



Leak detection in  
Transmission Pipelines  
for Non-Revenue water  
minimization

# We are Aganova

Specialists in leak detection in transport networks and digitalization of results

Our mission is to provide cost-effective, efficient and effective technologies with a recurring use model that helps minimize Non-Revenue Water (NRW), and that can offer valuable information to our customers for the decision-making process.



More than **2 500** km  
inspected



More than **1000**  
leaks  
detected



**5300** L  
recovered per minute during  
2022

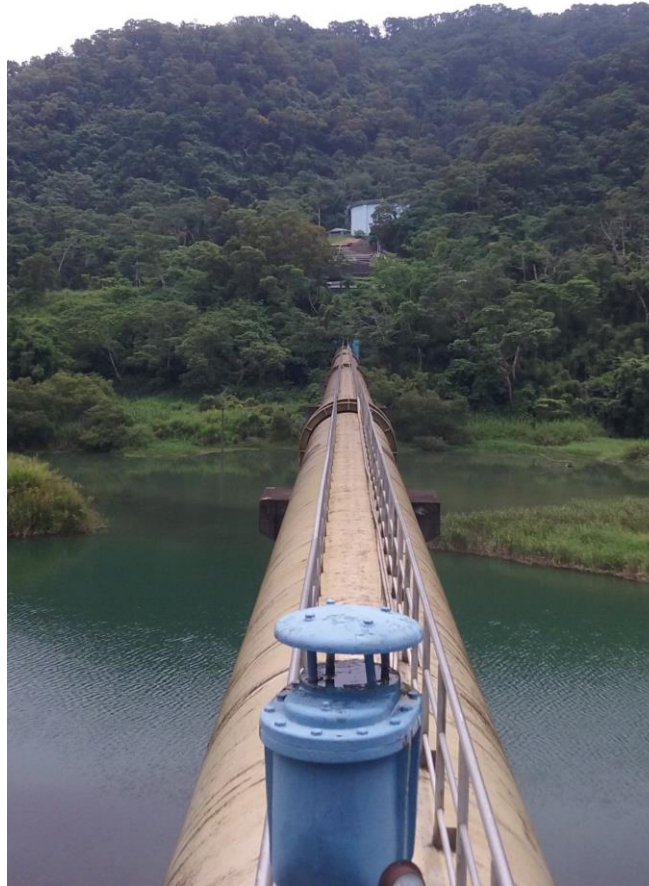


**1** olympic pool every  
**7h 45 minutos**  
with the recovered flow

# Leak detection in Transmission pipelines

## FAVORING FACTORS

- ✓ They are critical and key elements for supply.
- ✓ They are the result of large engineering projects
- ✓ Its structure and materials are solid and resistant
- ✓ The number of failures is much lower than in distribution networks but...



## DISADVANTAGEOUS FACTORS

- ✓ Maintenance activities are less intensive.
- ✓ It is a type of infrastructure that tends to age.
- ✓ A large number of transport networks do not have exact planimetry or inaccurate planimetry.
- ✓ Digitization and monitoring is much lower than in distribution networks.
- ✓ It requires specific tools for monitoring.
- ✓ Failures in these networks have disastrous consequences.



# Technologies for leak detection and digitization of results

## Nautilus System

Wireless, in-line and neutral buoyancy technology for the analysis of large diameter water networks.



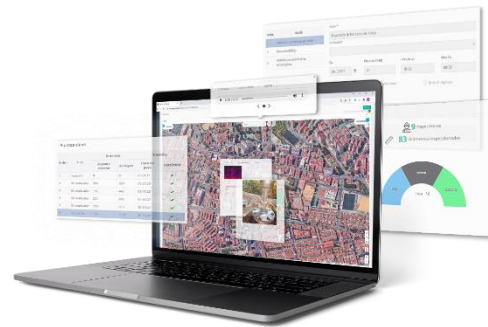
**Nautilus**  
*Leak detection*



**Nautilus**  
*Explorer*

## Nemo Platform

Digital advanced platform that allows to track the results of inspections with Nautilus systems.



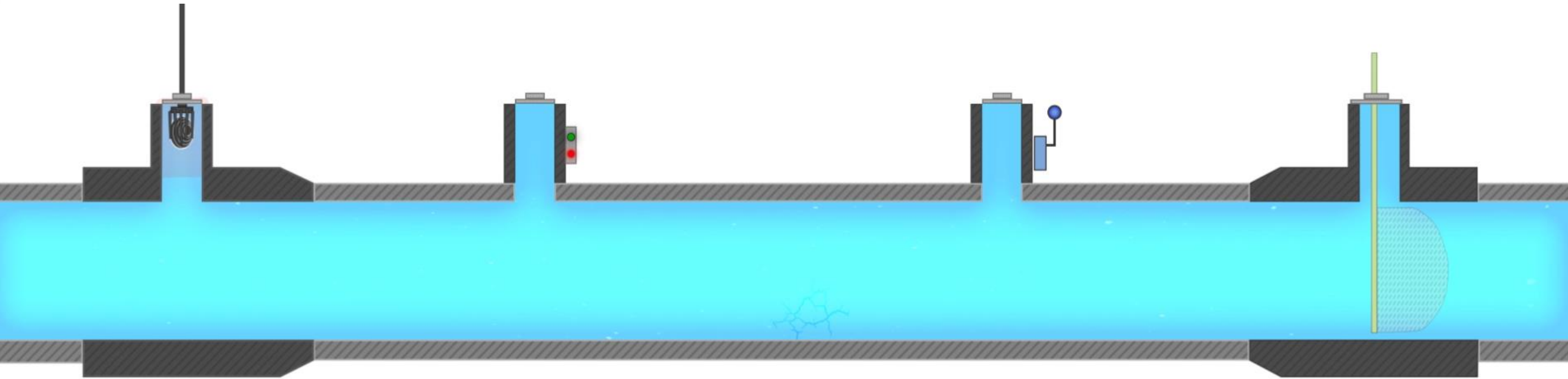
## Jabega System

Interior visualization technology of pressure pipes with CCTV system and acoustic register.



Operation

# Nautilus System



# Benefits of the **Nautilus** System

## ✓ Navigation in-line

Navigates inside the pipe, at any depth and vertically.

## ✓ Small leaks detection

Detects leaks from 0.005 liters per second.

## ✓ Neutrally buoyance system

The system navigates freely through the center of the pipe, allowing to dodge possible obstructions.

## ✓ No service interruption

The inspection is carried out with the pipeline under pressure.

## ✓ Long distances per inspection

Can inspect up to 35 kilometers in a single insertion.

## ✓ Exact location

Identifies leaks with an error margin of 1 meter.

## ✓ Suitable for any material

Can be used in any type of material.

## ✓ Low flow rates

Can be used in pipes with very low flow rates.

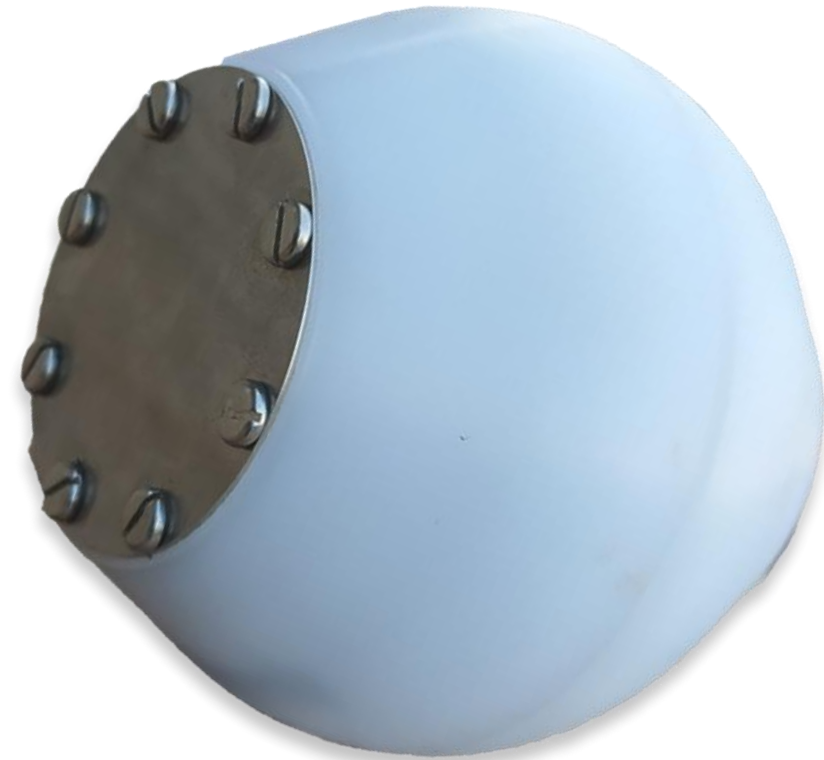


# Nautilus

## *Explorer*

### Evaluation and diagnosis of large-diameter water networks

- Navigability analysis.
- Reports on the existence of hotspots in the network.
- Network diagnostics.

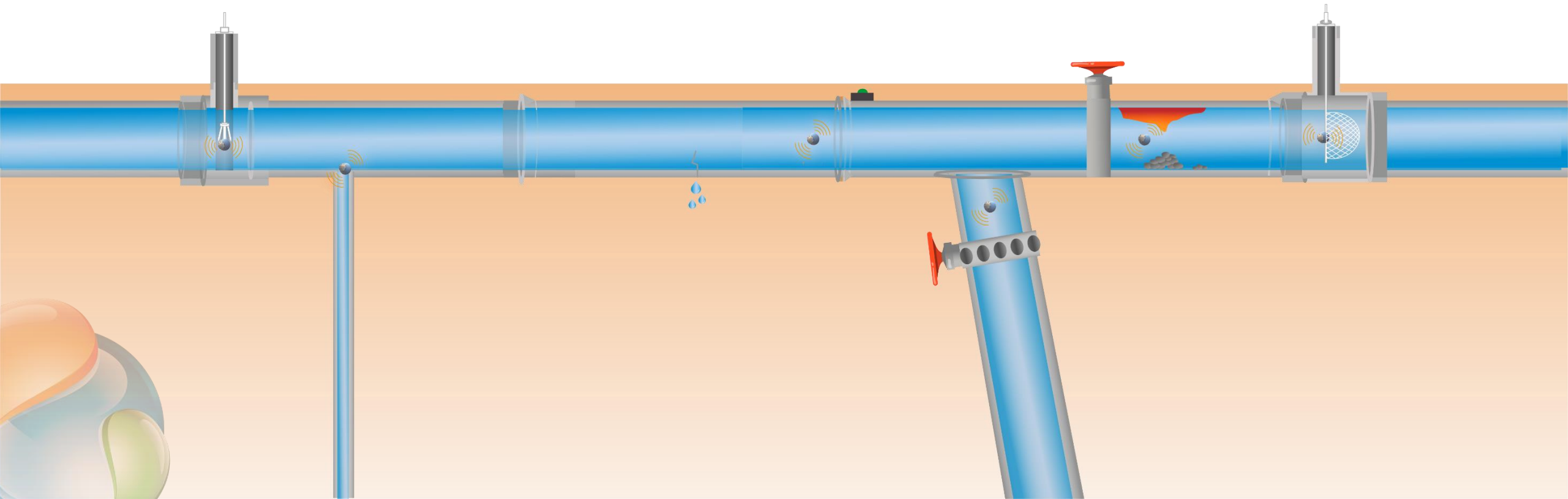




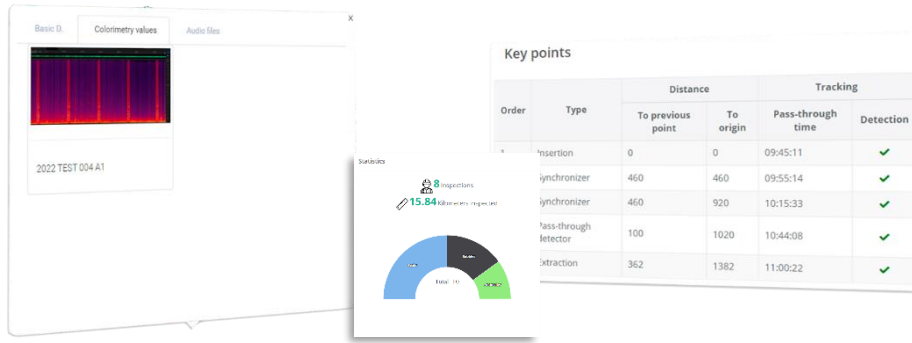
# Operation

# Nautilus

*Explorer*







# Nemo Platform

Digital transformation of inspections in large diameter networks.

## ✓ Digital platform

Facilitates access to the data of inspections carried out with Nautilus and Jabega.

## ✓ Campaign monitoring

Allows the live monitoring of the inspection, as well as its preparation and obtaining of final reports.

## ✓ Data analysis

Interprets the data obtained with the Nautilus and Jabega systems, showing them in a simple and easy to understand way.

## ✓ Preventive management

Stores data obtained from previous campaigns, which allows monitoring of the network and anticipating serious anomalies.

## ✓ Facilitates decision-making

Knowledge of the state of the network is essential for decision-making process.

## ✓ Analysis of the evolution of the leak

Allows to know the life cycle of the network and to carry out a strict monitoring of the status and progress of the localized incidents.

Inserción



# Jabega System

Visual and acoustic technology to obtain detailed information from the interior of the pipe.

## VISUALIZATION

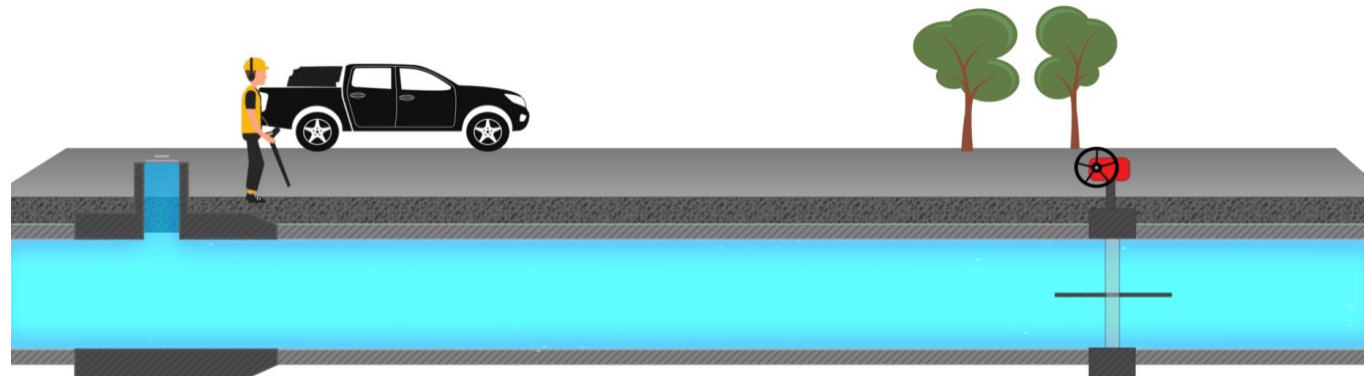
Pipe visualization system from the inside for the detection and identification of anomalies.

## ACOUSTIC RECORDING

It has a high intensity hydrophone that allows acoustic recording inside the pipe and, therefore, the detection of leaks and existing anomalies.

## TRACKING

It allows to know the route of the pipe to be able to follow Jabega from the surface.



# Benefits of the Jabega System

## ✓ Acoustic and visual recording

CCTV with high definition recording and sound recording for leak identification.

## ✓ Live viewing

Through the camera it is directly connected to the video case.

## ✓ Up to 700 meters per insertion

Wired technology that allows inspection of up to 1000 meters in a single insertion.

## ✓ No service interruption

The system is inserted with the pipe under pressure.

## ✓ For large diameter pipes

Applied in pipes of diameters greater than 300 millimeters.

## ✓ Easy maneuverability

Can be manipulated to move forward and backward during the inspection allowing a detailed visualization of the points of interest.



# Research and development, our main pillar

We develop new technologies for the minimization of Non-Revenue Water

## Projects

Our projects are focused on developing cutting-edge technologies in the sector, applied to the needs transmitted by our customers.

We currently work on:

- Sensors in the sphere for mapping, water analysis, pressure measurement and other parameters of interest to the customer.
- Analysis and interpretation of data, algorithms and digitalization.
- Nautilus for network diagnostics.
- Greater autonomy in the insertion and extraction of the sphere.



## Test bench

Here, we test the technologies developed by Aganova and study different problems found in customer networks with the aim of providing new solutions.

It has a length of 180 meters and different diameters, with conflict points, such as blind T and Y and the possibility to cause leaks and anomalies.

## Success story

Success stories downloadable on our website  
[www.aganova.es](http://www.aganova.es)





# Our clients



empresa mixta metropolitana, s.a.



# Where are we

## Network of collaborators and international distributors

We believe that collaboration is key to minimizing Unregistered Water in the world. For this reason, Aganova relies on the structure of partnership with international partners for the prospection of its services in the world.





# Quality certifications and memberships

## ISO 9001 and 14001 Certificates

Aganova has implemented quality management and environmental management systems updated annually.



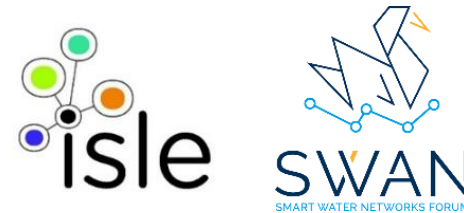
## Patented

Nautilus technology is patented in 68 countries.



## International partnerships

Aganova belongs to the most prestigious international associations in the field of water technologies.






Nothing is  
forever  
but what we  
take care of  
lasts longer

THANK  
YOU!

[ana.cozar@aganova.es](mailto:ana.cozar@aganova.es)

Contact

 [info@aganova.es](mailto:info@aganova.es)

 +34 951 014 672

[www.aganova.es](http://www.aganova.es)