



## Facilitating the use of ETV to increase energy efficiency in water sector

### Verifying a technology under the EU ETV Programme – the ETV process step by step

Izabela Ratman-Kłosińska, ETV4Water Project Coordinator  
Environmental Technology Verification Body IETU

Workshop:  
How to verify the performance of an innovative, energy efficient technology for wastewater sector under the EU ETV Programme  
Aquateam COWI, 23.10.2017, Oslo, Norway

# What does ETV consist in?

**ETV consists in providing third party evidence that a specific environmental technology achieves a declared performance (technical/functional) and resulting environmental benefits:**

- for a specific application
- under specific operational conditions
- taking into account all measurement uncertainties and other assumptions

The starting point for the verification is the claim about the performance of a technology made by the applicant

- ETV is made based on robust procedures specified in the General Verification Protocol of the EU ETV Programme and in the ISO 14034 standard
- Verifications of individual technologies are carried out based on a verification plan ( specific verification protocol) which is specific to technology/verification
- Verification Bodies act as inspection bodies (accredited for compliance to ISO/IEC 17020:2012 for type A inspection bodies)
- Verification is an impartial, third party assessment based on the highest quality assurance requirements and factual approach
- ETV is carried out under a confidentiality agreement
- The process is transparent and is carried out in dialogue with the applicant the activities as well as risks at each step of the verification are communicated to the applicant
- Verification is a dynamic process with an active role of the applicant

# Entrance criteria for technologies

- **Ready for market** or already present on the market
- **Environmental**
- **Innovative** compared to relative alternatives
- **Relevant** to user needs
- **Complying to the legal regulations** that apply to them
- **Belong to the technology areas of the EU ETV programme**

# Candidate technologies

- Technology must be a specific technical solution e.g. a proces, product, equipment , service with a unique identifier (e.g. commercial name, catalogue number)
- It must meet the definition of an environmental technology
- It must be at such a stage of development when no changes will be made which could impact is performance ( the unit verified should be identical with the one available for sale)
- It should demonstrate innovative features
- ETV could be particularly helpful when:
  - The technology performs better that it is required by applicable regulations/standards (an assessment of conformity to the standard/regulation will not reflect this innovation)
  - When a standard that could reflect the innovative feature does not exist
  - When the competition on the market is strong – ETV can help distinguish innovation among competitors

# What is an environmental technology

## Environmental technology

- Must either deliver or result in an environmental added value (e.g. water treatment technologies) i.e. :
  - Reduce the environmental pressure or have a positive impact on the environment including but not limited to removal, prevention, reduction, mitigation of pollutants released to the environment, restoration of environmental damages or use of natural resources in a more efficient and sustainable manner compared to conventional technologies currently used
- Solves an environmental problem that has not been solved before
- Allows to better measure environmental impacts (monitoring equipment)

**Innovative environmental technologies are environmental technologies presenting a novelty in terms of:**

- design,
  - raw materials and energy involved,
  - production process,
  - use,
  - recyclability or final disposal
- when compared with relevant alternatives.

## A technology is considered ready for market when :

- At least one unit has been produced in an industrial scale

and, in relations to the above, at least two of the following conditions are met:

- An instruction/operation/maintenance manual is available,
- It is a product offered in the manufacturer's catalogue,
- It is in marketing materials of the manufacturer .



## Technology areas applicable to ETV4Water project:

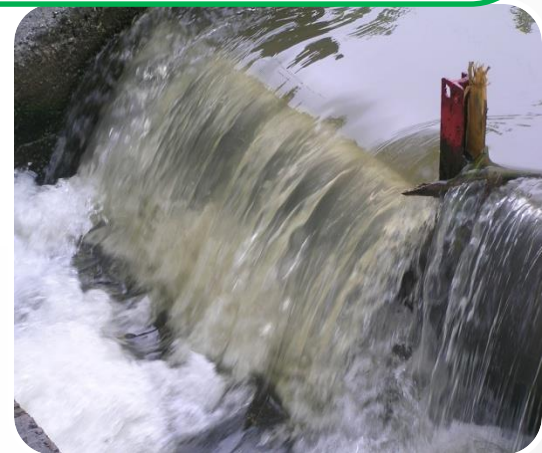
### Water technologies

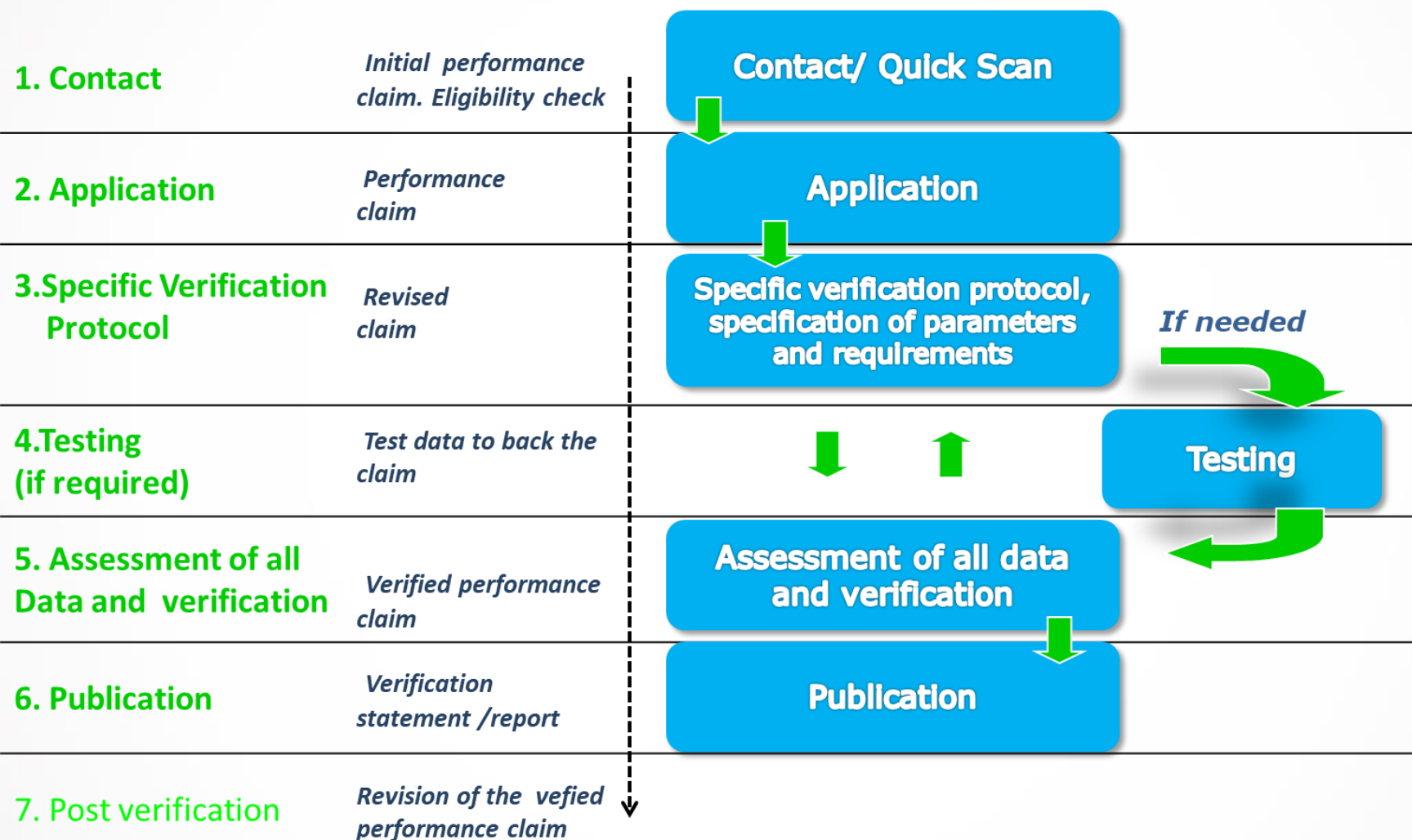


- Treatment of wastewater for microbial and chemical contaminants (e.g. separation techniques, biological treatment, electrochemical methods, small-scale treatment systems for sparsely populated areas)
- Treatment of industrial water (e.g. disinfection, filtration, purification)

### Energy technologies

- Energy production from RES
- Energy production from waste





# Contact phase

# Contact phase: what does it cover

- **Initial determination of the technology eligibility for ETV based on Quick Scan**
  - Does the technology meet the definition of an environmental technology (environmental added value)?
  - Is it innovative ?
  - Is it mature enough to be verified?
  - Does it fall under the EU ETV technology areas?
  - Is the addressed verification body accredited to perform verification of this technology ?
  - **Determination of the elements of the performance claim (i.e. what the applicant intends to verify? )**
  - Initial review and indications concerning potential acceptance of the existing test data and the needs to do additional testing
  - Indication of the costs of the verification ( excluding testing costs)

# Contact phase: what does it cover

## Development of the technology description

- **Provide a relative alternative** – refer to current solutions/technologies available on the market (both own or offered by the competitors), present examples of relevant alternatives.
- **Specify the target market** of the verified technology
- If there is no relevant alternative available on the target market of the verified technology a solution that the client would choose to solve the problem should be provided

# Contact phase: what does it cover

- The Quick Scan is assessed by the verification body and submitted to the EU ETV technical working groups for review
- Conclusions from the assessment and review are taken into account during the application development

# Application

*(subject to contractual arrangement )*

# Application: what does it cover?

- Contractual arrangement between the applicant and the verification body including confidentiality issues
- Development of an **ETV application** taking into account the conclusions from the quick scan (**based on the EU ETV application form**)
- Obtaining all data and documentation of the technology necessary for the verification body to understand its operation and performance including benefits, operational constraints and , limitations; and system boundary and assess if its technical design ensures achievement of the declared performance,
- Specification of the **initial performance claim** to be verified based on the elements of claim included in the Quick Scan



# Application: data needed

- **Intended application of the technology** described using the terms:
- **matrix** (material(s) which the technology is intended for and its characteristics)
  - e.g. wastewater from a dairy
  - *the performance of the technology will be tested and assessed for these material (s)*
- **purpose** (functional/technical) which is a measurable property that is affected by the technology and how it is affected. It is possible to define more than one purpose
  - *the purpose should be related to the performance parameters and the environmental added value*
- **Operational conditions** – in which incl. assumptions the technology performs as declared (e.g. parameters of the matrix, ambient temperature, operation time, flow rate etc)
  - *for these conditions and assumptions the test data relevant for performance will be analysed and if needed testing will be made*

# Performance to be verified

**The starting point is the initial declaration from the Quick Scan that is translated into a set of verifiable parameters that shall be**

related to the technology itself

*e.g. not reduced eutrophication of surface waters but removal rate of phosphorus in wastewater)*

- expressed in a specific and unambiguous way using absolute measurable figures so that only one interpretation is possible  
*e.g. energy consumption expressed in MW/ton of production units, not as 2% reduction compared to average energy consumption of similar technologies available on the market;*
- specifying the minimum rather than the maximum achievable performance  
*e.g. . at least ....and not up to....;*
- precisely defining the operating conditions under which the minimum claimed performance is achievable  
*e.g. temperature range, water flow rate, etc.;*
- meet the minimum standards required e.g. by legal regulations for the technology or other technical standards  
*e.g. relevant EU criteria for drinking water as well as targeted markets drinking water criteria or Best Available Technologies values in relation to the Industrial Emissions Directive;*
- be measurable using acceptable (i.e. scientifically sound yet not necessarily standardized) test procedures and analytical techniques.
- reflect the needs and requirements of the users for specific applications at specific operational conditions  
*(CTC – critical to customers)*

**The applicant is encouraged to submit test data relevant to the claim from testing done prior to application for ETV.**

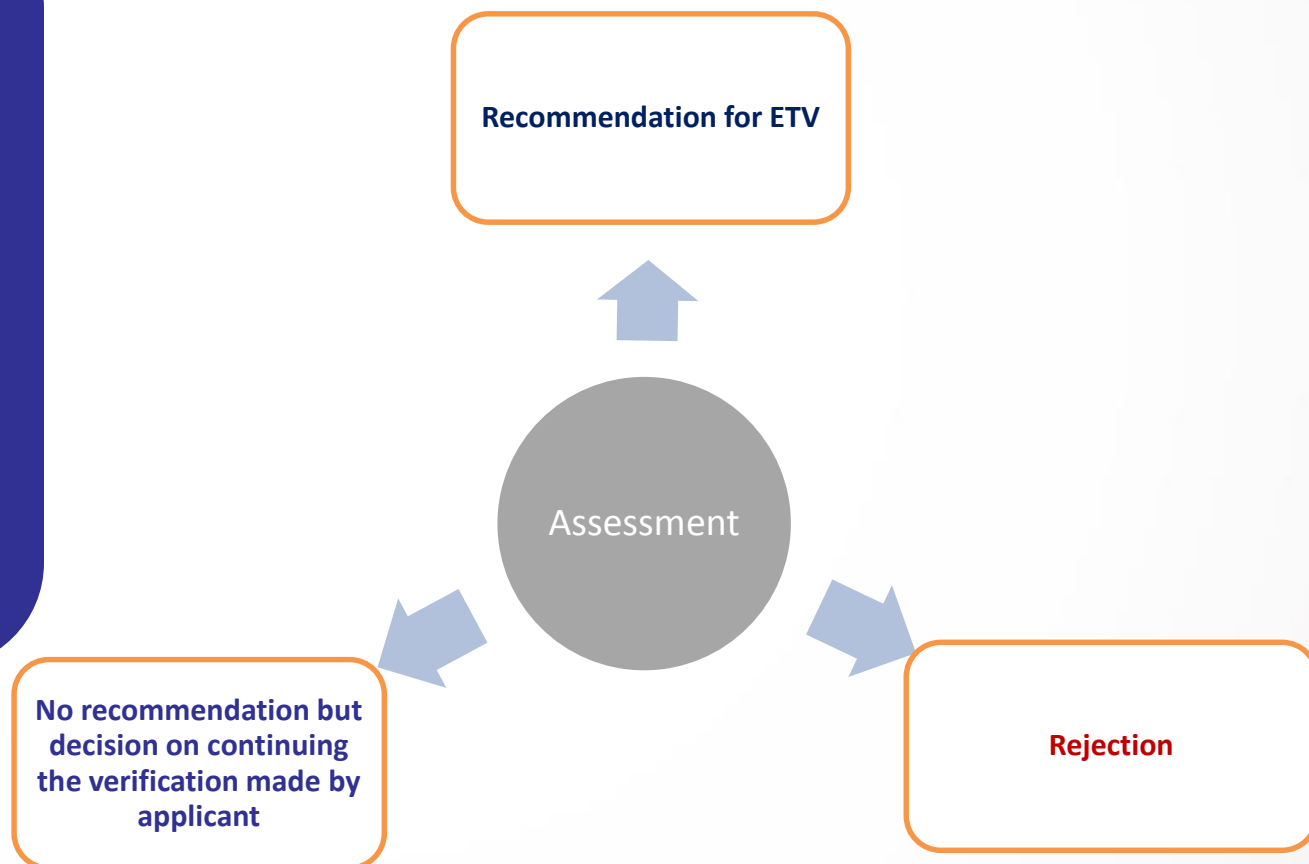
**The test data will be analyzed taking into account the following:**

- Information on the qualifications of the test body/analytical lab that performed the testing ( accreditation to ISO 17025)
- Information on the test plan developed to perform the testing
- Information on the methods used to perform the testing/measurements
- Information on the access to source data (e.g. access to test report, raw data etc)
- Relevance of the data for the performance claim

- **Data (preferably quantitative) on the positive and negative environmental aspects of the technology at its 4 key life stages :**
  - Acquisition of resources,
  - Manufacturing,
  - Operation,
  - End of life
- Emission of greenhouse gases
- Emission of pollutants to the air, water and soil
- Use of resources
- Use of energy (incl. from renewable sources )
- Water consumption and associated processes
- Generation of waste incl. hazardous waste

# Eligibility assessment

Based on information obtained from the verification body makes a final assessment on recommending or not the technology for verification

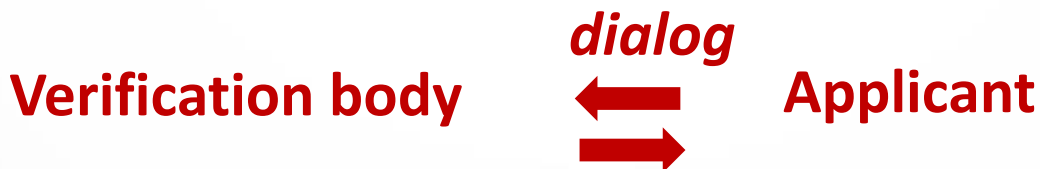


# Specific verification protocol *(contractual arrangement)*

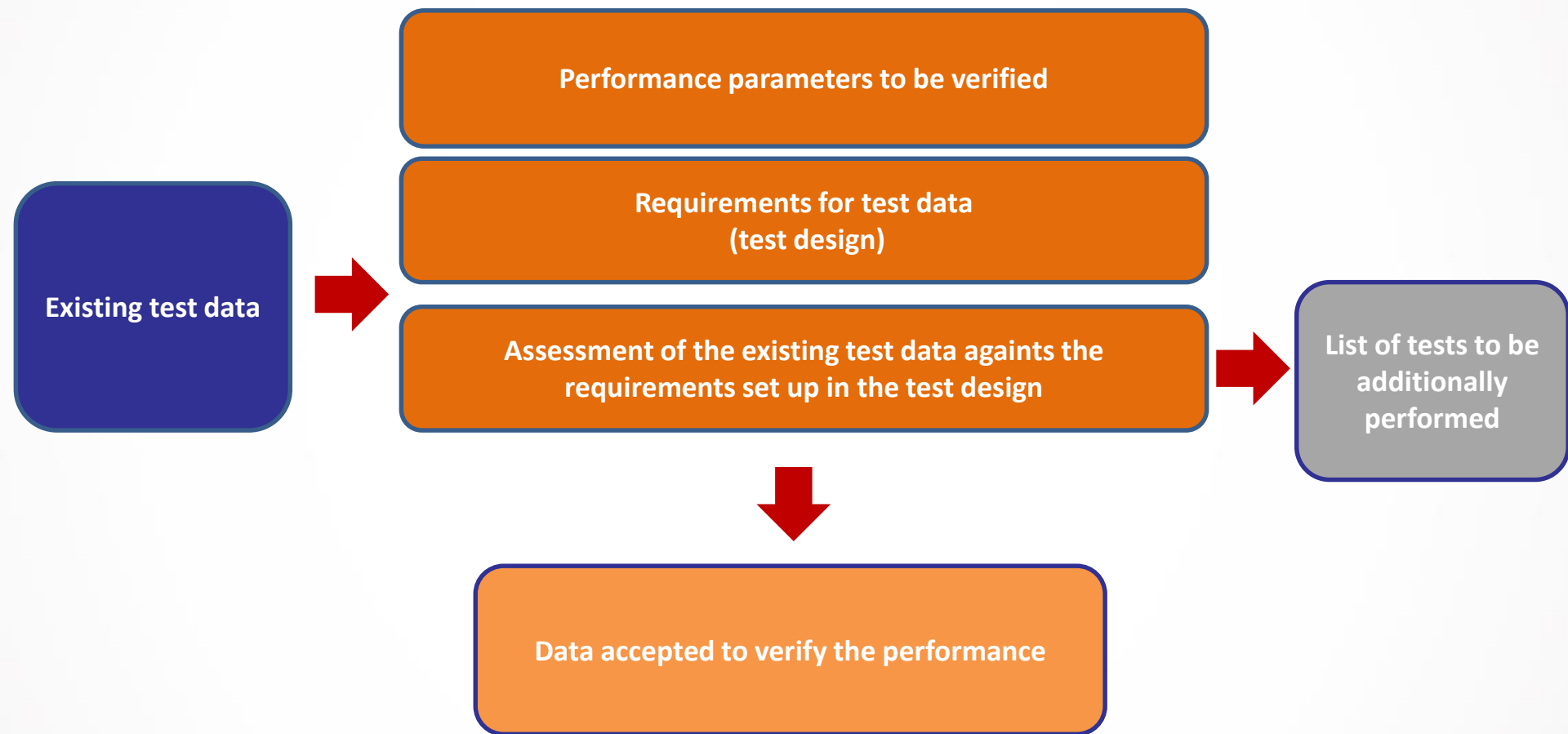
# Specific verification protocol

## Determining a detailed plan of the verification in cooperation with the applicant including:

- Final **specification of the performance parameters to be verified** (based on performance declaration from the application)
- **Specification of the test design and requirements relevant to the performance parameters to be verified including :**
  - requirements concerning testing and measurement methods,
  - determination of calculation methods ( statistical methods, number of samples etc.),
  - making assumptions for the testing – for specific operational parameters
  - Specification of requirements concerning the test site
- **Description of the way in which operational , environmental parameters and other parameters that will not be assessed but are relevant from the technology user's point of view e.g. operational costs, safety issues, ease of use, longevity and maintenance etc.**



# Specific verification protocol





## Activities of the verification body

- Communicates the scope of additional testing and relevant requirements to the applicant ( based on the test design)
- Supports the applicant in finding appropriate test body
- Performs test system assessment (including audit when the test body is not accredited to ISO 17025)
- Cooperates with the test body on the development of test plan and test report
- Approves test plan and test report

## Activites of the applicant

- Makes a decision on the choice of the test body
- Closes a contractual arrangement with the test body
- Cooperates with the test body on the development of the test plan and test report
- Provides the test body with an access to the technology/ provides its unit/ enables sampling/ provides operational manual and training if needed on the operation of the technology
- Accepts the test plan and test report

# Verification

*(contractual arrangement)*

## Activities of the verification body:

- makes a final confirmation of the technology performance based on a professional judgement of the test data
- Develops a verification report and a verification statement :
  - **Verification Report** includes a detailed description of all verification activities implemented according to the verification plan and the verified performance claim
  - **Verification statement** is a summary of the verification report and includes the verified performance declaration together with the conditions, limitations and assumptions under which the verified performance is achieved as well as other additional information on the technology relevant for the user

## Activities of the applicant

- Reviews the report and the statement
- May propose corrections but they will be considered by the verifier as deemed necessary, the corrections should not refer to technical content. If the verifier does not agree with the result of the verification( inspection) he may rise a complaint using a dedicated procedure
- Accepts the report and statement

**The report and statement are the property of the applicant**

# Publication

*(contractual arrangement)*

- **Activities of the verification body:**
- Submission of at least the verification statement for registration and publication by the services of the EC
- Publication of the report is recommended for transparency but not mandatory
- **In the case when the applicant is not satisfied with the verified performance of a technology (it is not attractive to the market or even harmful for the marketing of the technology) he may request not to issue and publish the verification statement**
- **In this case only the report is submitted to the applicant**

## Services of the EC register and publish the verification statements and the reports at a dedicated web iste

REG #	TITLE	TECHNOLOGY APPLICATION	MANUFACTURER	COUNTRY	VERIFICATION BODY	ISSUED ▼
VN20160012	<a href="#">GW Dryer</a>	Materials, Waste & Resources	G3 Enterprises - Verification proposed by the Institute for Agricultural and Fisheries Research (ILVO)	United States	RINA Services	16/03/2016
VN20160011	<a href="#">ECOGI - Separator for extraction of organic waste from pre-sorted household waste</a>	Materials, Waste & Resources	Komtec Miljo af 2012 A/S	Denmark	ETA-Danmark	01/02/2016
VN2015006	<a href="#">PURROT</a>	Materials, Waste & Resources	PurFil Aps	Denmark	ETA-Danmark	23/11/2015
VN20150005	<a href="#">Bio-Com System</a>	Materials, Waste & Resources	SELMA sp. z o.o. sp.k	Poland	Institute of Technology and Life Sciences (ITP)	07/09/2015
VN20150004	<a href="#">Aerobic Biodegradation of Mater-Bi AF03A0 and Mater-Bi AF05S0 (Mater-Bi of Third generation) under marine condition</a>	Materials, Waste & Resources	NOVAMONT Spa	Italy	Certiquality	09/08/2015



# Use of the verification statement

- The verification statement shall be only used in full, it is not allowed to use only parts of it.
- The verification body may withdraw the statement if it determines that the applicant is not using it properly
- In the case of withdrawal the statement will be also removed from the EC web site.

- **There is no validity date on the statements**
- **The applicant however is obliged to communicate any changes made to the technology to the verification body if he wants to continue using the statement to his technology under the same name/series number etc**
- The verification body assesses how the changes made to the technology could affect the verified performance
- If upon the assessment the verification body will state that the conditions for which the original verification had been made changed :
  - The verifier may apply for a simplified verification referring only to the changes and issuance of a new statement, or
  - The verification statement is withdrawn

# More information on ETV

- [www.etv.ietu.pl](http://www.etv.ietu.pl)
- [www.ec.europa.eu/environment/etv](http://www.ec.europa.eu/environment/etv)