

# SUCCESS STORY

## 18% DECREASE IN HAGIHON'S NRW

### THE JERUSALEM REGION WATER UTILITY REPORTS CONTINUOUS DECLINE IN PIPE BURSTS

Results from a recent study by HaGihon indicate a substantial improvement in NRW (Non-Revenue-Water) in the DMAs in which Aquarius Spectrum's system was installed and continuously operated during a period of two years (2014-2015). NRW was reduced in those neighborhoods by 18%, mainly due to locating and fixing hidden leaks and repairing malfunctioning equipment located by Aquarius. In addition, there is a clear trend of a yearly decline in the number of water pipe bursts.

During the two years prior to the implementation of the Aquarius system in Hagihon, there was an increasing trend in the number of bursts per year, which was clearly reversed to a declining trend apparent during the two years in which the Aquarius leak detection system has been in place.

## The Utility Challenge

HaGihon – Jerusalem Region Water & Wastewater Utility, is an early adopter of innovative technologies. In the past few years, the Utility's objectives included increasing consumer satisfaction, decreasing NRW, decreasing energy costs and increasing efficiency.

HaGihon water distribution network is spread across the hilly terrain of Jerusalem, requiring the Utility to create multiple pressure zones using water tanks and PRVs. Aquarius Spectrum successfully overcame these challenging conditions during the implementation of the project.

## The Solution

In September 2013, the Utility, together with Aquarius Spectrum, started implementing a **FIXED WATER MONITORING AND LEAK DETECTION SOLUTION**. More than 1600 acoustic sensors were installed during 18 months to cover most of the Utility's water distribution network.

Aquarius-Spectrum's solutions feature fixed and mobile acoustic sensors that upload gathered data to the Aquarius servers via cellular communication. The sensors incorporate built-in GPS capabilities, allowing for full-synchronization of readings across multiple sensors.



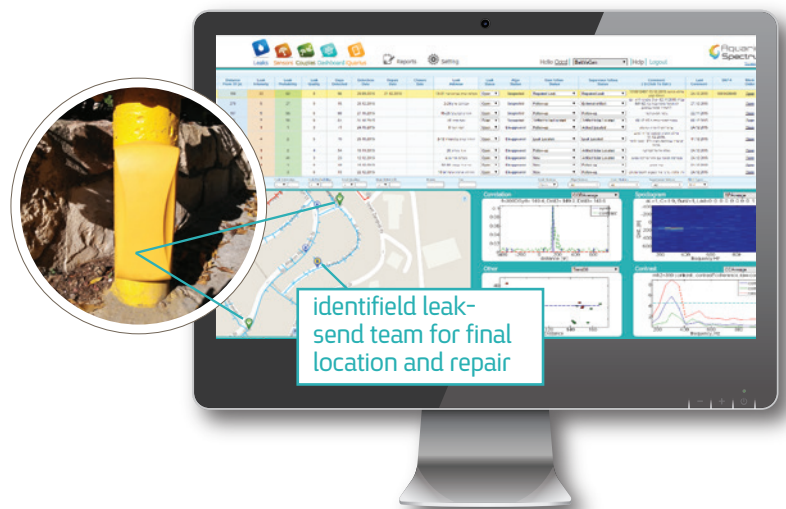
## How it works?

Each night, at an exact predefined time, all sensors record a noise sample and send the information to the Aquarius-Spectrum cloud based servers. The signals are processed, correlation algorithms are executed and alerts are issued to HaGihon regarding leaks or malfunctioning appurtenances, such as throttled valves.

Analyzed findings are displayed via a user-friendly browser-based display. From the very first reading, the system started learning the behavior of the Jerusalem area water distribution network, by following its trends daily, from every sensor.



Management Dashboard



identified leak - send team for final location and repair

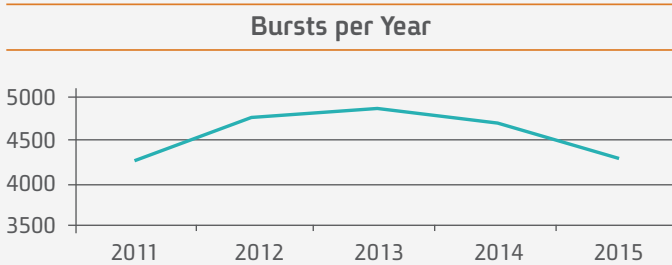
## Results

As of August 2016, the Aquarius-Spectrum system has found more than 226 hidden leaks in the Jerusalem area, 171 of which were in the public distribution network and 55 in private properties. Fixing those leaks resulted in potential savings of over a million cubic meters of water for the Utility. NRW was lowered by 18%; the number of visible (reported) leaks (bursts) has declined.

In addition, the Aquarius-Spectrum system has discovered more than 250 non-leak faults, including partially closed valves, faulty water meters, malfunctioning non-return valves and other items of equipment under the responsibility of the water Utility.

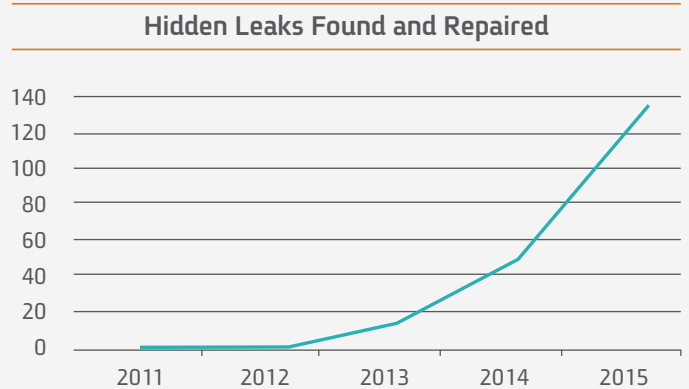
### Pipe Bursts in Decline

The rising trend in the annual number of pipe bursts was halted and a drop in number is evident since the deployment of the system. See below the numbers, year by year.



### 226 Hidden Leaks

As of August 2016, the Aquarius-Spectrum system has found more than 226 hidden leaks that have been repaired by field teams. Without the Aquarius-Spectrum system they would have stayed hidden, causing continuous water loss, or burst into the open at some future date, causing much secondary damages. See the figures in the graph below.



The Aquarius-Spectrum system is helping HaGihon to revolutionize the way it manages leak repairs, allowing it to switch from a reactive mode to a planned approach. The Utility is now able to plan its repair schedule to fix hidden leaks before they become visible bursts, thus reducing the cost of contractors, avoiding collateral damage to infrastructure, informing consumers well in advance of shutting off of water supply for maintenance, reducing shutoff times and improving customer service by notifying consumers of hidden leaks on their premises. All this saves money and improves the level of service.

HaGihon's CTO,  
**Mr. Aharon Rosenberg**

“ We are excited and proud to be at the forefront of municipal water system technology. The Aquarius-Spectrum innovative leak detection system has proven its effectiveness in improving the maintenance of our water pipes network and is changing the way we manage our assets. ”