

2024 DANUBE WATER FORUM

Riding the wave: Water Sector Innovations for a new Climate Reality

Implementation of a Performance-Based Service Contract (PBSC) for Non-Revenue Water reduction | AGS Experience in Romania

May 2024



AGS presentation

MARUBENI 100%

AGS has been working in the water sector for more than 30 years, focusing its goal on the preservation of the environment and acting throughout the urban water cycle.

AGS activities range from consultancy and development of specialized engineering services to the management, operation and maintenance of urban water systems and treatment facilities.



FRAMEWORK & SERVICES:

- Concessions and PPP
- Performance-based agreements
- Operation & maintenance contracts
- Engineering services provider
- IT services provider (Aquasis)

PBSC for NRW reduction | Municipality of Constanta

RAJA, SA is the largest regional public operator in Romania for water supply and wastewater drainage and treatment, being also a founding member of the Romanian Water Association (ARA – Asociația Româniă a Apei)



7
counties



1 million
inhabitants



170
localities



9
WTP

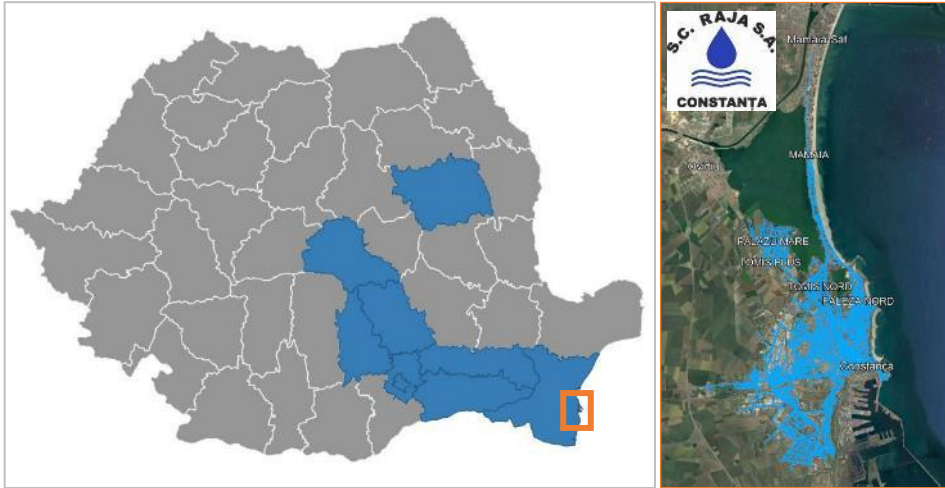


340 000 m³
water storage



4 300 km
water supply network

PBSC for NRW reduction | Municipality of Constanta




Utility main goals
5-year project



700 km of network
35 300 clients
265 000 inhabitants

Sharing risk and
responsibilities

 **59%** non-revenue water*
30 Mm³
Water losses*

Remuneration
model

Non-revenue water reduction plan

Infrastructure resilience improvement

Reduction of **water losses in the network**

Teams' **technical capacity building**

Utility responsibilities:

- Procurement process and construction works
- Coordination of operational teams

AGS responsibilities:

- Development of NRW strategy and identification of intervention priorities
- Definition of technical requirements to improve network and sectorization
- Improvement of operational procedures
- Installation of software support tools
- Performance evaluation and monitoring
- Teams' training

Remuneration model based on a **fixed component** and a **variable component** depending on the results obtained on **4 performance indicators**

* figures available in the tender requirements

Setting a path for water losses reduction

Initial challenges...



Aged infrastructure



High level of NRW



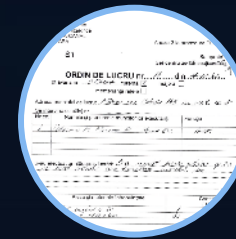
“Open” network without subsystems nor DMAs



Incomplete metering of system's inlets and outlets



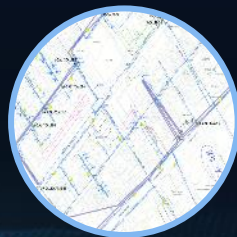
Operational activities done with low accountability



Most records on paper hindering reporting and performance assessment



Reactive leakage detection



Lack of tools (software) for system's management

Setting a path for water losses reduction

Methodology applied

Reporting

- Inception report
- Daily reports
- Quarterly reports
- Base year report
- Annual reports

Monitoring

- Results analysis
- Technical support
- Activities control

Implementation Action Plan

- Hydraulic modelling
- Measuring equipment
- Pressure management
- DMAs & active leakage control
- Maintenance & quality of repairs
- Combatting commercial losses
- Other activities



Analysis

- Assessment
- Current practices
- Risks analysis
- Mitigation measures
- Work & staff



NRW concept & strategy

- Vision
- Mission
- Objectives, criteria & targets
- Activities planning (short-term, medium-term and long-term)



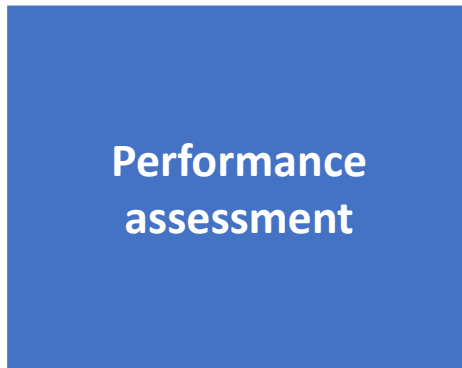
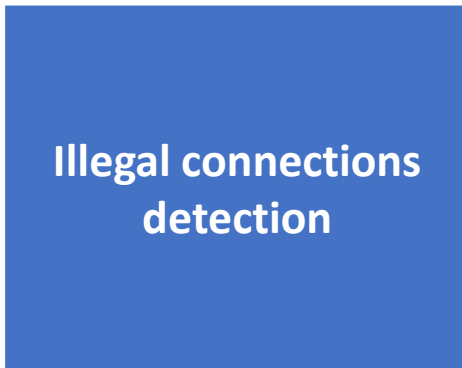
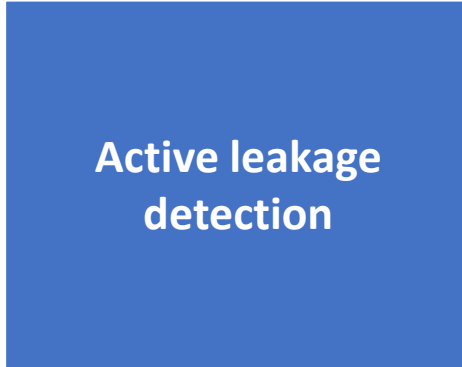
Procedures & specifications

- Data collection
- KPI methodology
- Equipment description and specifications
- Best practices

Action Plan working areas: network sectorization | active leakage detection | pressure management | repair procedures | hydraulic modelling | illegal connections detection | meters inaccuracies and replacement program | real-time monitoring | performance monitoring | asset management

Collaborative effort

Short, medium and long-term activities for NRW reduction



Project main results

Infrastructure

Operational
management

Digital
maturity

Knowledge
and
organizational
culture

Project results

Infrastructure and network operation improvement

- Construction of **130+ chambers**
- Installation of **80+ flow meters** and **200+ pressure sensors**
- Installation of new **valves** and replacement of non-working ones
- Implementation of **22 DMAs** (so far), out of 81 planned

Variable		2021	2022	2023	Difference	
Inspected network length	km	184	326	908	393%	▲
Mains bursts detected by ALD	no.	62	158	235	279%	▲
Service connections bursts detected by ALD	no.	22	81	144	555%	▲
Detection of illegal uses	no.	26	38	42	62%	▲
Operational personnel working in water losses	no.	11	15	22	100%	▲



Project results

Digital maturity

- Data collection procedures review
- Continuous GIS update
- Development of **hydraulic models** (overall and by DMA)
- Digitalization of work orders
- Digital forms for reporting on active leakage detection activities
- Digitalization of maintenance activities (on-going)
- Implementation of **4 new solutions** – AGS software platform



Real-time monitoring of water and wastewater systems



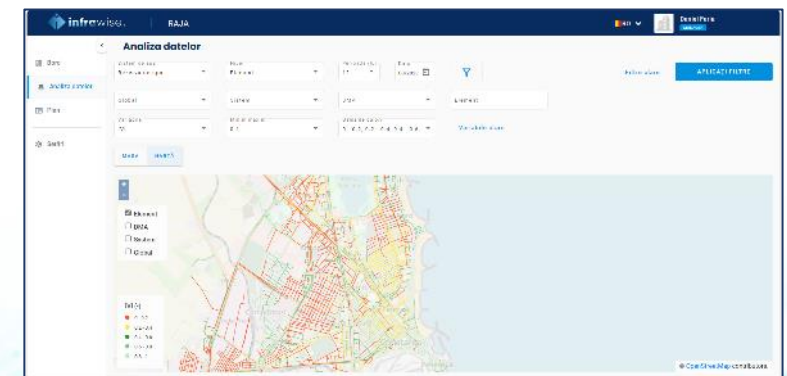
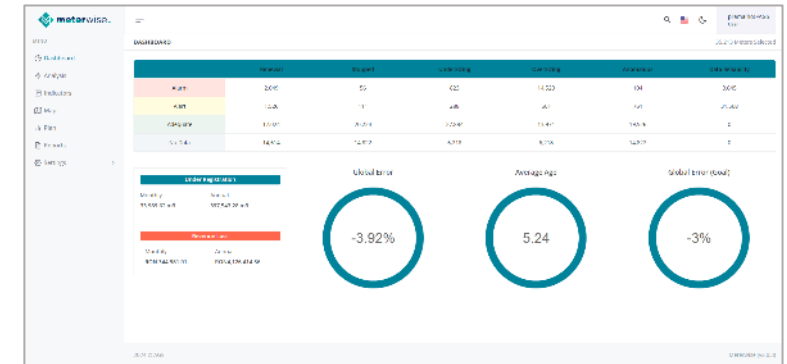
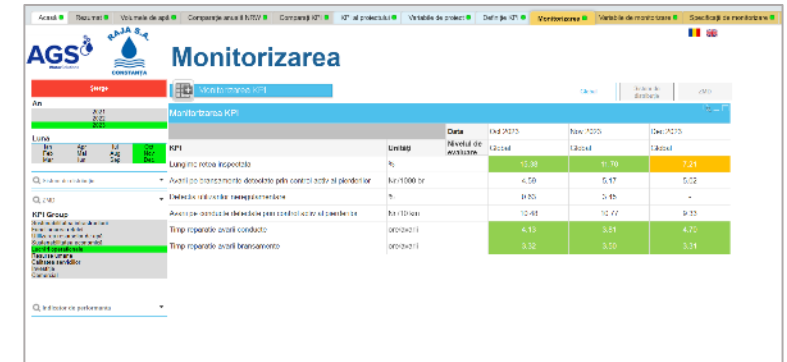
Business intelligence & performance assessment



Integrated customer meters management

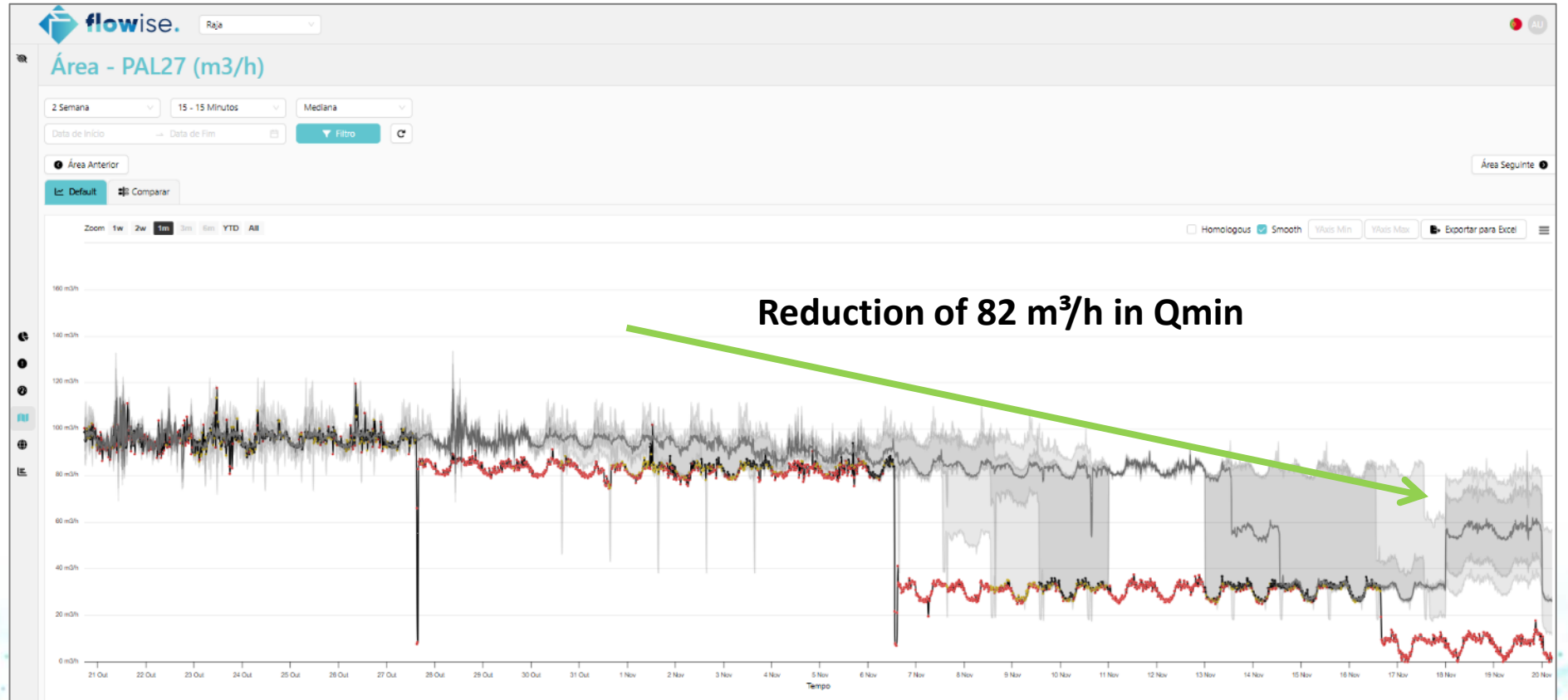
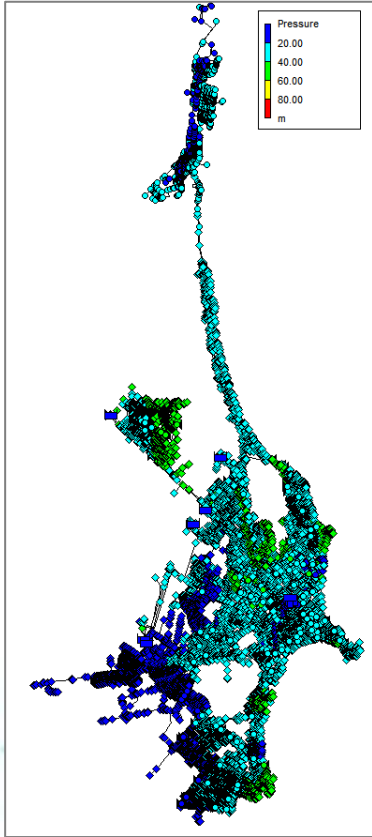


Prioritization of rehabilitation investments in water and wastewater systems and networks



Project main results

Improving digital maturity



Project main results

Technical knowledge and organizational culture

- **NRW reduction strategic plan**
- **20** reports and operational procedures review
- Know-how on the use of specific software
- **23** training sessions for more than **100 technicians**

- **Awareness and focus** on the water losses problem at all decision-making levels, from operational to strategic
- Promoting **inter-departmental communication**
- Increased **organizational efficiency** in decision making processes
- **Improving water utility image**, as a national reference in this process



Final remarks

- RAJA project is demonstrating that PBSC is a feasible strategy for NRW reduction and that it constitutes already a **reference project for the Romanian water sector**. Relevant aspects in a successful PBA include the establishment of realist targets, having clear roles and responsibilities, having a well-defined baseline (or a mechanism to revise it), ensuring the existence of adequate resources and good communication between stakeholders.
- The biggest challenge is always related with **human resources, changing procedures and organizational structure**. AGS gives a particular focus on knowledge transfer to guarantee the systematic reduction on water losses in the short-medium term, but also in the long-term.
- **Digital transformation** has an important role on the operational activities and on the results obtained. Having data, makes problems visible and facilitates the identification of solutions. Involving people in the process, from management to operational levels, is a key step in this process.
- The implementation of procedures and methodologies that lead to higher efficiency levels are **typically complex processes** that involve changes at various levels, both technical and organizational. These projects **promote faster incorporation of methodologies** compared to isolated implementation by the water utility.

2021 | PT GLOBAL WATER AWARDS

PWP – Portuguese Water Partnership Award on Technical Services category --
Performance based agreement focused on non-revenue water project in one water utilities in Romania

2022 | BBC StoryWorks documentary

Project identified by International Water Association (IWA) to be part of the online film series #BeneathTheSurface produced by BBC StoryWorks

<https://www.bbc.com/storyworks/beneath-the-surface/the-city-below>



AWARDS & TECHNICAL RECOGNITION



Thank you.