 2014.

More information: Project factsheet www.eaci-projects.eu/eco/page/… ect_detail&prid=2047

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