

Nanalyze evaluó 7 startups para detección de fugas de agua potable

Oportunidades e impacto para el sector de agua, saneamiento e infraestructura:

La firma de investigación y consultoría [Nanalyze](#) especializada en evaluar tecnologías disruptivas y startups para inversionistas y mercados financieros publicó un artículo sobre 7 soluciones para detección de fugas de agua potable.

A continuación citamos las tecnologías analizadas:

** [Utilis](#) de Israel desarrolló algoritmos que analizan imágenes satelitales de alta resolución para detectar fugas a través de la huella espectral del agua potable en el subsuelo. Mediante aplicaciones móviles basada en la nube, Utilis visualiza la pre-localización de fugas en el sistema de información geográfica.*

** [Fluid Robotics](#) de India emplea robots que inspeccionan el estado de la infraestructura sanitaria.*

** [Sewer AI](#) de Estados Unidos utiliza visión computarizada e inteligencia artificial para detectar defectos en la infraestructura de alcantarillado.*

** [Aquarius Spectrum](#) de Israel inventó un sensor acústico basado en Internet de las Cosas que integra comunicación celular, GPS y análisis de datos en la nube para encontrar fugas en redes urbanas de agua potable.*

** [StormSensor](#) de Estados Unidos ha desarrollado una red de sensores basado en Internet de las Cosas para monitorear el sistema de drenaje y generar ahorros en operación y mantenimiento.*

** [CloudtoStreet](#) de Estados Unidos creó una plataforma que monitorea eventos de inundación en tiempo real al combinar información satelital geoespacial e inteligencia artificial.*

** [Aguaseca](#) de Estados Unidos inventó sensores basados en Internet de las Cosas que ayuda a manejar problemas de distribución de agua en el interior de edificios. Los sensores se acoplan a las tuberías y transmiten datos a una nube donde algoritmos infieren señales de fugas u otros eventos.*

7 Kinds of Water Technology for Finding Leaks

People will often talk about how children are our most important resource. That's bollocks. Go a few days without water and you're dead. You don't have to Google for very long before you find a bunch of [depressing statistics](#) about all of the ways our freshwater systems are under pressure. You may remember back in 2018 when Cape Town, Africa, nearly ran out of fresh water. Cities from [Tokyo to London](#) could also face water shortages in the next few decades due to a variety of factors, especially aging, failing, leaky infrastructure.

Sometimes, these leaks are easy to spot – like the one that [flooded the UCLA campus in 2014](#) and turned the basketball court into an Olympic-sized pool – and sometimes they are not. That's why a number of startups are using technologies to identify, predict, or inspect for leaks, water loss, or flooding within municipal water networks.

Scale of the Problem

Before we examine the companies aiming to improve leak detection, it's important to recognize the scale of the problem. In the United States, water line leaks cost the government (and the economy) upwards of [\\$2.8 billion annually](#), according to some estimates. In fact, leaky pipes alone steal seven billion gallons each day from our water systems, according to the American Society of Civil Engineers. That's enough to grow a bagful of California almonds.

At the level of individual cities, the situation can be just as dramatic. The Wall Street Journal [published a detailed look](#) at water infrastructure in New York state last year. The report makes for harrowing reading: Syracuse, an upstate New York manufacturing city, spent \$77 million from 2009 to 2015 to repair and replace pipes, but still experiences dozens of breaks each year. As one expert told the WSJ, it's "a very mixed bag" when it comes to how well utilities tackle water infrastructure issues.

Investing in Smart Water Solutions

Technology to the rescue, right? While we've covered [quite a few watertech startups](#) over the years, investment in the space has been tepid at best, given the scale of the problem they seek to address.

The reasons are complex. The most important is that governments have been unwilling to shoulder the burden of investing in water infrastructure. Some municipalities have passed laws that require utility companies to re-invest a portion of their profits each year into infrastructure repair and maintenance, but not many. Just ski over to Texas to see the results. This may be about to change, however. [Smart city water technologies](#) are cropping up everywhere, using advanced sensing and data-processing capabilities that could detect leaks and flooding across expansive areas.

Now, let's take a look at seven kinds of water technology for finding leaks.

Using Satellites to Detect Underground Leaks



Founded in 2013, Utilis out of Israel employs [geospatial intelligence](#) from satellites in space to detect underground leaks. Specifically, the startup has developed algorithms to analyze imagery from satellites that use a specialized sensor known as synthetic aperture radar (SAR).

This [space-based radar](#) emits pulses of microwaves, just like a standard radar system. However, the “synthetic” part in the name refers to how the motion of the product synthesizes an aperture that is much bigger than the actual antenna hardware. The bigger the aperture, the finer the image resolution. Good enough, in fact, for the algorithms to detect the signature of drinking water leaking underground. A new product launched in 2020, Hydro-Scan, measures soil moisture below ground, identifying areas with underlying moisture issues, and predicting where pavement will fail prematurely.

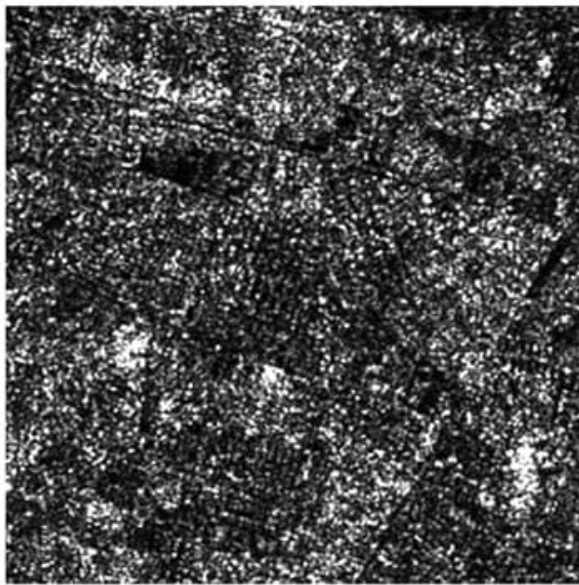


Image before Speckle Filtering

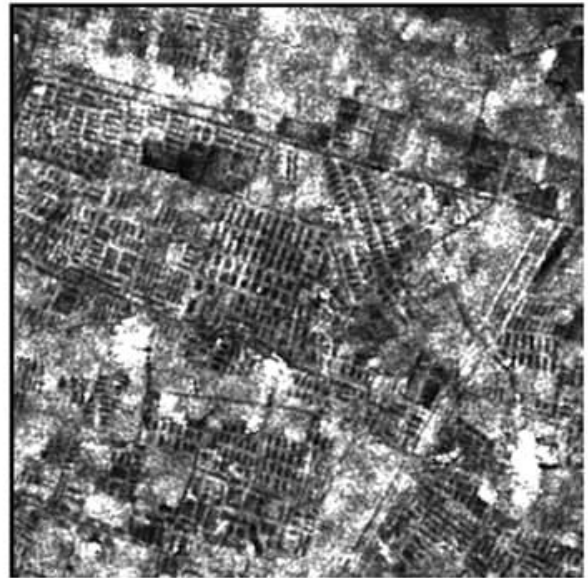


Image after Speckle Filtering

Cleaning up satellite imagery is part of the Utilis platform. Credit: Utilis

Since 2016, the company claims to have saved more than five billion gallons of potable water – remember that the United States loses seven billion every day – and 12,000-megawatt hours of energy per year. For a project in Bangkok (above), Utilis helped locate more than 2,000 leaks, saving enough water to supply 100,000 Thai (or 100 Americans).

Robot Inspection of Pipeline Infrastructure



Founded in 2016, Fluid Robotics is a startup out of India that has taken in an undisclosed amount of money in the form of a grant from a U.S.-based construction company. The company takes a more direct approach to detecting leaks in municipal water systems. Instead of using radar to scan for water outside pipes, robots produced by Fluid Robotics physically climb through pipes to inspect them for defects.



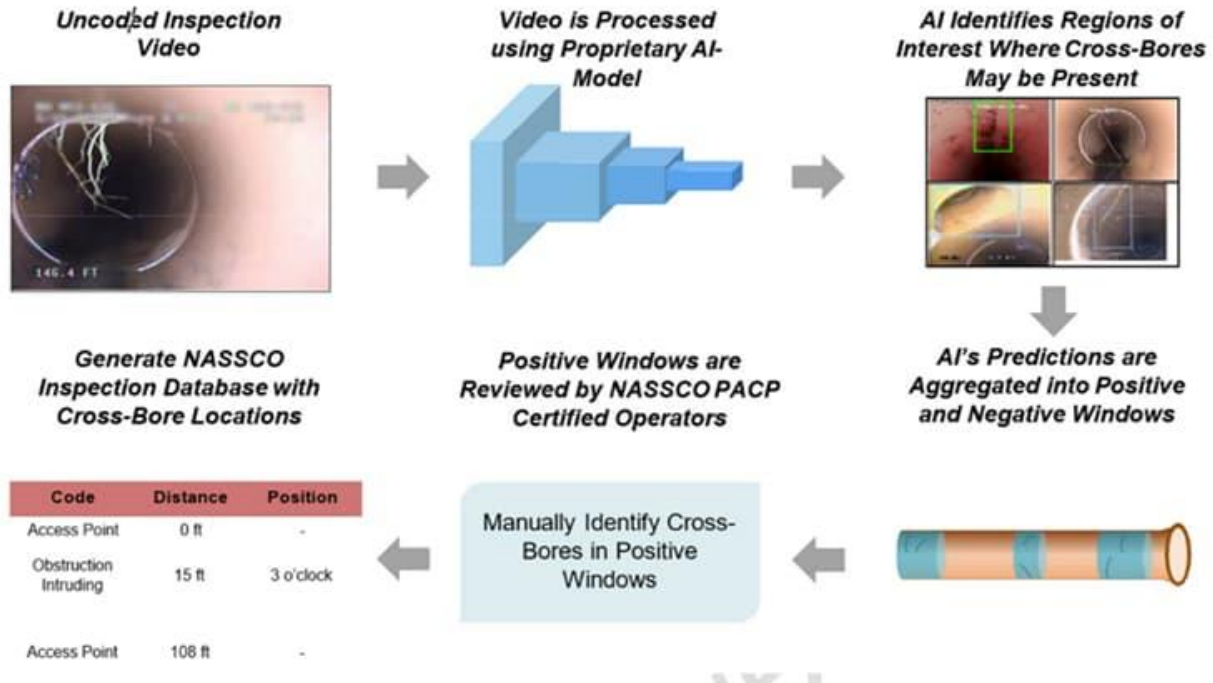
Credit: Fluid Robotics

These robots form part of a [wider class of robots](#) that are being developed and deployed to inspect infrastructure, often in hostile environments or in spaces in which humans simply wouldn't fit. A direct approach like this could certainly find favor because, as we've previously noted, if the robotic solution can do the job better than humans, it's an operational risk to not adopt it. Investors love these types of businesses because the product sells itself.

Computer Vision for Assessing Sewers



Founded in 2019, San Francisco-based Sewer AI has raised \$2 million in disclosed funding from a Seed round in August 2020. The company uses a [computer vision](#) platform called AutoCode to assess defects in sewer infrastructure from video footage autonomously. Currently, robots are used to crawl sewers and image the pipes. Humans must then watch the resulting video – every darn boring foot and excruciating second in real time – and jot down any problems they see. The system is particularly adept at detecting what are called cross bores, or unintended intersections of utility lines, which could compromise the integrity of either or both.



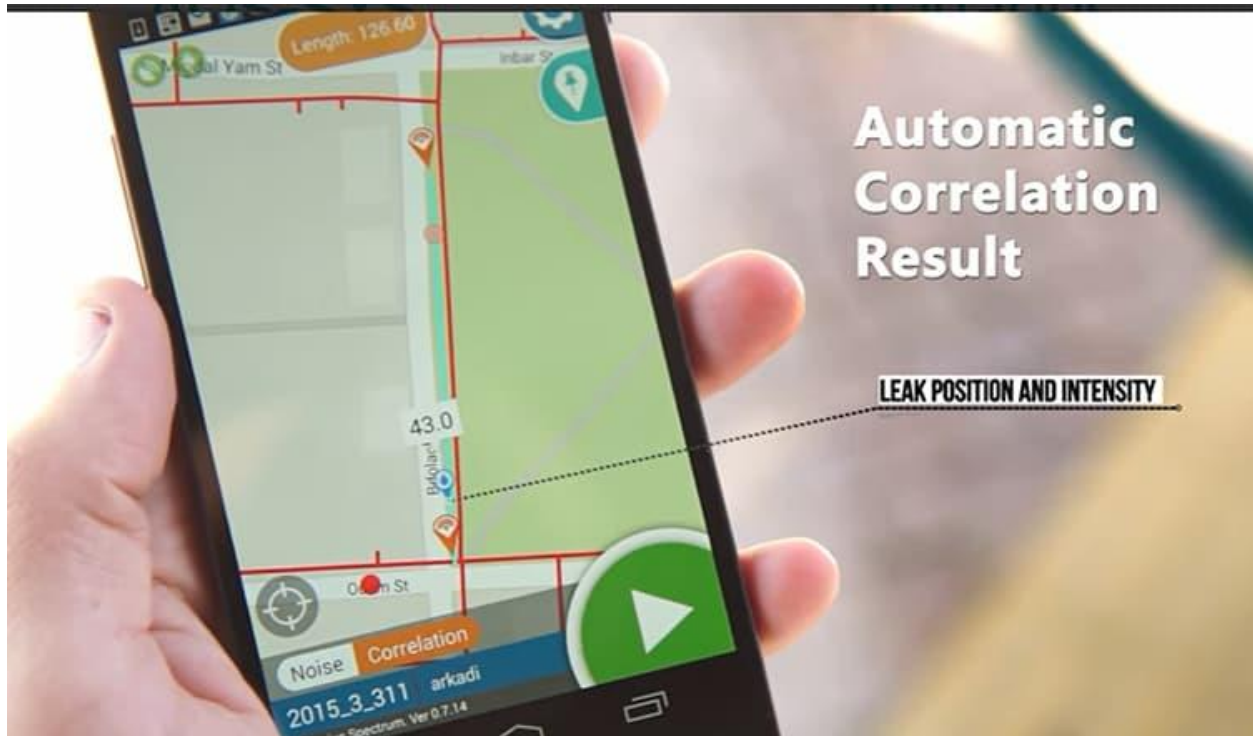
An overview of the Sewer AI platform. Credit: Sewer AI

Sewer AI claims its solution can improve inspection accuracy data by 20%, as well as save a ton of time – 40% in the field and 70% in the office – that could be better spent checking social media accounts.

Acoustic Leak Detection System



Founded in 2009, Aquarius Spectrum is another startup out of Israel. It has raised \$2.2 million for leak detection technology for two different solutions. There is an acoustic sensor-based IoT system called AQS-SYS that integrates cellular communication, GPS, and some good old-fashioned cloud analytics to find leaky pipes in the city. Leaks are detected automatically by acoustic correlating sensors and located the moment they start, transmitting data via a cellular network. Automatic alerts provide engineers the precise location where to locate the issue. The company has also developed a mobile solution, iQuarius, which uses an acoustic sensor plugged into a smartphone:



*Is there anything you can't do with a smartphone, aside from making a clear-sounding phone call?
Credit: Aquarius Spectrum*

In a series of case studies, Aquarius Spectrum touted some of its recent successes, a pilot project in Italy caught 20 leaks and resulted in a contract for 235 sensors. A third-party study showed that the company's acoustical network reduced revenue loss in neighborhoods where it was deployed by 20% over a two-year period. Most of the savings were due to locating and fixing hidden leaks and repairing malfunctioning equipment located by Aquarius.

AI and IoT for Stormwater Management



Founded in 2015, Seattle-based StormSensor has raised \$3.2 million in disclosed funding from nearly a dozen investors, scoring \$2 million of that total about a year ago. StormSensor has developed an IoT sensor network to monitor a city's stormwater system, which the company claims drains as much as \$500,000 per day from your average hipster city in operations and maintenance cost. StormSensor's platform, Terrapin, uses algorithms to provide predictive analytics about where all the rubber duckies are going as the latest storm-of-the-century rages through.



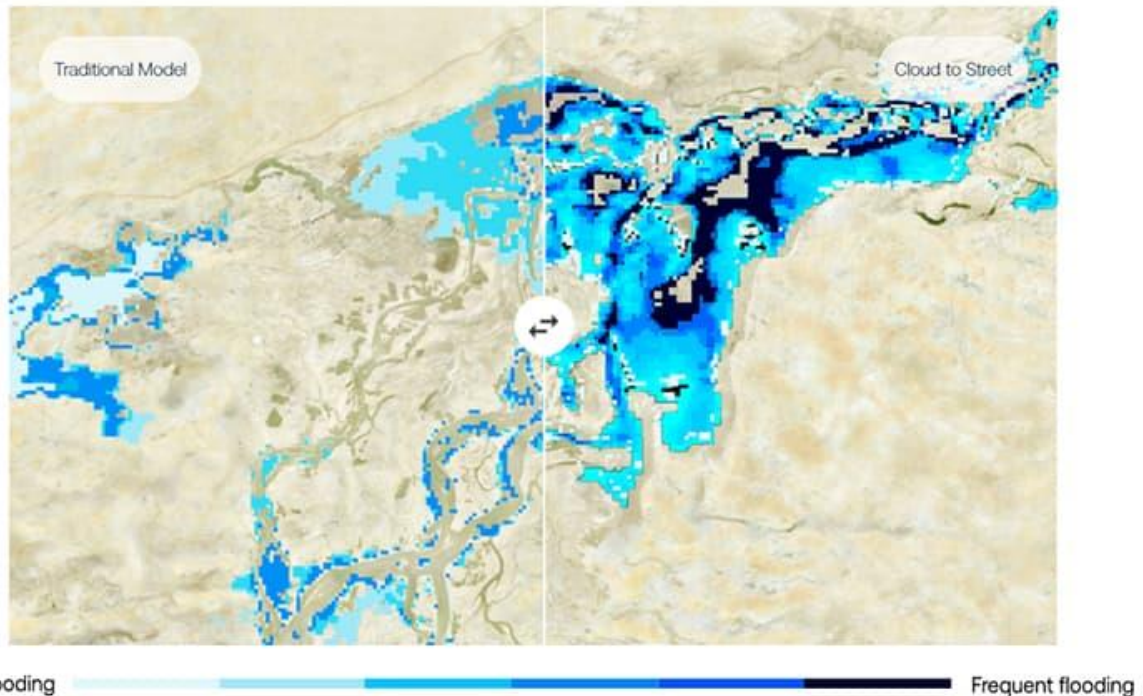
The sensor component in StormSensor. Credit: StormSensor

In Memphis, StormSensor deduced that the Mississippi Rivers infiltrates the city’s stormwater system by about a mile, which makes for a serious flooding issue.

Satellites and AI for Flood Detection



Speaking of floods: Founded in 2015, New York-based Cloud to Street has raised \$2.4 million last year in a pre-Seed round to develop a platform that monitors flooding events in near real time by combining geospatial intelligence from satellites and AI. Traditional flood maps use hydrology models and simulations to predict flood risk, according to the startup. In contrast, Cloud to Street employs satellite imagery, then uses algorithms to “smooth out difficult terrain and eliminate clouds to see the floods below” to pinpoint flood-prone areas and assess risk better. Here’s a quick comparison between old school and new school:



Looks like more opportunities for beachfront property. Credit: Cloud to Street

In the Republic of the Congo, for instance, the company's intelligence platform identified floods in just days instead of weeks, helping relocate 7,000 refugees at risk. Insurance is a major market for the tech outside of humanitarian efforts. For example, an insurer in Indonesia was able to offer flood insurance to rural areas where it had no reliable data before.

Smart Water Management for Buildings



Founded in 2015, AquaSeca is a Silicon Valley startup that has raised an undisclosed amount of money for an acoustic-based IoT sensor network like Aquarius Spectrum that helps individual buildings manage plumbing problems. Sensors attached to pipes transmit data to a cloud where algorithms infer signs of leaks or other issues. There's not a ton of info on the company's solution, and we suspect that full-scale commercialization is still more dream than reality based on AquaSeca's plea statement about "seeking partners and investors to help us reach the full technical and market potential of our product."

Conclusion

It continues to boggle the mind that so little money is flowing into water-saving technologies, but we suspect that will change when scarcity and/or ROI reaches a certain threshold. Or unless you're doing something truly innovative such as turning air into water using only the sun like the startup Zero Mass Water. It probably doesn't help that the main customer for many of these watertech solutions is the government, which is notorious for taking the low bidder and being slow to abandon legacy systems. Retail investors who think that betting on the Mad Max

scramble for this precious resource is a good long-term strategy would be better served to look at an exchange traded fund (ETF) that invests in major companies likely to adopt these sorts of technologies. The oldest and largest, Invesco Water Resources ETF (PHO), is a good place to start.

Pure-play disruptive tech stocks are not only hard to find, but investing in them is risky business. That's why we created "The Nanalyze Disruptive Tech Portfolio Report," which lists 20 disruptive tech stocks we love so much we've invested in them ourselves. Find out which tech stocks we love, like, and avoid in this special report, now available for all Nanalyze Premium annual subscribers.

Fuente: [Nanalyze](#), 22-febrero 2021.