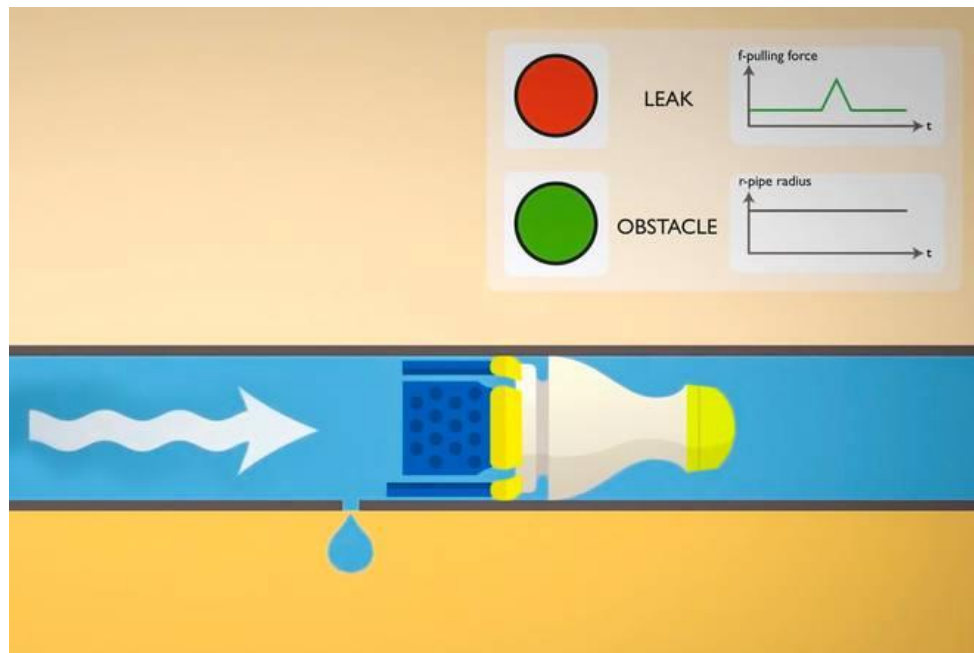


MIT Robot Swims Through Water and Gas Pipes to Detect Leaks

Source: treehugger.com

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By [Megan Treacy](#)

Beneath the cities around the world runs a complex web of pipes, carrying water and gas to buildings, homes and businesses. These miles of pipes are necessary to everyday life, but they are unfortunately vulnerable to the wear of pressure and time.

Leaks in these pipelines often remained undiscovered until they become huge problems that are very costly to fix, not to mention the impact of all of that leaked water and [gas](#). It's estimated that 20 percent of the water that moves through today's distribution systems is lost to leaks. This causes shortages in water and also structural damage to buildings and roads above where the leaks occur.

Current leak detection systems don't find leaks in their early stages and they don't work well in wood, clay or plastic pipes which are the predominate materials used in the developing world. To solve these problems, MIT has developed [a small, pipe-swimming robot](#) that can detect even very small leaks before they become catastrophes in any type of pipe.

The robot resembles a shuttlecock and can easily be inserted into a water system through a fire hydrant. The robot is moved along the pipe by the flow of water and it logs its location as it goes. The robot can sense even small changes in pressure that tug at the edges of its skirt. These pressure changes signal the presence of a leak.

The robot can then be retrieved from another fire hydrant and its data uploaded to show potential leaks throughout the length of pipe it traveled.

The detection system is currently carrying out testing in Monterrey, Mexico where 40 percent of the water supply is lost to leaks each year, and in Saudi Arabia where 33 percent of precious desalinated water is lost to leaks. In previous testing in Saudi Arabia, a mile-long section of pipe was given an artificial leak and the robot was able to detect it every time over three days of trials, distinguishing it from other obstacles in the pipeline.

The researchers next want to develop a more flexible version of the robot that can quickly change shape to fit different diameters of pipes, like an umbrella opening to fit the space it occupies. This would allow the robot to be used in cities like Boston where a mix of pipe sizes are linked together.

Ideally, in the future the robot will also be outfitted with special tools to fix tiny any tiny leaks as it finds them. Below you can watch a video of the robot in action.

Click here to watch “MIT Leak Detection Robot for City Water Distribution Systems”:
<https://youtu.be/CohDhFkyiks>
