

Towards a European Environmentally Sound Technology Verification System



EDITORIAL

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Meeting the objectives of sustainable development requires strengthening public and private sector capacity to identify, assess and select environmentally sound technologies and infrastructure. Third-party verification is a proven assessment mechanism for determining technology performance with a high level of reliability. It is based on scientific and statistically valid protocols for verifying performance claims. It helps facilitate environmentally sound decisions by ensuring that environmental performance information is reported clearly and in a transparent manner.

In its second year, TESTNET has initiated pilot testing and verification of water and cleaner production technologies in order to validate proposed procedures. Key stakeholders have been engaged and similar developments outside Europe have been monitored. Through these experiences, TESTNET has helped build the foundation for an effective European environmental performance verification system that will serve industry and society at large. TESTNET has also identified some of the implementation challenges related to quality management and accreditation; scope of testing and verification; and transparency and disclosure.

In moving forward, it is important to recognize that performance claims need to reflect market needs and realities. Technology users in key sectors, both industry and government, should become engaged early in the process, thereby facilitating the identification of verifiable performance objectives and the implementation of sustainable solutions.

ISSUE

Progress and first results of the TESTNET water technologies cases studies

Within the TESTNET project a number of verification cases addressing different kinds of technologies are performed with involvement of suppliers and possible customers, according to the scheme developed in WP2 (see www.est-testnet.net/Verification system design).

This issue is focus on progress of the water technologies test cases which planned target date are end 2007.

Type of case	Technology	Coordinator	
Water Technologies			
Monitoring of drinking & surface water	Bio monitoring [Toxcontrol]	DHI (& Exera)	DK
Monitoring of waste water	Optical monitoring [s::can spectro::lyser]	DHI	DK
Water disinfection in food industry	Disinfection by oxidation processes	KIWA	NL
Water Treatment	Fuzzy filter	VTT	FI

Case Biomonitoring:

The microLAN TOXcontrol Biomonitor for drinking water/surface water monitoring (Producer: microLAN B.V., Netherlands) is a recently marketed product and represents the group of biomonitors capable of continuous monitoring of toxicity.

The application in this test is focused on intake protection for water works producing drinking water from surface water (rivers and lakes/reservoirs), thus defining the field test to be carried out at a measuring station for a river or a lake/reservoir.

The equipment is verified using a version of the protocol from EN ISO15839 adapted to the methodology described in EN ISO 11348: Water Quality – Determination of the inhibitory effect of water samples on the light emission of *Vibrio fischeri* (Luminescent bacteria test).

This case needs some adaptation of the mentioned protocol to procedures described in another existing standard. The scheme with a Verification Institute (VI) is applied, EXERA playing the role of a VI.

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Case Optical monitoring:

The scan spectrolyser for waste water monitoring (Producer: scan Messtechnik GmbH, Austria) is a fairly recently marketed product, but new application possibilities are still introduced. It represents the group of multiparameter sensors based on spectral UV-VIS absorbance measurements.

The application to be reviewed in this test will focus on monitoring and process control on waste water treatment plants – specifically measurement of NOx to monitor nitrification and denitrification processes (possibly separated into Nitrate and Nitrite), Carbon source available for denitrification (possibly calibrated to COD) and Suspended Solids, thus defining the field test to be carried out at in an activated sludge tank at a waste water treatment plant including Nitrogen removal

This case is regarded to be quite straightforward because a useable protocol exists in an existing standard (EN ISO15839: Water Quality – On-line sensors/analysing equipment for water – Specifications and performance tests). For this case it certainly seem the need for a “fast track”, which involves the use of existing protocols/standards and is operated by Accredited Test labs supervised by the Thematic Verification Organisation (TVO) – and therefore no need for a Verification Institute (VI).

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Case Water disinfection technology for food industry:

The techniques described comprise:

- electrolysis equipment including anodic oxidation without addition of salt
- copper / silver ionisation equipment
- equipment for the production of chlorine dioxide

The objective of the verification tests is to evaluate the performance of the equipment for the continuous disinfection of water for use and reuse in the foodstuffs industry.

These performance specifications must focus on the following aspects:

- performance of the equipment with respect to the objectives set out by the supplier (claims)
- the effect of variations in the quality of the water supply on the performance
- the resources required, the manpower (for operation and maintenance) and the energy used to power the equipment
- the usefulness, the reliability, the robustness, the costs and the ease of operation of the equipment
- representativeness of the tests carried out

The test case must address indication of which aspects can be evaluated quantitatively and which can only be studied qualitatively.

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Case Fuzzy filter:

Fuzzy Filter is a modular filtration technology suitable for removing suspended solids from waste water. The filter medium consists of compressible filter balls with low density and high porosity. The fluid to be filtered flows through the medium which is retained between two perforated plates. In the backwash mode the upper plate is raised mechanically, and air is introduced to the filter sequentially to the flow. The high porosity of the filter medium and the design of the filter make it possible to achieve very high rates of filtration. The wash water usage is low compared to other filtration techniques, and energy is also saved.

The technology is adaptable for several applications, such as treatment of municipal waste water effluent, pulp&paper process water, water from food processing, as well as prefiltration for other waste water treatment systems, etc.

The producer of the technology is Bosman Water management B.V. The TESTNET partner responsible for the case 7, and acting as verification laboratory is VTT Technical Research Centre of Finland. The verification protocol is developed by a task group involving the representatives of VTT, Bosman Water management B.V., EUCETSA and Royal Haskoning.

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First findings and recommendations on the verification procedure

Although most of the case studies are still ongoing, there are some findings.

It will be important to be able to perform verification with high quality at a reasonable price. Therefore the system has to be flexible and has to allow using partly existing data, when quality is assured.

Although a fast procedure is desired, a longer testing might be reasonable in certain cases. By using qualified personnel, organisations and experts, the verification system can be slim and efficient.

Some parameters like the durability of equipment, engineered quality and possible side effects are difficult to measure and verify in a reasonable time frame, but have to be included in some way, if important for the application.

Also environmental and cost parameters have to be included in the system, and to be verified if important for the application.

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NEWS

Publication:

A new JRC/IPTS report examines the environmental technology verification (ETV) systems in the context of the Environmental Technologies Action Plan (ETAP) implementation strategy. The organisational structure of existing ETV systems and related European ones is studied and financial aspects of these systems are analysed. A Market Survey was carried out to collect the opinion of the end users related to various implementation choices of ETV. An ETV model, describing the various ETV constituting entities and proposing a structure for a European Environmental Technology Verification Systems (EETVS) is presented.

<http://www.jrc.es/publications/pub.cfm?id=1504>

Announcement:

- Nov.26-27, 2007 (Paris – Fr) “Boosting Eco-Technologies through verification”, European forum on Eco-Innovation
- Nov.28, 2007: 3rd ETV International Forum « Engaging the developing world » (at POLLUTEC - Paris-Villepinte - Fr)
- March 5, 2008 (Paris – Fr): 3rd TESTNET seminar focus on cleaner production.
- June 2008: (Bruxelles – Be): Final TESTNET conference

Key dates in TESTNET project:

- June 13-15, 2007: Joint meeting of the EU FP6-projects AIRTV, EURODEMO, PROMOTE and TESTNET and the Life project TRITECH-ETV, together with the RTD projects Advisory Board (VEGAS, Stuttgart, De).
- Sept. 4-5, 2007: Steering Committee Meeting (INASMET, San Sebastian, Spain)
- 23 Oct 07: 2nd TESTNET seminar in cooperation with TECHNEAU/ VIRM / OSPAR focus on water technologies and monitoring (Kiwa, Nieuwegein — NL)
- Oct 11, 2007: TESTNET 2nd year report (available on www.est-testnet.net/Publication)
- March 4, 2008: Technical Committee Meeting (ADEME, Paris)

FOCUS

DHI

DHI Water & Environment is the Danish research and consultancy organisation with focus on urban water and industry, water resources and marine and coastal issues. Main role in TESTNET is to perform online monitoring of water system case
DHI web site: <http://www.dhi.dk/ContactUs/>

EXERA

EXERA, association of industrial users, supports industry in evaluating and choosing measure equipment, automats, instruments, analysers and monitoring devices. Main role in TESTNET is to contribute to review the verification system (WP 2), to play the role of Verification Institute in test case biomonitoring and to support in the development of the follow-up (WP 5).

EXERA web site: <http://www.exera.com/>

What is TESTNET

TESTNET aims to enhance the application of Environmentally Sound Technologies (EsTs) through the development of a European system for the production of reliable and independent performance data for EsTs.

TESTNET covers two technology areas: water technologies and clean production technologies, including in both technology areas environmental monitoring.

TESTNET in brief

- A three years project, started in September 2005
- A 2,9 millions euros total costs project
- TESTNET consortium:

TNO (coordinator)	http://www.tno.nl
NCSRD	http://www.demokritos.gr
DHI	http://www.dhi.dk
GIG	http://www.gig.katowice.pl
IVL	http://www.ivl.se
KIWA	http://www.kiwa.nl
INASMET	http://www.inasmet.es
VTT	http://www.vtt.fi
ADEME	http://www.ademe.fr
EXERA	http://www.exera.com
IPTS	http://www.jrc.es
EUCETSA	http://www.eucetsa.net

For further information: www.est-testnet.net

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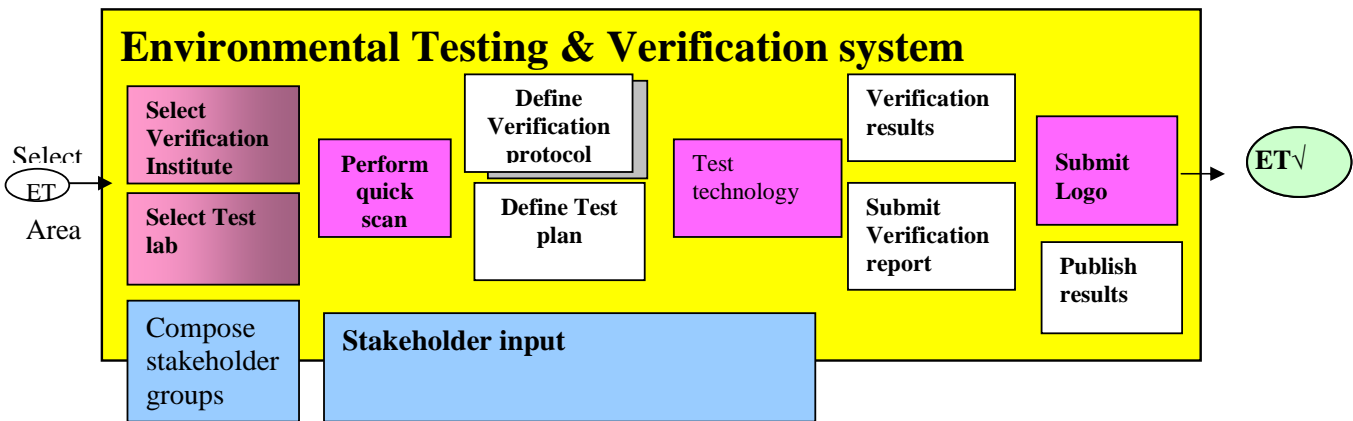
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TESTNET: a pilot for designing, developing and testing an Environmental Technology Verification (ETV) system

for different types of organisational solutions and for selected technologies in the field of
 ➔ water technologies ➔ cleaner production technologies



Selected cases to test the verification system in practice:

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Monitoring of drinking & surface water	Bio monitoring [Toxcontrol]	DHI (& Exera)	DK
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Cleaner production technologies			
Recovery system in biomass and waste power station	Membrane technology for flue gas condensate	IVL	Sw
Treatment process in metal and waste industries	Plasma technology	INASMET	Sp
Hydrocarbon recovery in petrochemical industry	Gas separation using membrane permeation process	NCSR D	Gr
Production line in mining industry	Clean pipe production	GIG (& TNO)	PI

TESTNET activities invite stakeholders' involvement

Involvement and feedback of all possible stakeholders (technology & equipment suppliers, vendors, users, investors, researchers & developers, authorizing agencies ...) is crucial for the development of an ETV system.
 ➔ Stakeholders are invited to participate in these simulation exercises by joining stakeholder groups which are formed for each of the selected technology areas.

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The TESTNET Consortium:

TNO	Netherlands	ADEME	France
DHI	Danmark	EUCETSA	Europe
EXERA	France	GIG	Poland
INASMET	Spain	IVL	Sweden
JRC / IPTS	Spain	KIWA	Netherlands
NCSR D	Greece	VTT	Finland

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