



## Efficiency control and performance verification of improved approaches for soil-groundwater protection and rehabilitation

A SPECIFIC TARGETED RESEARCH PROJECT FUNDED BY THE 6TH FRAMEWORK OF THE EUROPEAN UNION



### BRIEF FACTS ABOUT PROMOTE

#### Objectives:

Strengthening competitiveness of technology developers and acceptance of European technologies in the field of soil-groundwater remediation and monitoring systems. Special emphasis is taken on helping enterprises about new and innovative technologies by faster entrance and full access to the European market.

#### Approach:

PROMOTE develops pre-normative protocols for credible environmental technology verification (ETV). PROMOTE will also set up an ETV platform for an open "CEN-workshop" tool beyond the projects duration (see this issue).

#### Time frame:

2005 to 2008

#### Finances:

Total project volume 2.4 million Euros; ~65% EU funding

#### Organisations:

CEN – European Committee for Standardization (Belgium)

Consejo Superior de Investigaciones Cientificas (Spain)

DECHEMA e.V. (Germany)

GeoDelft (Netherlands)

IMW Innovative Messtechnik Weiß (Germany)

Municipality of Bydgoszcz (Poland)

Polish Geological Institute (Poland)

Sachverständigen-Büro Dr. Thomas Ertel (Germany)

SLANDI Sp. z.o.o. (Poland)

Strasbourg University (France)

Stuttgart University (Germany)

VITO (Belgium)

### EDITORIAL

## What is the status of Environmental Technology Verification (ETV) within PROMOTE and the European Commission?

The first PROMOTE newsletter outlined and explained the verification scheme worked out within PROMOTE (see issue 01 – September 2006).

To further evaluate the applicability of the developed verification procedure and to gain first practical experiences with it, a "roleplay" was established within the project. A real verification was run under reference site conditions at the "Research Facility for Subsurface Remediation" (VEGAS) in Stuttgart, Germany. The tasks of the institutions involved in the verification procedure were assigned to different project partners. For first experiences with the verification scheme in the reference site tests please see page two of this issue.

In parallel to the evaluation of the verification system within the reference site tests first steps were taken for the CEN workshop (see also issue 02 – April 2007 of this newsletter) – the elaboration of a CEN workshop agreement (CWA). The kick-off meeting was successfully held as well as online conferences to develop the CEN workshop agreement (CWA) – a common understanding on the verification procedure to bridge the time gap between the

end of the PROMOTE project and the full implementation of a European ETV system. For details of the CWA activities please see page three of this issue.

In addition PROMOTE participated in "overall" events bringing together partners from all European ETV related projects and beyond, such as the "Joint ETV meeting" that was held in June 2007 in Stuttgart, Germany.

PROMOTE and the other EU-funded projects working in the field of ETV supported the preparation of the "Public Consultation" which the EC DG Environment is carrying out during November 2007 and January 2008. We encourage you to participate in this consultation! More information on the public consultation can be found on page four of this issue.

The consultation of the European Commission clearly shows that the establishment of a European system is getting closer.

We hope you enjoy further reading in this newsletter.

The PROMOTE Partners



## Testing the ETV Procedure under Reference Site Conditions at VEGAS

The proposed structure and procedure of a European ETV system was tested in a „roleplay“, where each project-partner took a role of a party involved in the ETV-system. The structure and the workflow of the ETV system are presented and discussed in issue 1 (September 2006) of this newsletter.

In cooperation with the „vendors“, information on the measurement systems was collected and a first set of claims was formulated. In order to verify these claims, a reference test environment was set up, using the infrastructure of VEGAS (Research Facility for Subsurface Remediation, University of Stuttgart). Some of the installations of this test environment are shown in Figures 1 and 2.

Within the roleplay, the following systems were subject to testing:

- Field Photometer, SLANDI, Poland. Detection of various dissolved inorganic compounds using standard quick test reagents.
- Ceramic Dosimeter, IMW, Germany. Time-integrated sampling of various organic pollutants by diffusion through a ceramic membrane and sorption onto a specific resin.
- Minipressure Pump, IMW, Germany. Sampling of water without gaseous losses of volatile compounds or contamination with atmospheric oxygen.
- Disc Packer System, IMW, Germany. Depth-oriented sampling in groundwater observation wells.
- Fibre Optic Fluorometer, VEGAS, Germany. Detection of dissolved PAHs in groundwater, highly resolved over depth.
- Metal Oxide Sensor System, VEGAS, Germany. Detection of chlorinated and non-chlorinated VOCs in soil air.

The tests were designed in cooperation between the „verification board“, the



Figure 1: Small test container. Gas calibration system (1) and online reference analytics (2) used for soil gas measurements, and large water columns filled with contaminant-spiked water (3) for testing pumps and passive samplers. (Photo: VEGAS)

„vendors“ and the „test lab“, and were conducted partly by the „vendor“ himself and partly by the staff of the „test lab“, depending on the complexity of the devices.

As a result of these reference site tests, the following statements can be made:

- Completion of the formalities requires considerable effort for devices, which were subject to verification in prototype stages of the development process. For commercially available systems this step is much easier
- The use of a test facility at reference site scale like VEGAS proved to be crucial, since only by such means it is possible to realize flexible, well controlled test environments with conditions close to those in the field
- The definition of claims is an essential part of the process and requires a close cooperation of the vendor, the VB and the test lab
- The conception of the tests is a time consuming step and requires detailed discussions between the vendor and the test lab (including trial and error approaches)

- A revision of the claims should be planned as an option during the testing procedure, as well as the possibility to repeat tests in order to precisely address the questions which may come up during the evaluation phase.
- Documentation and evaluation are time consuming steps and a detailed planning and clear definition of any post-processing procedures seems to be mandatory.

In addition, a clear distinction can be made between tests that require well controlled conditions provided by a test facility at reference site scale and tests, which should rather be performed in the field:

Aspects that should be tested in a **test lab**:

- General performance, including statistical parameters
- Interferences (boundary conditions, matrix effects...)
- Strongly varying parameters
  - Anything for which control and flexibility is required

Aspects that should be tested under **field conditions**:

- Handling under field conditions, user friendliness
- Influence of environmental conditions
- Influences caused by the subsurface
  - Anything that cannot be realized in the test lab

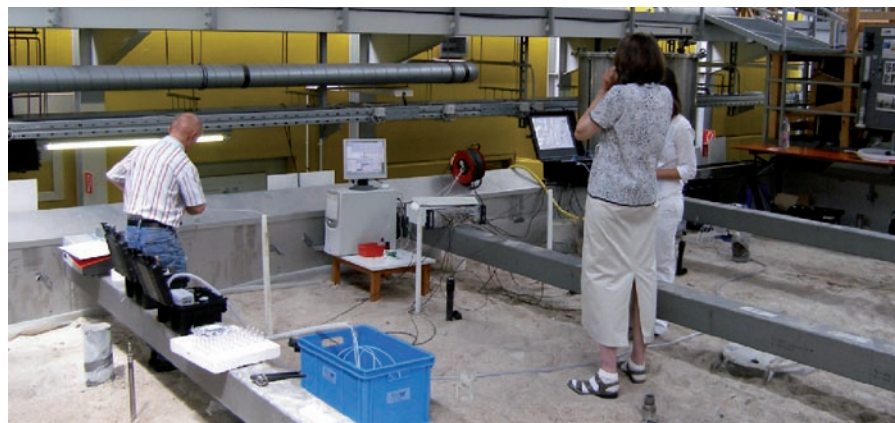


Figure 2: Large VEGAS tank (8x6x4,5m) with testing installations (Photo: VEGAS)

To complete the assessment of the verification procedure, a field scale verification was done in October 2007 at a former gas work in Bydgoszcz, Northern Poland. The results and experiences of this campaign will be reported in a later issue.

# Elaborating a pre-Standard for ETV of Soil/Groundwater Remediation and Monitoring Systems – the CEN workshop 32

Issue 02-April 2007 of this newsletter introduced the CEN workshop. The European Committee for Standardization (CEN) offers the possibility to run a CEN workshop and thus elaborate a consensus based pre-standard, the CEN workshop agreement (CWA).

The PROMOTE project will end in August 2008, but for sure it will take certain time until a European ETV system is established. The CWA is dedicated to fully bridge this gap between the end of the PROMOTE project and the establishment of a EU ETV system PROMOTE decided to run a CEN workshop, the “CEN workshop 32” on ETV for Soil/Groundwater Remediation and Monitoring Systems (ETV-SGS).

The overall aim of the CEN workshop is to provide guidelines for a verification

system that can be characterized by the keywords:

- valid
- fair and transparent
- cost-efficient and fast
- non-bureaucratic

On 25th April 2007 stakeholders met in Stuttgart for the kick-off meeting of the CEN workshop 32. Discussing the first draft of the CWA was the key topic of this meeting, besides some formalities such as the official approval of the workshop secretariat, the chairpersons and the business plan (defining the workshop’s activities during the entire cycle of the workshop).

Since the kick-off meeting in April 2007 further online meetings were held in order to enhance the CWA.

Figure 3 shows the current status of the generic verification flow scheme as it was worked out and developed during the previous meetings. The scheme comprises the steps that have to be taken in order to undergo a verification according to the guidelines given in the draft CWA of the CEN workshop 32. The flow scheme also gives a hint to the tables and figures, which are mandatory for the verification report and which are described in an accompanying explanatory text.

The workshop procedure will run until August 2008. Stakeholders who are interested in the CEN workshop can still enter discussion and are invited to join the CEN workshop 32 in order to contribute to the development of the CEN workshop agreement.

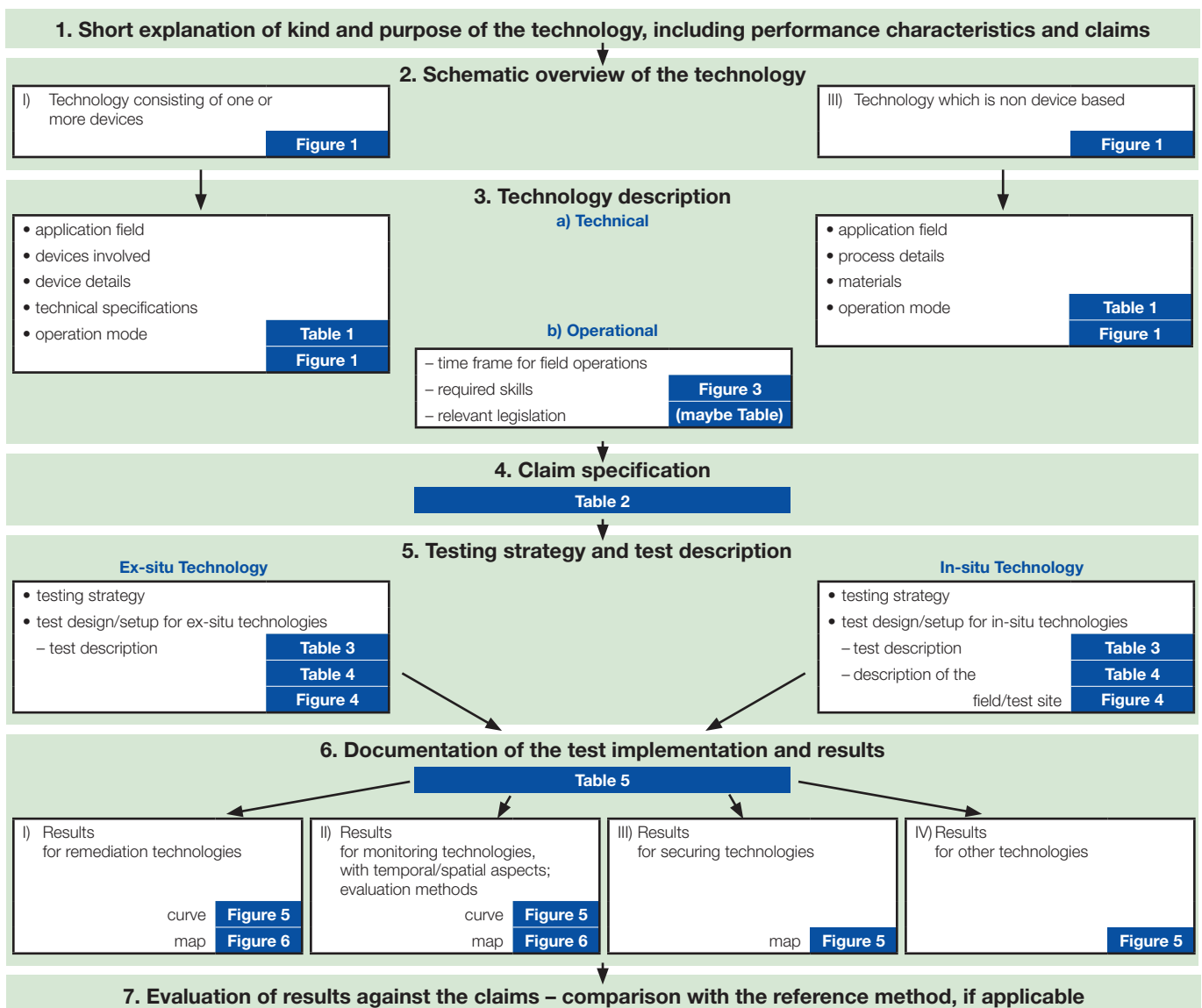


Figure 3: Verification flow scheme and contents

## Public Consultation on ETV

On 15<sup>th</sup> November 2007 the European Commission DG Environment opened a web-based public consultation on a EU system for ETV.

The European Commission (EC) is considering proposing the establishment of a EU-wide verification system, offering credible proof of the performance and of the potential impacts on the environment of new technologies. The target of this public consultation is to gather a wide variety of views on the main options identified in order to prepare a Commission initiative in 2008.

Figure 4 shows the steps of the EU ETV procedure as it is displayed in the consultation paper.

The following issues would be the main targets of the EU ETV system:

- A simple and user-friendly service should help to support SME's and innovative businesses (both technology vendors and users);
- A wide recognition in the EU and ideally internationally should make it unnecessary to repeat the verification in every country where the technology is sold;
- A short duration of the verification procedure that does not compromise on the credibility and scientific soundness of verifications (about 6 months, depending on technology and availability of test data);

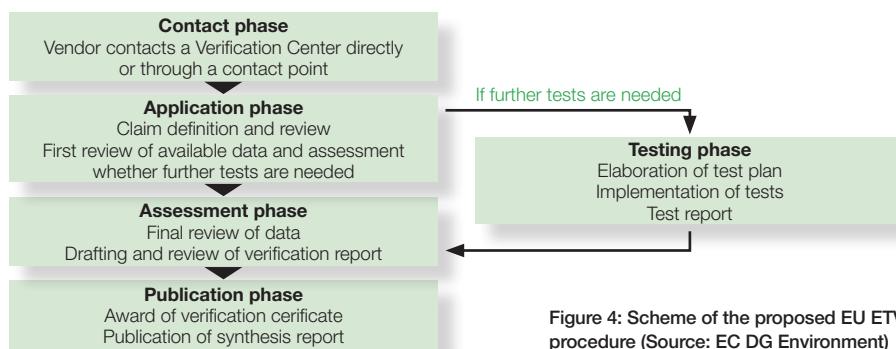


Figure 4: Scheme of the proposed EU ETV procedure (Source: EC DG Environment)

- Limited costs for applicants, with the probable consequence that other sources of funding (public or private) will be required.

The EU ETV system would begin in a few thematic areas and then enlarge its scope progressively. Based on research projects in this field (such as, PROMOTE, AIRTV, TESTNET and TRITECH-ETV) and on the experience of the US and Canadian systems, potential areas for the initial stage include:

- Monitoring technologies, such as continuous emission monitors or water quality control
- Waste water treatment technologies
- Equipments for renewable sources of energy and energy efficiency
- Air pollution abatement technologies, including greenhouse gas abatement
- Clean technologies, including waste and resource recycling

More information on the background and the targets of the public consultation as well as the questionnaire are available on the website of the ETAP, the Environmental Technologies Action Plan, at: [http://ec.europa.eu/environment/etap/consultation\\_en.htm](http://ec.europa.eu/environment/etap/consultation_en.htm).

You are very welcome to contribute to the public consultation that is open from **15<sup>th</sup> November 2007 – 20<sup>th</sup> January 2008!**

## UPCOMING ACTIVITIES

### PROMOTE:

June 3 - 6th, 2008  
10th ConSoil Conference 2008  
Special session of PROMOTE  
Milan, Italy  
More information: [www.consoil.de](http://www.consoil.de)  
and [track@dechema.de](mailto:track@dechema.de)

### FURTHER EVENTS:

March 5th, 2008  
TESTNET Cleaner Production Conference  
Paris, France  
More information: [www.est-testnet.net](http://www.est-testnet.net) and  
[berrie.vankampen@tno.nl](mailto:berrie.vankampen@tno.nl)

### OTHERS:

November 15th, 2007 – January 20th, 2008  
Public Consultation on ETV  
Carried out by the European Commission  
DG Environment  
**More information:** [http://ec.europa.eu/environment/etap/consultation\\_en.htm](http://ec.europa.eu/environment/etap/consultation_en.htm)

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## “Food for Thought”

In this part of the newsletter we continue a series.

“Food for Thought” provides terms that should be discussed and eventually defined in order to establish one consistent terminology that benefits a better common understanding for ETV.

If you have any comments, suggestions, or disagreements, please do not hesitate to provide feedback to Katja Wendler ([wendler@dechema.de](mailto:wendler@dechema.de)), as your suggestions are very welcome!

## What is...?

- **Expert**  
Person qualified on an environmental technology such as scientist, technology developer, technology user or regulator.
- **Environmental technology**  
A particular system, device or method (=product) that is based on technology or technology application, including engineering, and that is supposedly, i.e. upon scientific and engineering measures, providing reproducible results.
- **Indicative claim**  
A hypothesis or hypothesis result that

could be formulated along numbers and units for chemical substances/substance classes, but that is derived from analogous behaviour of model compounds only.

- **Innovative environmental technology**  
A technology that is not yet established on the market or a technology that is applied in a new way (particularly for methods).
- **Performance characteristics**  
Specific properties of an environmental technology that describes the effects that the technology is meant for and that is the basis for the claim definition.