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CASE STUDY Multi-Utility A2A in the City of Brescia, Italy

How water leakage was reduced in bulk with Curapipe's Trenchless Automated Leakage Repair (TALR) system

Key Takeaways

- **Rapid leakage reduction in bulk** was clearly demonstrated (in this case 100%).
- There was **no need for leakage detection**. Leaks were **automatically located** and fully sealed during the intervention.
- The whole intervention was carried out with **little or no social and environmental disruption.**

Introduction

Wherever water pipes exhibit high levels of aggregate leakage, utilities are keen to find new approaches for a comprehensive and non-intrusive solution to reduce leakage in bulk.

While the traditional method of detecting-locating-digging to repair leaks (aka “find & fix”) is effective for maintaining existing levels of leakage, it inherently lacks the ability to enable a dramatic reduction in leakage levels necessary for countering the gradual increase of water loss over the years.

TALR takes a dramatically different approach by repairing leaks from within the pipeline. This approach makes it especially suitable for **repair** of **multiple leaks in one intervention**, hence its capability for **leakage reduction in bulk.**

This case study demonstrates both the necessity as well as the efficacy of the TALR solution.

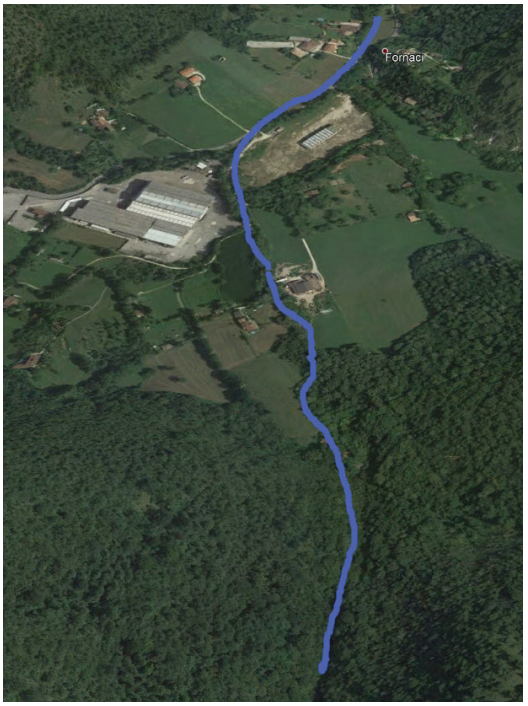
Background and Challenge

The City of Brescia is an affluent Italian industrial city in Lombardy and the capital of the Province of Brescia. It is nestled in rolling hills east of Milan, close to Lake Garda and at the foothills of the Alps.

A2A is a leading Italian multi-utility serving the City’s and Province’s water needs and has, as every water utility usually does, an aggregate of aged and leaky water pipes that need to be repaired.

A one kilometer (1 km) long stretch of cast iron water pipe was identified as a suitable candidate for testing the unique repair capabilities of the TALR system. The pipe had a diameter of 80mm and was serviced by a small 80 cubic-meter water reservoir. It ran down from the top of a woody hill at 44 meters elevation as far as Via Del Bosco, servicing residents along the way.

The utility measured water losses of around **2.8 litres-per-second** which is comparatively high considering the small distance of the pipe. Since the pipe seemed to be in fairly good working condition, the most likely sources of the water losses were the pipe’s joints and service connections.



In this case, the challenge was to significantly reduce the high level of multi-source leakage (2.8 l/s) within a three-day timeframe without knowing where the specific leaks were located.

TALR to the Rescue

A2A S.p.A contracted Pipecare srl, the local exclusive licensee for Curapipe’s TALR solution in Italy, to execute the repair by applying the unique TALR solution. Pipecare and A2A first conducted a site survey of the area to be treated.

One early morning in May 2019, the A2A and Pipecare teams isolated the first pipe section of a total of three to be treated. Measurements taken by the see-through rotameter were shown to be compatible with the utility's readings of a substantial **8,900 litre/hour** (2.5 litres-per-second) **aggregate leakage in a 440 meter long section** that was assigned by A2A for treatment.

Curapipe's TALR was deployed, and after only a few sealing cycles, TALR successfully reduced the aggregate leakage in this first section to **zero**.

Two more pipe sections were treated within the three-day timeframe. The second pipe section had a low level of **150 litres/hour** and the third pipe section had a high level of **1,200 litres/hour** (0.33 litres-per-second). Also for both these sections, TALR was able to reduce water leakage to **zero!**

In the first pipe section, measurements taken during sealing cycles indicated the presence of four leaks spaced along the route. The leakage levels were 1,700 l/h, 500 l/h, 4,800 l/h and 1,900 l/h respectively totaling 8,900 l/h.
Following its sealing cycles, TALR was able to reduce these leakages to zero!

Conclusion

This case study demonstrates that the TALR system is **highly effective in reducing bulk leakage**. This differentiates TALR dramatically from the age-old practice of locating leaks, excavating the pipe section(s) to be treated, manually repairing the leaks, and rehabilitating roads.

TOTAL SAVINGS:
89.8 million litres-per-year or 0.25 MLD

Repair of a one kilometer (1 km) long cast iron water pipe leaking over 10 cubic-metres-per-hour

	Leakage level	Total savings per hour after TALR intervention (100% success rate)	Total savings per annum
Pipe Section 1 (DN 80)	8,900 litres-per-hour	8,900 litres-per-hour	78 million litres
Pipe Section 2 (DN 80)	150 litres-per-hour	150 litres-per-hour	1.3 million litres
Pipe Section 3 (DN 80)	1,200 litres-per-hour	1,200 litres-per-hour	10.5 million litres

About Curapipe

Established in 2007, Curapipe System Ltd. is the very first to initiate the Bulk Leakage Reduction market category by introducing TALR (Trenchless Automated Leakage Repair) an innovative, breakthrough leak-curing solution for buried potable water pipes. By doing so Curapipe is addressing the current pressing needs of urban water utilities to enable significant leakage reduction like never before. TALR enables this central feature by repairing hidden leaks in their mains and service connections that normally go undetected. The TALR Intervention can cure varying types of leaks (e.g. pinholes, cracks) typically found in potable water pipes. The TALR solution is the result of many years of research and development by a team of highly skilled and experienced PhD technologists in the fields of hydraulics, materials and pipelining. Curapipe's TALR is currently deployed at several water utilities at various global locations.

For more information on how we can reduce leakage in bulk in your network, visit **www.curapipe.com** or contact **info@curapipe.com**.

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