# aquaBio. ETV success story

6TH ETV STAKEHOLDERS FORUM

18th June 2024, Warsaw Poland

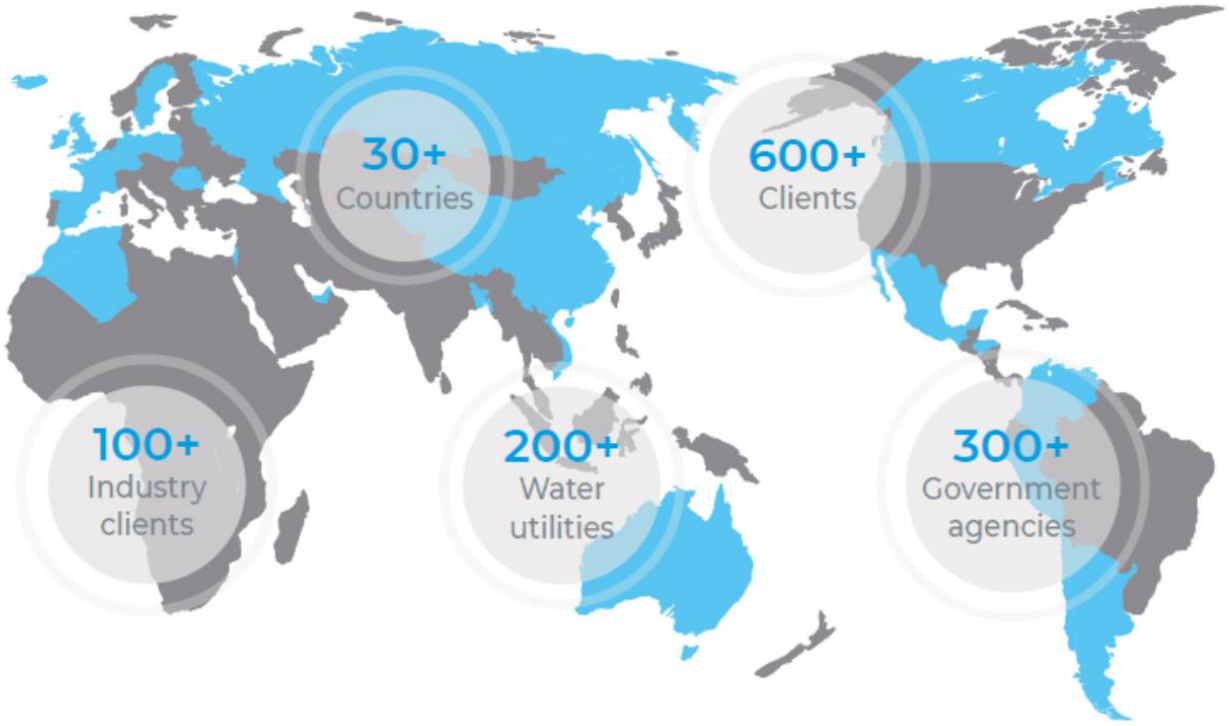
# Digital experts in solving water management challenges

With **35 years of global expertise**, in **ADASA**, we work with public and private organisations globally to solve the challenges of water management to build systems that make the **world safer, healthier and more sustainable**

advanced **ICT technologies**

water **sciences and modelling** and

real-time water **sensors**




Committed to:

SUSTAINABLE DEVELOPMENT GOALS

# Adasa, a SKion Water company

SKion WATER

SKion Water incorporates Adasa's digital capabilities to provide the best available digital solutions for its subsidiaries and clients.

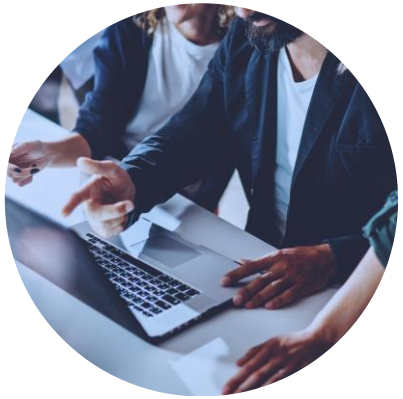
# Our Services and Products

Adasa follows a value creation strategy by offering our clients specialized and customized technological services for the comprehensive management of the **water cycle and meteorology**.

ENGINEERING & INTEGRATION

OPERATIONS & MAINTENANCE

WATER QUALITY ANALYZERS



CONSULTING

SOFTWARE DEVELOPMENT

opsCTRL

DAM 360

SaaS SOLUTIONS

# aquaBio

***Escherichia coli*** and **Total Coliforms**, or **enterococci**

Online Measuring Device

ETV

Continuous and simultaneous measurement of ***E. coli*** and Total **Coliforms,** or **enterococci**

Methodology: **Defined Substrate Technology® (DST®)**

Measurement principle:

*E. coli* or enterococci **detection, Fluorimetric**
Total Coliforms - **Colorimetric**

Range: **0 – $10^6$ MPN**

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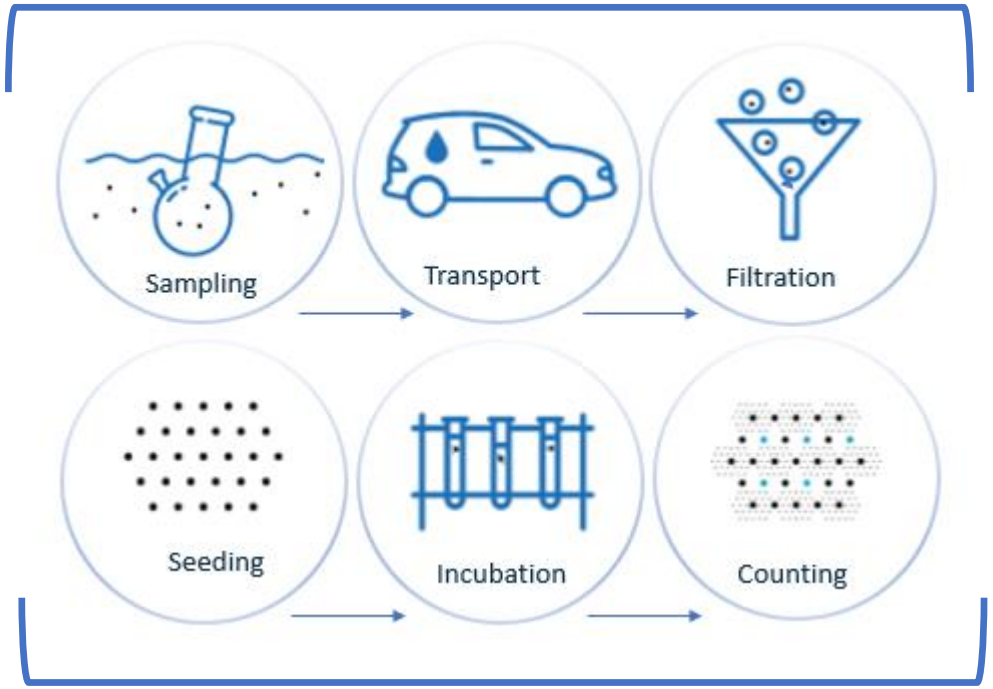
# Measurement Advantage

## Traditional monitoring




From 24 to 96 h

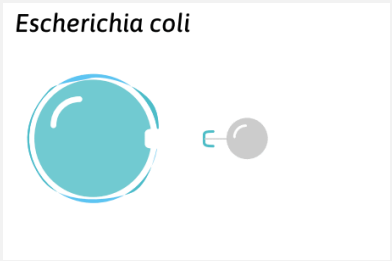
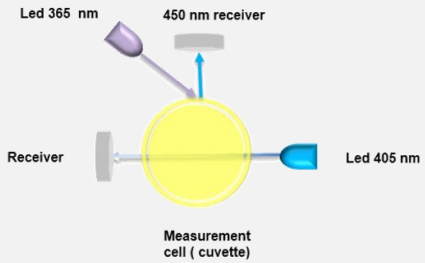
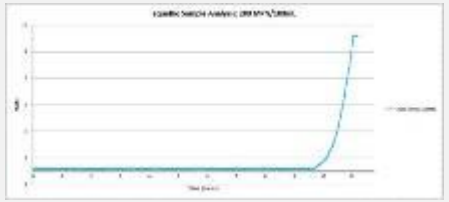
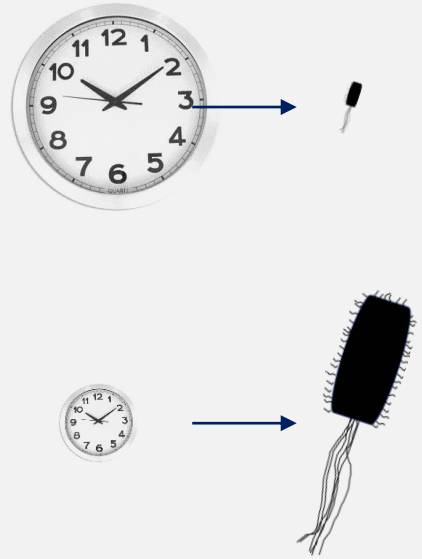
PLASTIC

## aquaBio

From 3 to 12 h

PLASTIC FREE

# Technological principle for *E. coli* quantification

| Method | Optical System | Measuring Principle | Quantification MPN |
|---|---|---|---|
|  |  |  |  |
| DST® Defined Substrate Methodology | Fluorescence | Monitorization of growth | Inversely Proportional |

# *E. coli* in regulations

## Water reuse
**Regulation (EU) 2020/741**

## Drinking water
**Directive (EU) 2020/2184**

## Bathing water
**Directive 2006/7/EC**

# Fast and continuous quantification of *E. coli*

Improve safety and efficiency in **reclaimed water** applications

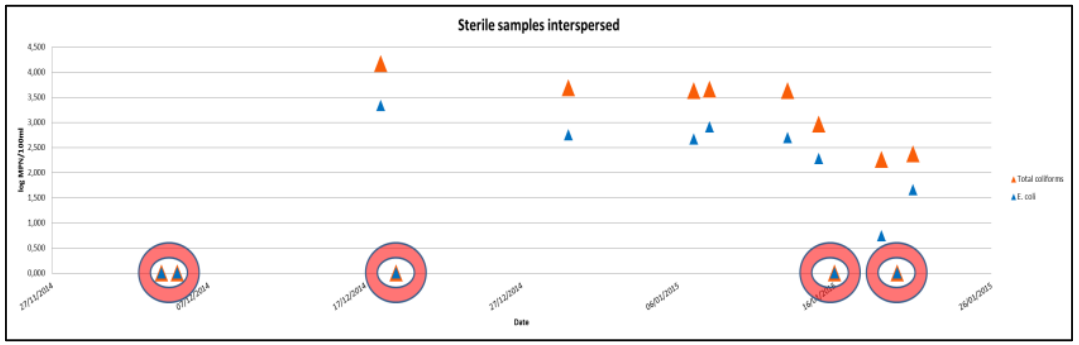
Improve safety in **drinking water** sources

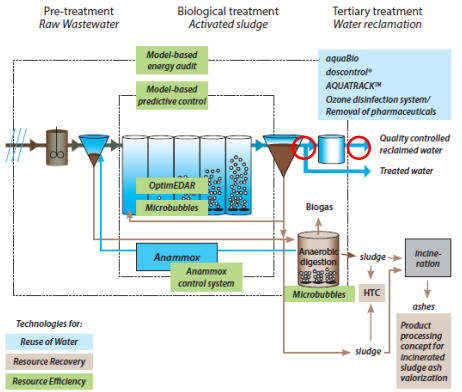
Monitor Online pollution to minimize **health risks for bathers**

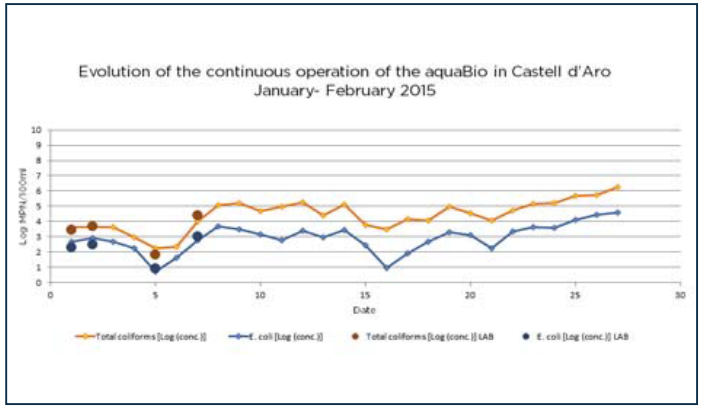
R3 Water

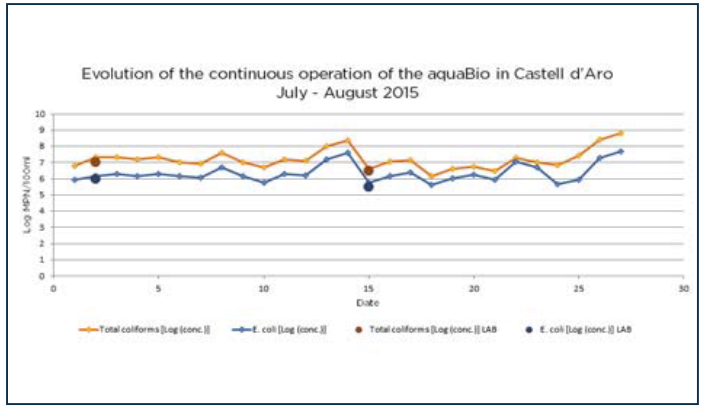
Reuse, Recovery and Resource efficiency: Innovations in urban wastewater treatment

This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 619093

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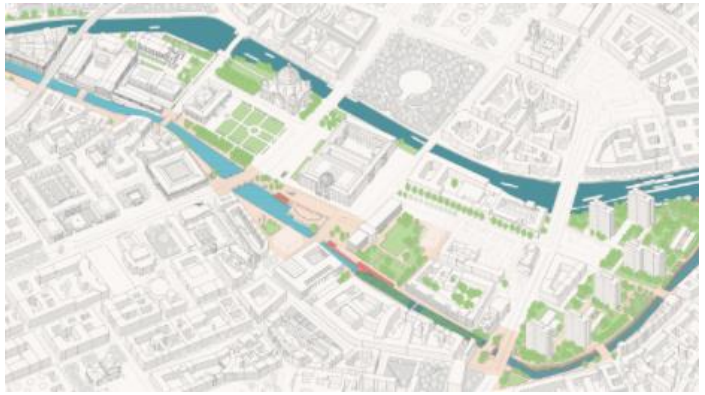
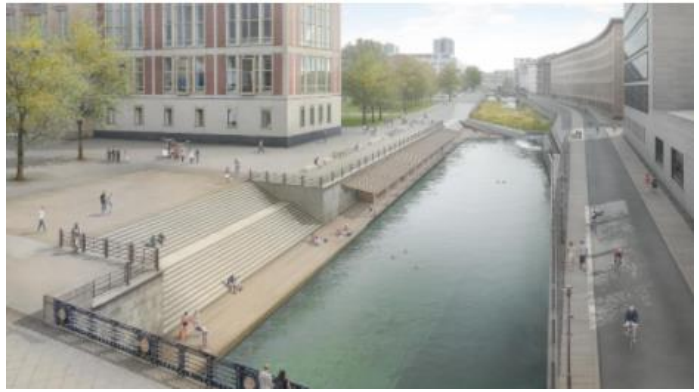
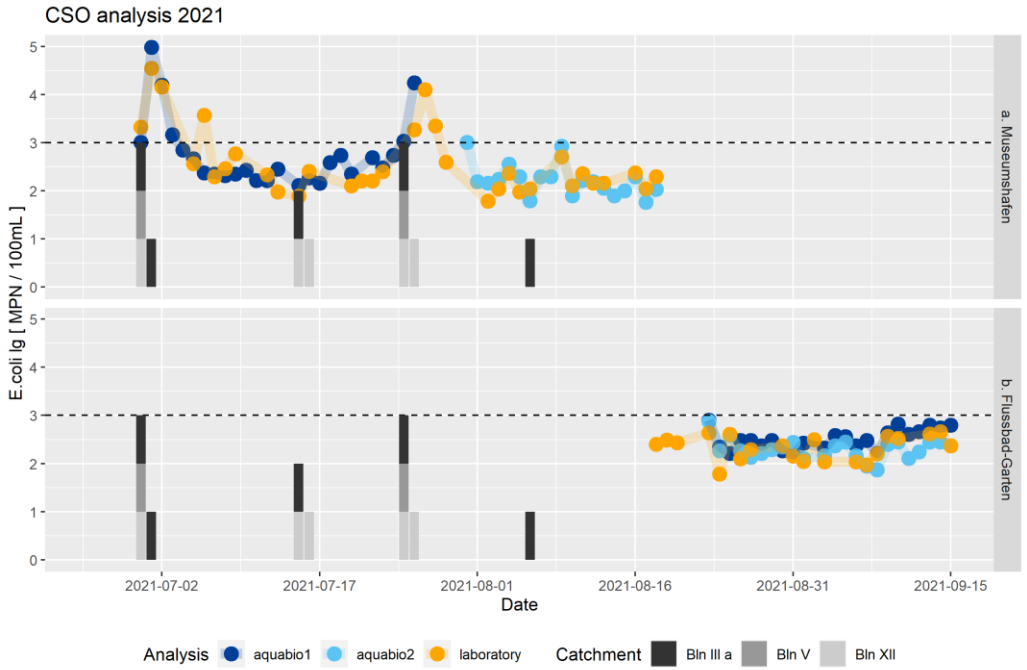
iBathwater





***Flussbad***

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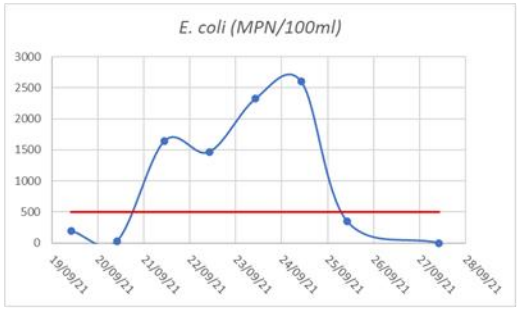
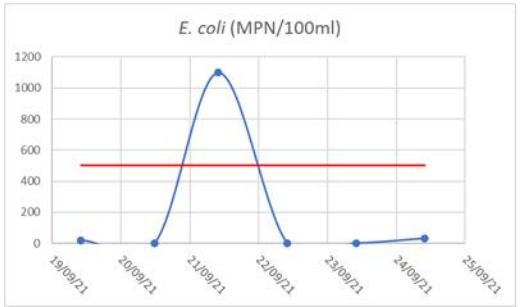
iBathwater

21-24 Sep. 2021

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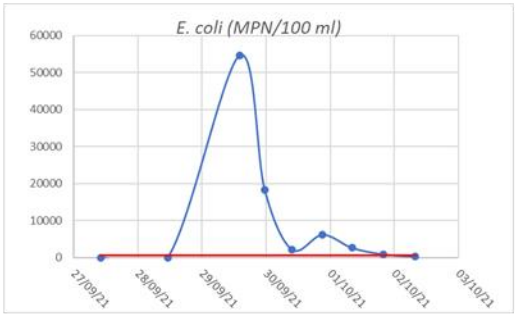
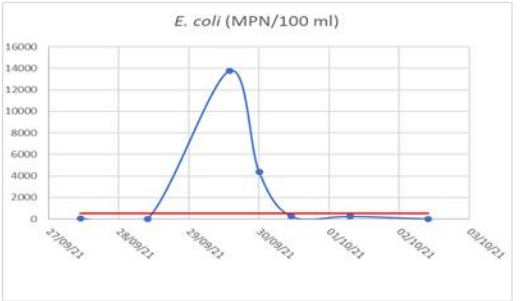
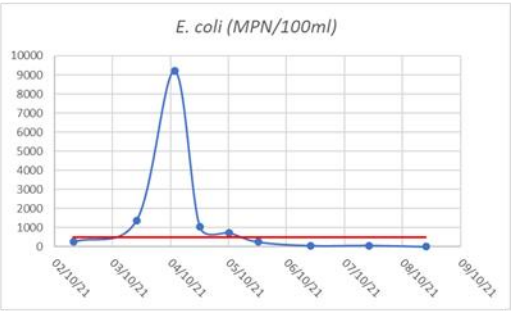
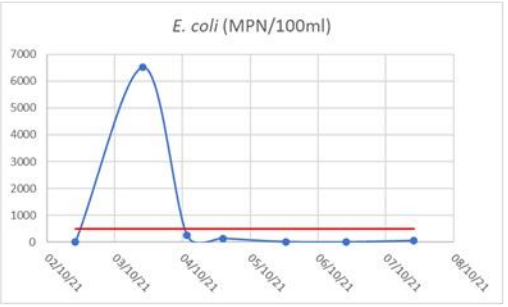



3-6 Oct. 2021



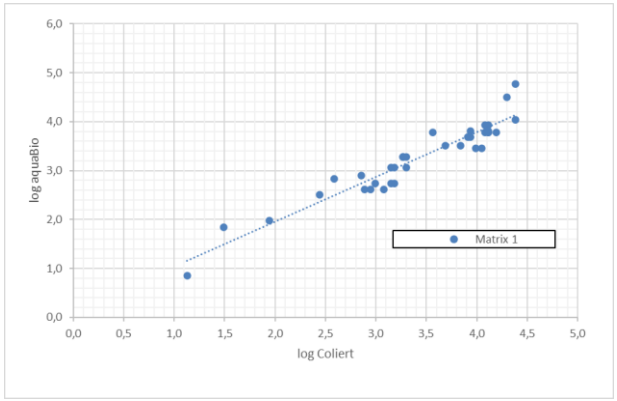



"Lack of confidence due to the tests not being conducted under an accredited verification body”

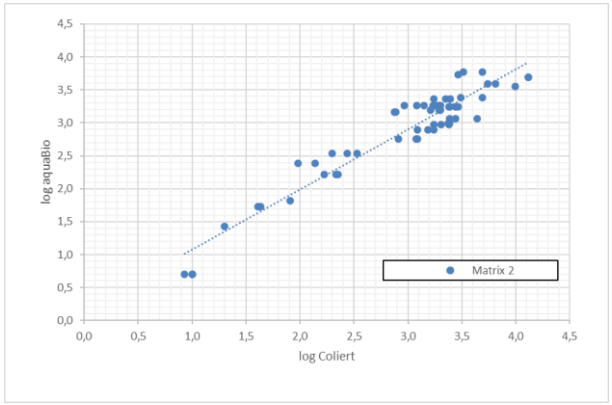
# Claims aquaBio

**Claim 1:** aquaBio B403 detects *E. coli* and quantifies them expressed as MPN in an **automatic and autonomous** way. The **upper limit** to be measured is $10^5$ MPN/100ml (although the equipment has not an upper limit for calculation).

**Claim 2:** aquaBio B403 provides results with a **linear regression coefficient higher than 0.95 when compared to the conventional laboratory method ISO 9308-2** (Water quality — Enumeration of *Escherichia coli* and coliform bacteria — Part 2: Most probable number method), and there are **no false positive values**.




The linear regression for Matrix 1: non-chlorinated treated effluent of a WWTP




The linear regression for Matrix 2 : river water

**Claim 3**: aquaBio B403 determines ***E. coli* without sample dilution** in a minimum time of **5.3 h (for $10^5$ MPN/100ml)** and a maximum of **12.4 hours (0 bacterium/100 ml)** with the same configuration

*The aquaBio technology, B403 model, was verified in the framework of the EU Environmental Technology Verification (ETV) pilot programme for:*

- *detect E. coli and quantify them expressed as MPN in an automatic and autonomous way in effluent from Wastewater Treatment Plant. The upper limit to be measured is $10^5$ MPN/100ml (although the equipment has not an upper limit for calculation).*
- *detect E. coli and quantify them expressed as MPN in an automatic and autonomous way in river water. The upper limit to be measured is $10^4$ MPN/100ml (although the equipment has not an upper limit for calculation).*
- *Provide results expressed in a logarithmic scale with a linear regression coefficient higher than 0,95 when compared to the conventional laboratory method ISO 9308-2 (Water Quality-Enumeration of Escherichia coli and coliform bacteria-Part2: Most probable number method), and there are no false positive values.*
- *determine E. coli without sample dilution in a minimum time of 5.3 h (for $10^5$ MPN/100 ml and a maximum of 12.4 h (0 bacterium/100 ml) with the same configuration in effluent for Wastewater Treatment Plant.*
- *determine E. coli without sample dilution in a minimum time of 5.3 h (for $10^4$ MPN/100 ml and a maximum of 12.4 h (0 bacterium/100 ml) with the same configuration in river water.*

*And matrixes:*

- *Effluents of WWTP with secondary treatment and with non-chlorinated tertiary treatment*
- *River water*

*Verification Body:* *Institute for ecology of industrial areas (IETU)*

*Date:* *15 of May 2024.*

*The statement of verification has been registered under number **VN20240055** and is accessible at the following address:*

*http://ec.europa.eu/environment/ecoap/etv_en*

*The aquaBio technology, B403 model, was verified in the framework of the EU Environmental Technology Verification (ETV) pilot program for:*

The data provided by aquaBio is reliable

This reliability is guaranteed by an independent and certified verification

Our clients can make decisions derived from monitoring with aquaBio with complete confidence

*The statement of verification has been registered under number* ***VN20240055*** *and is accessible at the following address:*

# Lessons learnt

**Clients:** Talk to your clients to know what are they real needs.

**Ambition:** Find a balance between what is necessary, the time and the budget.

**Claims:** What is relevant in your technology and is affordable to demonstrate. You need to do the tests in-house first.

**TRL:** Although in the R&D projects is possible to apply with a TRL 7, it is advisable to have a TRL9. Any change is out of the scope.

**Time:** It can take 12 month for ETV implementation, but it can be longer depending on the tests.

**Operation:** Plan and execute tests to demonstrate the performance of the technology in stable operating conditions.

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