Purpose

This quality manual has been prepared to comply with the requirements from the EU ETV pilot programme and the international standard for inspection, ISO/IEC 17020. The quality manual is integrated into the DHI Business Management System (the DHIbus) where processes of work, responsibilities, rules and methods are described.

Contents

1 Test Centre Quality Manual

1.1 Principles and organisation of the manual

This quality manual is the framework for organization, operation and quality management of the DHI DANETV test centre - one of five test bodies under DANETV – Danish Centre for Verification of Climate and Environmental Technologies.

The DHI DANETV test centre is established in compliance with the EU ETV pilot programme and this quality manual has been elaborated. The test centre quality manual has the form of a conventional quality manual with scope of the quality management system, documented procedures and description of interactions. The quality manual is prepared to comply with the requirements from the EU ETV pilot programme /1/ and the international standard for inspection, ISO/IEC 17020. The quality manual is integrated into the DHI Business Management System (the DHIbus), where processes of work, responsibilities, rules and methods are described.

The quality manual has 3 main sections: principles (Section 1.1), organization (Section 1.2) and quality management processes (Section 1.3).

1.1.1 Scope

Where tests of a new technology are considered necessary by the verification body, test bodies are designated. The DHI DANETV test centre operates as a test body according to the EU ETV pilot programme and carries out testing for environment, energy and climate related technology products within the technology areas:

- Water treatment technologies
- Water monitoring technologies
- Materials, waste and resources

1.1.2 References

For undated references, the latest edition of the publication referred to applies.

The normative reference of the operation of the DHI DANETV test centre is the EU Environmental Technology Verification pilot programme, General Verification Protocol pilot programme /1/ and ISO 17020: General criteria for the operation of various types of bodies performing inspection /2/.

With regards to quality assurance the DHI Business Management System (the DHIbus), is based on EN ISO 9001. Quality management systems – Requirements /3/, and is in operation.

1.1.3 Terms and definitions

This quality manual is using a set of definitions derived from the EU GVP /1/, ISO 9001 /3/ and, ISO 17020 /2/, see Table 1.

Table 1 Terms and definitions used by the DANETV test centres.

Term	Definition	Comments
Accreditation	Meaning as assigned to it by Regulation (EC) No 765/2008	EC No 765/2008 is on setting out the requirements for accreditation and market surveillance relating to the marketing of products
Additional parameter	Other effects that will be described but are considered secondary	None
Amendment	A change to a specific verification protocol or a test plan done before the verification or test step is performed	None
Analytical laboratory	Independent analytical laboratory used to analyse test samples	The test centre may use an analytical laboratory as subcontractor
Application	The use of a technology specified with respect to matrix, purpose (target and effect) and limitations	The application must be defined with a precision that allows the user of a technology verification to judge whether his needs are comparable to the verification conditions
DANETV	Danish centre for verification of environmental technologies	None
Deviation	A change to a specific verification protocol or a test plan done during the verification or test step performance	None
Environmental technologies	Environmental technologies are all technologies whose use is less environmentally harmful than relevant alternatives	The term technology covers a variety of products, processes, systems and services
Evaluation	Evaluation of test data for a technology for performance and data quality	None
General verification protocol (GVP)	Description of the principles and general procedure to be followed by the ETV pilot programme when verifying an individual environmental technology.	None
Innovative environmental	Environmental technologies presenting a novelty in terms of design, raw	None

Term	Definition	Comments
technologies	materials involved, production process, use, recyclability or final disposal, when compared with relevant alternatives.	
Matrix	The type of material that the technology is intended for	Matrices could be soil, drinking water, ground water, degreasing bath, exhaust gas condensate etc.
Method	Action described by e.g. generic document that provides rules, guidelines or characteristics for tests or analysis	An in-house method may be used in the absence of a standard, if prepared in compliance with the format and contents required for standards, see e.g. /4/
Operational parameter	Measurable parameters that define the application and the verification and test conditions. .	Operational parameters could be flow, pH, temperature, production capacity, concentrations of non-target compounds in matrix etc.
(Initial) performance claim	Proposer claimed technical specifications of technology. Shall state the conditions of use under which the claim is applicable and mention any relevant assumption made.	The proposer claims shall be included in the ETV proposal. The initial claims can be developed as part of the quick scan.
Performance parameters (revised performance claims)	A set of quantified technical specifications representative of the technical performance and potential environmental impacts of a technology in a specified application and under specified conditions of testing or use (operational parameters).	The performance parameters must be established considering the application(s) of the technology, the requirements of society (legislative regulations), customers (needs) and proposer initial performance claims.
Potential environmental impacts	Estimated environmental effects or pressure on the environment, resulting directly or indirectly from the use of a technology under specified conditions of testing or use.	None
Procedure	Detailed description of the use of a standard or a method within one body	The procedure specifies implementing a standard or a method in terms of e.g.: equipment used
Product	Ready to market or prototype stage product/technology, process, system or service based upon an environmental	Technology is used instead of the term product

Term	Definition	Comments
	technology	
Proposer	Any legal entity or natural person, which can be the technology manufacturer or an authorised representative of the technology manufacturer. If the technology manufactures concerned agree, the proposer can be another stakeholder undertaking a specific verification programme involving several technologies.	Can be vendor or producer
Purpose	The measurable property that is affected by the technology and how it is affected.	The purpose could be reduction of nitrate concentration, separation of volatile organic compounds, reduction of energy use (MW/kg) etc.
Ready to market technology	Technology available on the market or at least available at a stage where no substantial change affecting performance will be implemented before introducing the technology on the market (e.g. full-scale or pilot scale with direct and clear scale-up instructions).	None
Specific verification protocol	Protocol describing the specific verification of a technology as developed applying the principles and procedures of the EU GVP and this quality manual.	None
Standard	Generic document established by consensus and approved by a recognised standardization body that provides rules, guidelines or characteristics for tests or analysis	None
Test body	Unit that that plans and performs test	None
Verification body	Unit that plans and performs the verification	None
Test/testing	Determination of the performance of a technology for measurement/para-	None

Term	Definition	Comments
	meters defined for the application	
Test performance audit	Quantitative evaluation of a measurement system as used in a specific test.	E.g. evaluation of laboratory control data for relevant period (precision under repeatability conditions, trueness), evaluation of data from laboratory participation in proficiency test and control of calibration of online measurement devises.
Test system audit	Qualitative on-site evaluation of test, sampling and/or measurement systems associated with a specific test.	E.g. evaluation of the testing done against the requirements of the specific verification protocol, the test plan and the quality manual of the test body.
Test system control	Control of the test system as used in a specific test.	E.g. test of stock solutions, evaluation of stability of operational and/or on-line analytical equipment, test of blanks and reference technology tests.
Vendor	The party delivering the technology to the customer. Here referred to as proposer	Can be the producer
Verification	Provision of objective evidence that the technical design of a given environmental technology ensures the fulfilment of a given performance claim in a specified application, taking any measurement uncertainty and relevant assumptions into consideration.	None

1.2 Organisation

The overall organisation with respect to other bodies involved in verifications in Denmark is shown in Figure 1.

The DHI DANETV test centre is a test body operated under the DANETV project cooperation. The DANETV project cooperation is a cooperation between DHI, AgroTech, Delta, Force Technology and Danish Technological Institute supported by the Danish Ministry of Science, Innovation and Higher Education.

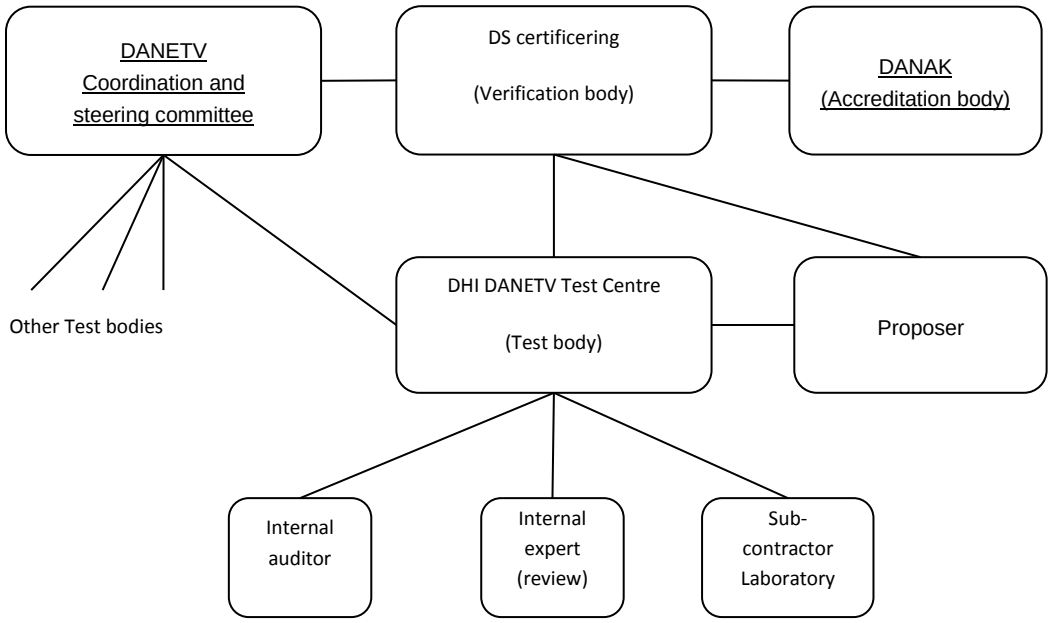

Figure 1 DHI test body – organisation with respect to other bodies involved in verifications in Denmark

1.2.1 Duties and responsibilities of the test body

Where tests are considered necessary by the verification body, test bodies are designated by the proposer.

Organisation management

DHI is a test body and is hosting the DHI DANETV test centre. DHI management with representatives at relevant levels (e.g. the head of the hosting department for testing) has the overall responsibility for the operation of the test centre according to this manual. The organisation management provides the resources (staff and facilities) required to follow the manual and for handling any complaints over the test centre, including an organisation quality system compliant with ISO 9001 /3/ for at the least the test activities.

Test centre management

The test centre management at DHI is responsible for practical operation of the test centre according to this manual. The test centre management has the responsibility according to procedures in DHI Business Management System for:

- Maintaining this manual
- Keeping records of staff training and experience
- Keeping record of facilities and their maintenance
- Keeping records of complaints from proposers.

Test centre quality management

The quality manager of DHI DK is responsible for quality assurance of the test centre activities, including for making internal auditors available for the centre. The quality manager has direct access to DHI Denmark and DHI Group management.

Test centre

The test centre has the overall responsibility for:

- Setting up and reaching of a contractual agreement with proposer on testing
- Elaboration of test plan within the requirements set in the verification protocol with test design requirements and in agreement with the verification body.
- Identification of and subcontracting with one or more analytical laboratories, if analysis of test samples is required; and ensuring that the analytical laboratories are accredited to applying ISO 17025 for methods within the relevant area of analysis
- Performance of the test according to the test plan, ensuring the level of quality required in the specific verification protocol
- Ensuring quality of analysis used in the test and, when applicable, the that analytical laboratories performing the analysis are accredited to applying ISO 17025 for methods within the relevant area of analysis
- Elaboration of the test report for transmission to the proposer and the verification body.

The staff performing testing (or otherwise involved in testing) shall not been involved in the elaboration of the verification protocol, e.g. the staff must not be assisting the verification body as external expert in the elaboration of the specific verification protocol.

If the test centre performs analysis in-house, the staff doing the analysis of test samples shall not be the same as those responsible for the evaluation of the analytical results in the test centre and they shall not be dependent upon these.

Testing performed in-house by proposer

In case when the proposer performs the necessary tests in-house, the proposer may contract a test body to:

- Draft the test plan within the requirements set in the verification protocol with test design requirements and in agreement with the verification body.
- Review the testing plans elaborated by the proposer within the requirements set in the verification protocol with test design requirements and in agreement with the verification body.
- Witness testing done by the proposer, if appropriate
- Approve test reports if drafted by the proposer and if not done by the verification body
- Where analysis of test samples is required, the analytical laboratory shall be accredited to applying ISO 17025 for methods within the relevant area of analysis. This provision applies also in case of in-house testing by the proposer.

1.2.2 Staff

The test body has, trains and maintains staff that is qualified for the testing within the scope of the test body with the executive staff responsible for the units shown in Table 2. Staff competence management procedures are found in chapter 2.6.

Table 2 Staff attached to the DHI DANETV test centre.

Organisation element	Name of responsible	Function
DANETV steering committee	Mette Tjener Andersson	Project Manager
Centre host (Department management)	Morten Rungø	Head of project
Test Centre	Mette Tjener Andersson	DHI DANETV test centre manager
Internal test auditor[1]	Bodil Mose Pedersen	Senior Chemical Engineer

[1] Internal test auditor is different from internal system auditor, see chapter 1.3

Centre host (head of projects, Morten Rungø) delegates responsibilities to the relevant department (head of projects) in charge of executing ETV testing.

Internal test auditor shall be trained as auditor and can delegate audit responsibilities to other trained auditor. Internal test auditor performs test system audits (i.e. qualitative on-site evaluation of test, sampling etc.; see also chapter 1.1.3 Terms and definitions) according to the EU ETV GVP /1/.

1.3 Test centre quality management processes

The quality management of the test centre has the following main points:

- Review of plans and reports
- Document and record control
- Internal system audits with corrective and preventive actions
- Complaint management
- Subcontractor management
- Staff competence management
- Facility management
- Annual management reviews.

The quality management processes are implemented in the DHIbus and are further described in Chapter 2. This description includes the principles of operation with the role of the test body

and the test documents. In order to facilitate the preparation of the relevant documents, templates have been prepared and are available in appendices to the document.

Processes of relevance for the test body during the verification are further detailed in Chapter 3 based upon the documentation required.

Internal system audits (i.e. audit of the ETV testing process) are implemented in the DHIbus and are performed by trained auditors.

2 Quality Management Processes

The test centre works according to the principles of ISO 9001 /3/ and the EU GVP /1/. This is done by working according to the DHI Business Management System which is in compliance with ISO 9001 and by working using the procedures prepared for the processes listed in this chapter which are in compliance with the EU ETV GVP.

Management, organisation and responsibilities are defined in Chapter 1 of this quality manual.

2.1 Quality assurance steps

The process and the responsibilities for preparing, reviewing and approving documents in the verification are summarised in Table 3.

Table 3 Quality assurance steps - verification document.

Document	Test body	Proposer	Verification body
Testing contract	1 Prepare and sign	2 approve and sign	
Verification protocol	-	-	3 hand over to test body
Test plan, including - test performance audit requirements[1] - test system control[2]	4 Prepare	5 Review and approve	6 Review and approve
Amendment form	7 Record and make amendments	8 Review and approve	9 Review and approve
Deviation form	10 Record and make deviations	-	-
Audit reports – test system audits	11 Internal test system audit[4]	-	12 External test system audit
Test report, including - results for test performance audit[3] - results for test system control[3]	13 Prepare 16 Finalise and hand over to verification body	14 Review	15 Review

1 This is called "Performance control – analysis and measurements" in the test plan template

2 This is called "Test system control" in the test plan template

3 Headline "Test quality assurance summary, incl. audit result" in the test report template

4 Performed by internal test auditor

In addition to this, the DHI Business Management System requires management approval of all contracts and reports.

The test centre management recruits internal reviewers for reviewing documents (adequate project staffing).

2.2 Document and record control

The DHI Business Management System includes a procedure which describes the process of drafting, revising and approving documentation such as the test centre manual with the aim of ensuring that all involved in the testing processes have access to and uses the latest approved version of the manual with process descriptions.

A list of documents (Appendix 5) is maintained with indication of the persons authorised to draft, revise and approve the documents as well as persons approved for functions within tests.

Procedures within DHI´s laboratory SOP-system (SOP-standard operating procedures describe how records of testing are stored, transferred, maintained and controlled in order to ensure data integrity for a period defined in the procedure, but not shorter than 5 years from completion of the testing (DHI Business management system - laboratory analysis and testing).

2.3 Internal audits

Internal system audit (ETV testing process)

The procedure in the DHI Business Management System – Audit describes the process of periodic internal auditing of the test activities in the test centre including audit responsibilities and planning, auditor training and competences and audit reporting.

The procedure in DHI Business Management System – Corrective and Preventive Actions - describes how deviations identified during operation and auditing are corrected (corrective actions) and how future occurrence of the same deviations is prevented by improving the quality manual including the process descriptions and working methods (preventive actions).

Internal test audit

A template to be used during internal test system audit is found in Appendix 8. Conformities and non-conformities with respect to the test plan will be identified and noted in the audit report by the auditor. The auditor suggests corrective actions to be carried out.

The internal test auditors appointed for the test centre conduct the audits required for the test body.

2.4 Complaint management

The procedure in the DHI Business Management System - Complaints - describes how proposer complaints are recorded, resolved, reported. If not resolved, complaints are referred to the DANETV steering committee for resolving.

2.5 Subcontractor management

The procedure in the DHI Business Management System – Purchasing and subcontracting - describes how the test centre ensures that subcontracting of tasks such as tests, sampling, measurement or analysis to other independent bodies is done while ensuring that the

subcontractor follows the quality requirements, the verification protocol and the test plan define for the task, see also Part C: Quality Management of the EU GVP /1/.

DHI´s laboratory SOP-system (DHI Business management system - laboratory analysis and testing) comprises a procedure that describes how to ensure that purchased items for testing resemble requirements, such as those that may be specified in a verification protocol, a test plan or a working method. In particular, the procedure describes how the purchased items are controlled, accepted and calibrated.

2.6 Staff competence management

The Human Resources process of the DHI Business Management System describes how the test centre ensures that tests are done by staff with adequate competences and knowledge of their responsibilities.

2.7 Facility management

The Infrastructure process of the DHI Business Management System describes how the test centre ensures that the facilities and the equipment for test of technologies belonging to the technology area covered by the centre are available and fit for the purposes.

2.8 Management review

The Quality Manual in the DHI Business Management System describes how the management of the organisation hosting the centre is ensuring that the test centre is working according to this quality manual through mechanisms such as e.g. an annual management review process (DHI Business Management System - Management - Quality Management - Management Review).

The quality manager is designated to be responsible for maintenance and development of the quality system and for the internal auditing of all aspects of the system – with daily reference to the Director, Group R&D and Quality Management. The DHI Business Management System contains rules for reviews of the quality system.

3 Test Body Activities during Verification Processes

A number of activities precede the test body's tasks and are carried out by the proposer and/or verification body. The test centre carries out testing in cases where the assessment of existing data by the verification body shows that further tests are required. Chemical analyses if required can be performed in-house or by an external analytical laboratory.

The overall processes carried out by the test body as part of verification are illustrated below (Figure 2).

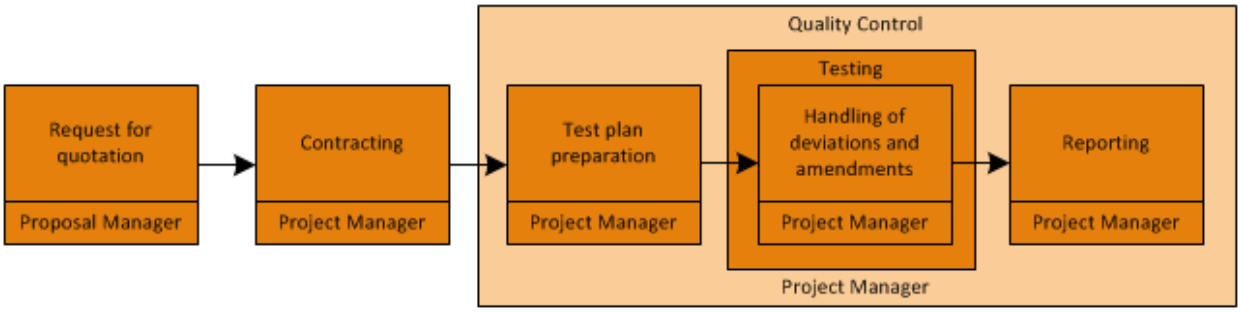

Figure 2 Outline of processes during ETV testing

3.1 Contract

If the proposer decides to proceed with verification, the test centre shall upon request for quotation provide a cost estimate for the planning, testing and reporting. Based upon the cost estimate, a testing contract is drawn up and signed by the proposer and the test body and when the specific verification protocol is delivered from the verification body, the test planning can start.

The testing contract shall be done applying the template found in Appendix 1. It is recognised, that parts of the testing budget may (in some cases) need to be revised after elaborating of the first parts of the test plan (test plan design and identification of analytical laboratories). In such cases, a contract is entered with a preliminary maximum budget for these first parts, opening for later revision and negotiation.

Submission of a quotation and contracting follows the rules for review and approval described in the DHIbus.

3.2 Test plan preparation

3.2.1 Specific verification protocol

The specific verification protocol describes the framework for verification of technologies and provides the information required for the test plan. The protocol is prepared by the verification body. Some interaction with the test body during the preparation of the protocol can be

foreseen. When the protocol is ready and approved by the proposer the test plan shall be derived based on the test requirements in the verification protocol.

3.2.2 Test plan requirements from specific verification protocol

The specific verification protocol describes the essential requirements for the test design and data for the technology under verification, as the test body shall implement it in the test plan. These requirements include main requirements of the test design, e.g. continuous or batch tests, test scale, test methods etc.

The protocol contains test plan requirements that reflect the application and the performance parameters defined for the verification, but specific requirements for the test design will be given in order to ensure that the tests will enable the final data assessment and completion of the verification procedures. The requirements on test design will be specified with respect to:

- Overall test design
  - Scale (laboratory, pilot and/or field)
  - Performance parameters to be measured (including also operational parameters and additional parameters to be covered in the testing/test reporting)
- Methods of reference analysis if relevant, including sampling, measurement and calculation methods
- Data management
- Quality assurance
- Test report contents.

The requirement on choice of methods to be used in testing will be defined. If available and relevant, existing standard methods (ISO, CEN) will be listed. If specific requirements for analytical methods or their performance have been identified during planning and elaboration of the protocol, these will be given.

The protocol will contain requirements for test data management with respect to the format of data storage. If needed, the methods to be used for processing of raw data into measurement results are given.

The quality assurance requirements described for the test plan will include requirements for reference analysis quality control, test system control, data integrity control and review/audit of test system, plans and reports.

3.2.3 Test plan

The test plan is the implementation of the verification protocol in tests producing the required measurements and data. A template for the test plan is given as Appendix 2 and shall be followed. Reference to the specific verification protocol used shall be given in the test plan.

The test plan is unique for each test occasion giving the exact information required by the test staff to conduct the tests as required in the specific verification protocol.

The test plan shall be reviewed and approved according to DHIbus procedure. Afterwards the test plan shall be reviewed and approved by the verification responsible and the proposer.

Test design

The types of test sites shall be described responding to the requirements set in the specific verification protocol. The description shall allow for an understanding of the site in relation to the matrix/matrices, purpose and operation parameters defined for the verification.

The information required for the test staff to access the site shall be included.

If the technology for testing is installed and used at the field site, it shall be ensured that no commercial or other interests, influencing the test results, are associated with using the site as test site for the technology. The field site shall not be dependent upon the proposer. If a site dependent upon the proposer is the only option available, the use of that site shall be justified and decided in the specific verification protocol, and precautions such as access logging shall be applied to ensure that the test results were not under undue influence.

The test method(s) used shall be given by reference, if standard or equivalent. If in-house methods are used, the method shall be referenced and outlined, or included in an appendix to the test plan.

Non-analytical measurement methods have to be clearly described in the test plan, including required calibration and quality control.

The test schedule shall be given.

The descriptions of test operation in the test plan shall allow the test staff to perform the tests as required in the specific verification protocol and to replicate operations with the least possible variation during the test. The description shall allow tracing of any errors back to sources with equipment, methods, operations or staff.

Reference analysis

The analytical programme shall be described including agreed analytical methods and required analytical performance (detection limit, uncertainty). Contact information, requisitions and logistics should be given. The format of reporting from the laboratory (data files, accredited reports, etc.) should be described.

Data management

The methods of calculation of test measurements from raw data shall be described, if not given in the analytical and test methods used. Formats of data storage (data files, instrument prints and report forms) shall be laid down. Software other than standard spread sheets used for data collection, storage and calculations shall be indicated.

A data compilation and storage table should be used to summarise the requirements (see Table 4).

Table 4 Data compilation and storage summary, example.

Data type	Data media	Data recorder	Data recording timing	Data storage
Test plan and report	Protected PDF files	Test responsible, DHI	When approved	Files and archives at DHI
Test details in laboratory and field	Log book and pre-prepared forms	Technician, DHI	During collection	Files and archives at DHI
Calculations	Excel files	Test responsible, DHI	During calculations	Files and archives at DHI
Analytical reports	Paper/PDF	Test responsible, DHI	When received	Files and archives at DHI

Data management should describe filing and archiving of: e-mail communication, paper communication, recordings in the laboratory and in field (if relevant), data, calculations and other files.

Quality assurance

The test system control planned to ensure and quantify the test traceability and reproducibility are described. Measures such as replicate samples, replicate tests, replicate analysis, field blanks and field controls may be selected. The way reproducibility of the tests will be quantified shall be described. Reference analysis performance requirements and quality control shall be detailed. Details on performance evaluation audit and test system audit shall be given.

The procedures to be applied in control of data integrity during transfer from one format to another shall be described.

The member of the test body that reviewed the draft test plan and report before submission to the verification body is named. Plans for additional review and/or audits shall be given, if relevant.

If an analytic laboratory is used it shall be ensure they have an ISO 17025 accreditation for the relevant analyses, if possible, and furthermore fulfil the requirement in the GVP with regard to validation, quality control and test system audit. If a laboratory with ISO 17025 accreditation for the analyses in question is not available, this shall be documented in the test plan and the measures taken to ensure adequate analytical quality be detailed.

Test report formats

The format of the test report shall be set, such as *e.g.* by reference to the template used in this manual (Appendix 3). The format and location for archiving of raw data shall be defined.

3.3 Testing

Testing shall be done according to the test plan.

Amendments to and deviations from the test plan must be recorded and approved in an amendment form and deviation form, respectively (see template in Appendix 6 and Appendix 7). Please note that amendments must be approved by the proposer and the verification body. The amendment and deviation forms must be retained as documentation as part of the records of testing.

3.4 Test report

The test report shall be based on the template found in Appendix 3. The test report shall refer to the test plan and a summary of any amendments to and deviations from the test plan recorded during test from the plans shall be included. Templates for reporting amendments and deviations are shown in Appendix 6 and 7.

The test report shall include all analytical and calculated data as well as a reference to the staff performing the test. The methods of calculation and test measurement shall be described, if not given in analytical and test methods used. If relevant, details on equipment and software used shall be included.

A summary of any amendments to and deviations from the test plan applied or recorded during tests shall be included in the test report. If the number of amendments to and deviations from the test plan is limited, the test plan can be used for the test report by completing it with a result chapter. If not, the test plan has to be updated reflecting the deviations.

The test report shall be reviewed and approved according to DHIbus procedure. Afterwards the test report shall be reviewed by the verification body and the proposer.

4 References

1. European Commission. EU Environmental Technology Verification pilot programme. General Verification Protocol. Version 1.0 – December 15th, 2011.

2. International Standardization Organization. ISO 17020. General criteria for the operation of various types of bodies performing inspection. 15-11-1998.

3. International Standardization Organisation. EN ISO 9001. Quality management systems - Requirements. 15-11-2008. 8.

4. International Standardization Organisation. ISO/IEC Guide 7:1994. Guidelines for drafting standards suitable for use for conformity assessment. 1994.

APPENDIX 1

DHI DANETV Testing Contract Template

DHI DANETV Testing Contract

Technology name:	

Test body		**Proposer**	
Name:		Name:	
Contact:		Contact:	
Address:		Address:	
Telephone:		Telephone:	
E-mail		E-mail	

{Test body} agrees to test the above mentioned technology for the below tentatively defined application in accordance with the EU ETV environmental technology verification method.

Application				
Matrices:				
Purposes:				

Costs and payments

The steps and the costs in the testing include {check parts and indicate costs as appropriate}:

Verification steps	**Costs {currency}**
Test planning (test plan)	
Test phase and reporting (set-up of equipment, testing, field trips, internal audit, data handling and evaluation, test report)	
Analysis and measurements (sampling, sample handling, internal/external laboratory analyses, online measurements)	
Total costs	

Costs are all inclusive, VAT exclusive.

The test budget is tentative and an exact budget is made during preparation of the test plan. If the final budget for test exceeds the tentative budget, this is subject to negotiations between the {test body name} and {proposer}.

The payment scheme is as follows:

Payment	Time of payment
10% advance payment	With signed contract
50% payment	After approval of test plan, before initiating testing
40% final payment	After delivery of test report to verification body

Deliverables

{Proposer} agrees to provide without costs and delay for {test body}:

- Contact person for the testing.
- Technology product(s) for verification as indicated in the test plan.
- Arrangement and mounting of the product at the test site.
- User instructions, training and support as needed during testing.
- Information on technology and product details and mode of action as required for a full understanding of the product.
- Comments on documents submitted for commenting.

{Test body} agrees to provide within the contract:

- Test plan
- Test report

Information

{Test body} and {proposer} shall both inform the other part, if changes in the conditions for the testing change.

Intellectual property rights

{Proposer} warrants that the technology submitted for testing is owned or controlled fully by {proposer}.

{Proposer} will retain all rights to the technology and all technical data produced during the testing.

{Test body} will retain all rights to the test plans, methods and procedures developed by {test body}.

Schedule

A detailed schedule will be part of the test plan. The test plan will be available for commenting within 6 weeks from the date of delivery of specific verification protocol to test body, contract signing and first payment, whatever comes latest.

Limitations

{Test body} performs the testing as described for the application of the technology as defined in this contract. The testing for this technology cannot be considered an endorsement, approval, authorisation or warranty of any kind, and the test results provided cannot be extended to other applications or to other technologies. The test results reflect the performance of the technology at the

time and under the conditions of the testing; they cannot be understood as guaranteeing the same level of performance in future under other conditions.

{Proposer} agrees not to use the test report, or to refer to this for any other technology or application

Confidentiality

All information obtained or produced during the testing is considered confidential for the part not owning the intellectual property rights.

During verification, {proposers} allows {test body} to give external auditors access to all information obtained or produced during the testing, as specified in the test plan.

Liability

{Test body} assumes no liability for any damages associated with the use of test results, and {proposer} agrees to cover any costs that may be imposed upon {test body} in connection with claims raised with this respect.

{Test body} assumes no liability for delays or for test results that damage the sales of the technology or the proposer.

Force majeure

The parties of this contract shall not be liable for failures beyond their control.

Termination

Either party may terminate this contract with a 15 days written notice. In case of termination, any costs endured by {test body} as part of the testing that cannot be averted shall be paid in full by terminating part. If termination is done by the test body due to proposer's non-fulfilment of the obligations in this contract then the costs shall be paid in full by the proposer.

Disputes

Disputes shall be governed by {test body home country} law.

Signatures

Test centre		**Proposer**	
Name:		Name:	
Signature:		Signature:	
Title:		Title:	
Date:		Date:	

APPENDIX 2

DHI DANETV Test Plan Template

DHI DANETV Test Plan

Title page

Table of contents

1. Introduction

1.1. Verification protocol reference

1.2. Name and contact of proposer

1.3. Name of test body/test responsible

2. Test design

(The test design refers to the design described in the verification protocol)

2.1. Test site

2.1.1. Types of test sites *(describe type of test: laboratory test or on-site test)*

2.1.2. Addresses

2.1.3. Descriptions

2.1.4. Special needs (e.g. access restrictions or clearance, training needs)

2.2. Tests

2.2.1. Test methods

(*Standardised methods, in-house methods, etc. Table with parameters and measurements methods)*

2.2.2. Test staff

2.2.3. Test schedule

2.2.4. Test equipment

2.2.5. Type and number of samples (*performance and operational parameters)*

2.2.6. Operation conditions

2.2.7. Operation measurements

2.2.8. Technology maintenance

2.2.9. Health, safety and wastes

3. Analysis and measurements (*pH, conductivity etc.)*

3.1. Analytical laboratory

3.2. Analytical and measurement parameters and methods

3.3. Analytical and measurement performance requirements

3.4. Preservation and storage of samples

3.5. Data management

3.6. Data storage, transfer and control

4. Quality assurance

4.1. Test plan review

4.2. Performance control – analysis and measurements

(Define test performance audit, see 1.1.3 Terms and definitions)

4.3. Test system control (d*efine, e.g. laboratory blanks, spiked samples, on-line logging)*
4.4. Data integrity check procedures
4.5. Test system audits
4.6. Test report review
5. Test report
(Describe that the test report will follow the QA manual and what the test report will include).
5.1. Amendment report
5.2. Deviations report
6. References

Appendix A Terms and definitions
Appendix B References methods
Appendix C In-house test methods
Appendix D In-house analytical methods and measurements
Appendix E Data reporting forms

APPENDIX 3

DHI DANETV Test Report Template

DHI DANETV Test Report

Title page

Table of contents

1. Introduction

1.1. Name and contact of proposer

1.2. Name of test sub-body/test responsible

1.3. Reference to test plan and specific verification protocol

1.4. Summary amendment and deviations to test plan (*summary of changes and the main effect on the testing)*

2. Test design

(Included here only a short overview table)

3. Test results

3.1. Test data summary

(This section shall summarise all results and shall contain calculation of all performance parameters)

3.2. Test performance observation

(In this section is described all observations done during testing. This should be problems with equipment, unexpected things happening).

3.3. Test quality assurance summary, incl. audit result

(This section shall contain the results for test performance, results for test system control and a summary from audit reports – both internal and external audits)

3.4. Details on amendments to and deviations from test plan *(details on amendments and deviations and the taken actions or refer to an Appendix 3 containing the reports)*

4. References

Appendix A Terms and definitions

Appendix B Test data report

Appendix C Amendment and deviation reports for test *(can be left out if chapter 3.4 is containing main part of information)*

APPENDIX 4

DHI DANETV Review Report Template

DHI DANETV Review Report

Document title:		Document date:	
Reviewer name:		Review date:	
Name:			
Organisation:			
Address:			
Telephone:			
E-mail			

Review results	
Overall recommendation	
Acceptable as is	
Accepted with minor revisions	
Major revisions	
Not acceptable	
Reason	

Revision details				
Topic	*Report chapter, section, page*	*Revision required*	*Reason*	*Revision action(to be filled in by document owner during revision after review)*

Add additional rows, if pertinent.

A P P E N D I X 5

DHI DANETV List of lists

DHI DANETV List of Lists

The lists mentioned below can be viewed in the DHIbus.

List persons authorised to draft, revise and approve documents

The test body holds a list of persons authorised to draft, revise and approve, documents within the quality manual system. The list contains information about name, department, education, date of authorisation and name of the person who made the authorisation.

List of staff approved for functions within test

The test body keeps a list of persons working within the test body. The list contains information about the person's work field and field of responsibility.

List of methods

DHI´s laboratory SOP system (DHI Business management system - laboratory analysis and testing)

List of tests

The test body keeps a list of performed testing. The list contains information about the name of the product/technology and the name, address, web site and e-mail of the company, technology type and application.

APPENDIX 6

DHI DANETV Test Plan Amendment Report Template

DHI DANETV Test Plan Amendment Report

PLAN DOCUMENT TITLE AND DATE:

AMENDMENT NUMBER: _____

DATE OF AMENDMENT: _____

PARTS AMENDED: *Appendix XX, section YY, table ZZ*

AMENDMENT CONTENTS: *What has been changed in Appendix XX, section YY, table ZZ?*

REASON FOR AMENDMENT:

IMPACT OF AMENDMENT:

CORRECTIVE ACTION:

If required, actions to be taken to prevent consequences of deviation.

PREVENTIVE ACTION:

If relevant, action to prevent that the same cause of amendment will reoccur in the future.

ORIGINATED BY:

_____

Test responsible

DATE:

APPROVED BY:

_____

Verification body

DATE:

APPROVED BY:

_____

Proposer

DATE:

APPENDIX 7

DHI DANETV Test Plan Deviation Report Template

DHI DANETV Test Plan Deviation Report

PLAN DOCUMENT TITLE AND DATE:

DEVIATION NUMBER: _____

DATE OF DEVIATION: _____

DESCRIPTION OF DEVIATION:

For which parts of the test plan have deviations been recorded? What has been changed?

REASON FOR DEVIATION:

IMPACT OF DEVIATION:

After suggested corrective action.

CORRECTIVE ACTION:

If required, actions to be taken to prevent consequences of deviation.

PREVENTIVE ACTION:

If relevant, action to prevent that the same cause of amendment will reoccur in the future.

ORIGINATED BY:

_____

Test responsible

_____

DATE:

APPENDIX 8

DHI DANETV Internal Test System Audit Report Template

DHI DANETV Internal Test System Audit Report

Test system audit – {technology area}

Project no.:	**Date of audit:**
Testing project:	**Site:**

Present during audit

Auditor:

Other:

Checklist

Conformity with test plan:

Test method in general
Operation of technology/treatment unit
Operation conditions, and measurements for monitoring them
On-line measurements and sampling for performance parameters
Data logging and retrieval
Sampling and sample storage
Documentation of laboratory operations and sampling

Other issues identified by auditor:

Non-conformities noted by auditor (non-conformity reports attached)

1

2

3

4

5

6

Auditor's conclusions

Date: Signature:

Non-conformity report No.		**Date**	
Reference document			
Test method step			
Non-conformity			
Cause			
Impact assessment			
Suggested corrective action, if any			

Signature (auditor)_____

Test responsible's assessment	**Date:** **Signature:**
Corrective action carried out	**Date:** **Signature:**