ETV Test Centre and Test Organisation

Test Centre Quality Manual – Air and Energy Technology

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1. TABLE OF CONTENT

2. ETV TEST CENTRE QUALITY MANUAL

2.1. Principles and organisation of the manual

This quality manual is the framework for organization, operation and quality management of FORCE Technology DANETV test centre - one of five test bodies under DANETV - Danish Centre for Verification of Climate and Environmental Technologies. FORCE Technology DANETV test centre was established in compliance with the EU ETV pilot program. The ETV test centre quality manual has the form of a conventional quality manual covering 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 program /1/, the international standard for inspection, ISO/IEC 17020 /2/, and competence of testing and calibration laboratories ISO 17025 /5/. The quality manual is integrated into FORCE Technology Corporate Quality Management System (in the following "CQMS"), where processes of work, responsibilities, rules and methods are described.

The quality manual has 3 main sections: Principles (Section 2.1), organization (Section 2.2) and quality management process (Section 0).

2.1.1. Scope

Where tests of a new technology are considered necessary by the verification body, test bodies are designated. The FORCE Technology 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 following technology areas:

- Air pollution monitoring and abatement
- Energy technologies

2.1.2. References

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

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

With regard to quality assurance FORCE Technology CQMS is in operation.

2.1.3. Terms and definitions

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

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

Term	Definition	Comments
Accreditation	Meaning as assigned to it by Regulation (EC) No 765/2008	EC No 765/2008 is on settling 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 ETV test centre may use an analytical laboratory as subcontractor
Application	The use of a technology specified with respect to matrix, target, 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	
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
Experts	Independent persons qualified on a technology in verification	These experts may be technical experts, QA experts for other ETV systems or regulatory experts
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 technologies	Environmental technologies presenting a novelty in terms of design, raw materials involved, production process, use, recyclability or final disposal, when compared with relevant alternatives	None
Matrix	The type of material that the technology is intended for	Matrices could be biomass, flue gas 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/
Operation parameter	Measurable parameters that define the application and the verification and test conditions	Operational parameters could be temperature, flow, 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

Term	Definition	Comments
Performance parameter (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 environ-mental technology	Technology is used instead of the term product
Proposer	Any legal entity or natural person, which can be the technology manufacturer or an authorized 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 Proposer 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 recognized standardization body that provides rules, guidelines or characteristics for tests or analysis	None
Test body	Unit that plans and performs tests	None
Test/testing	Determination of the performance of a technology for parameters defined for the application	None
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.

Term	Definition	Comments
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.
Proposer	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

2.2. Organization

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

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

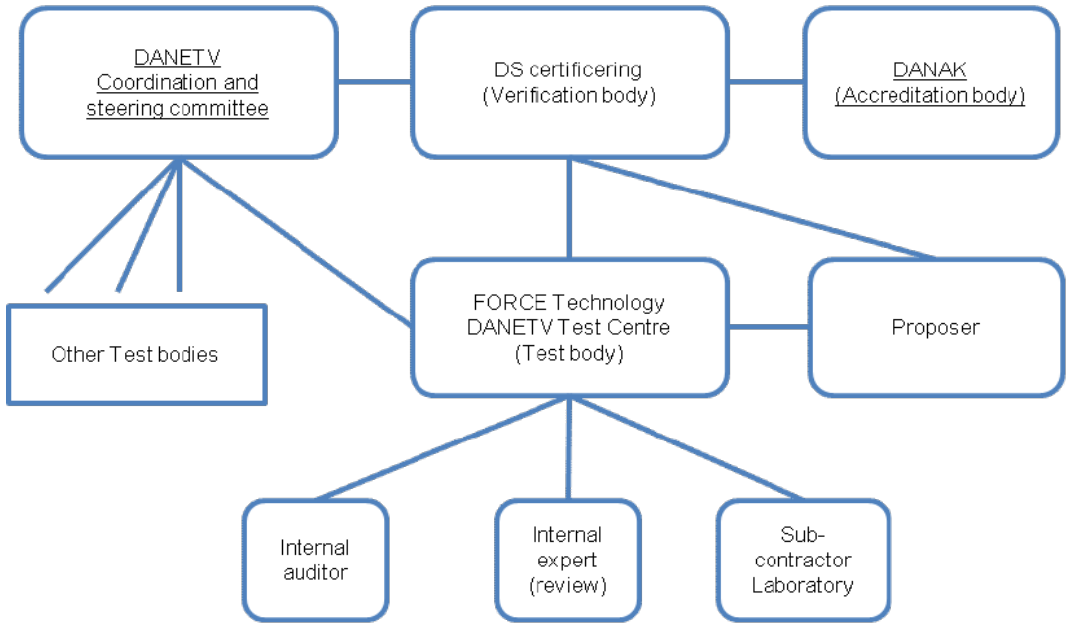

Figure 1 FORCE Technology test body – organisation with respect to other bodies involved in verifications in Denmark

2.2.1. Duties and responsibilities of the test body

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

Organization management
FORCE Technology (Department A202, Air & Environment) is a test body and is hosting the FORCE Technology DANETV test centre. The head of department A202 and hence the organization management is overall responsible for the operation of the ETV test centre according to this manual. According to FORCE Technology CQMS the organization management is responsible for:

- Maintaining an ISO 17025 accreditation with the quality management system required herein
- Designation of quality manager of the ETV test centre
- Providing the resources (staff and facilities) required to follow the manual
- Handling any complaints over the ETV test centre, including an organization quality system compliant with ISO 9001 /3/ for at least test activities
- Keeping records of staff training and experience
- Keeping record of facilities and their maintenance
- Keeping records of complaints from proposers.

ETV Test Centre Management
The test centre management of the hosting organization is responsible for:

- Practical operation of the test centre according to this manual
- Maintaining this manual

ETV Test Centre Quality Management
The quality manager of the ETV test centre is responsible for quality assurance of the ETV test centre activities, including making internal auditors available for the centre in accordance with FT Global procedure.

ETV Test Centre
The ETV test centre has the overall responsibility for:

- Identification of and subcontracting with one or more independent analytical laboratories for analyses of test samples, if required; and ensuring that the analytical laboratories are accredited to applying ISO 17025 for methods within the relevant area of analysis
- Elaboration of test plan within the requirements set in the verification protocol with test design requirements and in agreement with the verification body
- Performance of the test according to the test plan, ensuring the level of quality required in the specific verification protocol
- Elaboration of the test report for transmission to the proposer and the verification body

The staff performing the test (or otherwise involved in testing) shall not be involved in the elaboration of the verification protocol.

If the ETV 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 ETV 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.

2.2.2. Staff

The ETV test centre has, develops and maintains staff that is qualified for technology verifications and tests within the scope of the test centre with the executive staff responsible for the units shown in Table 2.

Table 2. Executive staff attached to the FORCE Technology DANETV Test Centre

Organization element	Name of responsible	Function
DANETV Steering Committee	Trine Erdal	Board member
ETV Test Centre host (Department A202, Air & Quality)	Ole Tvede Larsen	Head of Department
ETV Test Centre	Ole Schleicher	ETV Test Centre Manager
ETV Test Centre Quality Management	Kasper Rovsing Olsen	ETV Test Centre Quality Manager
ETV Test Centre Staff	Ole Schleicher Arne Oxbøl	Authorized staff

2.3. ETV Test Centre Quality Management Processes

From Table 3 the main points of the quality management of the ETV test centre are given:

Table 3. The main points of the quality management of the ETV test centre

Quality management task	Location
Review of plans and reports	ETV Test Centre Manager
Document and record control	ETV Test Centre Manager
Internal audits with corrective and preventive actions	ETV Test Centre Quality Manager
Complaint management	Head of Department
Subcontractor management	ETV Test Centre Manager
Staff competence management	Head of Department
Facility management	Head of Department
Annual management reviews	ETV Test Centre Quality Manager

The quality management processes are further described in Chapter 0.

3. QUALITY MANAGEMENT PROCESSES

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

Management, organization and responsibilities are defined in Chapter 2.

3.1. Quality assurance steps

The process and the responsibilities for preparing, reviewing and approving documents in the verification are summarised in Table 4.

Table 4. Quality assurance steps - verification document

Document	Test body	Proposer	Verification body
Testing contract	1 Prepare and sign	2 Approve and sign	
Verification protocol	-	-	3 Prepare, review and 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

Additional management approval may be necessary according to FORCE Technology CQMS.

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

3.2. Document and record control

FTD Luft[1] (FORCE Technology Denmark Luft) describes the process of drafting, revising and approving the documentation of the ETV test centre manual with the aim of ensuring that all involved in the verification processes have access to and uses the latest approved version of the manual with process descriptions.

FTD Luft also describes how records of verification and 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 verification.

3.3. Internal audits

Internal system audit (ETV testing process)

The procedure in FORCE Technology CQMS describes the process of periodic internal auditing of the test activities in the ETV test centre including audit responsibilities and planning, auditor training and competences and audit reporting.

The procedure - Corrective and Preventive actions[2] - in FORCE Technology CQMS – describes how deviations identified during operating 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).

The periodic internal auditing is performed by a person appointed by the Quality manager of the ETV test centre.

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.

[1] FORCE Technology Quality Management System Denmark (the D4 IT system)

3.4. Complaint management

FTD procedure, "Nonconformity", describes how proposer complaints are recorded, resolved and reported. If not resolved, Nonconformities should be referred to the DANETV Steering Committee for resolving.

3.5. Subcontractor management

The ETV test Centre management ensures that purchasing and 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 for the task, see also Part C: Quality Management of the EU GVP /1/.

3.6. Staff competence management

The tests are done by staff with adequate competences and knowledge of their responsibilities. A list of the approved staff is available under the quality system connected to the accreditation /6/.

3.7. Facility management

The facilities and the equipment for verification and test of products belonging to the technology area covered by the ETV test centre are described and maintained in accordance with the FTD Luft together with the FT Global procedure[3] and FTD Forretningsgange[4]. The approved staff is fully available and fit for the purposes.

3.8. Management review

FORCE Technology CQMS describes how the management of the organization hosting the centre is ensuring that the ETV test centre working according to this quality manual is reviewed through an annual management review process. The management review is performed by the CQ manager in accordance with FT Global procedure.

The quality manager of the ETV test centre is designated to be responsible for maintenance and development of the quality system and for the internal auditing of all aspects of the system.

[3] FORCE Technology Global Procedure (the D4 IT system)

[4] FORCE Technology Denmark Forretningsgange (the D4 IT system)

4. 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 ETV 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 in Figure 2.

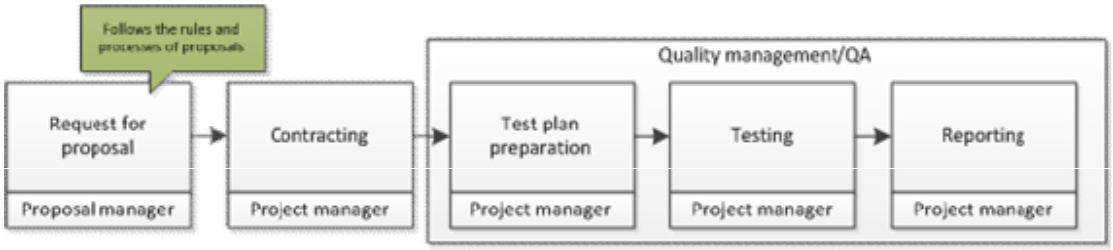

Figure 2 Outline of processes during ETV testing

4.1. Contract

If the proposer decides to proceed with verification, the 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 recognized, that parts of the testing budget may in some cases need to be prepared after elaborating 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 FORCE Technology CQMS.

4.2. Test plan preparation

4.2.1. Specific verification protocol

The specific verification protocol describes the framework for verification of the technologies and provides the information required for the test plan. The verification 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.

4.2.2. 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 the 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, 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 shall be specified with respect to:

- Overall test design
  - Scale (laboratory, pilot and/or field)
  - Performance parameters to be measured (include 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 shall be defined. If available and relevant, existing standard methods (ISO, CEN) shall be listed. If specific requirements for analytical methods or their performance have been identified during planning, 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.

4.2.3. 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 verification protocol used shall be given.

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 verification protocol.

The test plan shall be reviewed and approved according to FORCE Technology CQMS audit procedure

Test design
The types of test sites shall be described responding to the requirements set in the 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 in the verification 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 proposer. If a site dependent on the proposer is the only option available, the use of that site shall be justified and decided in the 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 to standards or equivalent methods. If in-house or non-standardized methods are used, the method shall be referenced and outlined, or included in an appendix to the test plan.

The test schedule shall be given.

The descriptions of test operation shall allow the test staff to perform the tests as required in the 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 5)

Table 5 Data compilation and storage summary, example

Data type	Data media	Data recorder	Data recording timing	Data storage
Test plan and report	Protected PDF files[1]	Test responsible, FT	When approved	Files and archives at FT
Test details in laboratory and field	Log book and pre-prepared forms	Technician, FT	During collection	Files and archives at FT

Calculations	Excel files	Test responsible, FT	During calculations	Files and archives at FT
Analytical reports	Paper	Test responsible, FT	When received	Files and archives at FT

[1] Protected PDF files are created from Word files by printing it to Win2PDF on a FORCE computer, which incorporate a password protection, preventing any user from making changes in the document.

Data management should describe filling 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. The test plan and report reviewer cannot be responsible for test planning or operation. Plans for additional review and/or audits shall be given, if relevant.

If an analytic laboratory is used it shall be ensured 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.

4.3. Testing

Testing shall be done according to the test plan.

Amendments to and deviations from the test plan shall be recorded and approved in amendment form, respectively (see template in Appendix 6 and Appendix 7). The amendment and deviation forms shall be retained as documentation as part of the records of testing.

4.4. Test reporting

The test report shall be based on the template in Appendix 5. The test 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 data report shall include all analytical and calculated data as well as a reference to the staff performing the test. The methods of calculation, test measurements and performance parameters from raw data shall be described, if not given in analytical and test methods used. If relevant, details on equipments 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 FT Global procedure. Afterwards the test report shall be reviewed by the verification body and the proposer – see Table 4.

5. REFERENCES

1. European Commission. EU Environmental Technology Verification pilot program. General Verification Protocol. 20-6-2011
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 Organization. ISO /IEC Guide 7:1994.Guidelines for drafting standards suitable for use for conformity assessment. 1994.
5. International Standardization Organization. ISO 17025 (2005). General requirements for the competence of testing and calibration laboratories.
6. DANAK accreditation no. 51 – Sampling
7. DANAK accreditation no. 65 - Analysis

Appendix

Appendix 1

Contract Template

Testing Contract

Technology name:

Technology no:

ETV Test Centre		Proposer	
Name Contact Address Telephone E-mail		Name Contact Address Telephone E-mail	

{Test body name} agrees to test the above mentioned technology for the below tentatively defined application in accordance with the EU-ETV environmental technology verification method FORCE Technology's General Conditions are valid for this Contract (see Appendix 1).

Application

Matrices

Targets

Effects

Costs and payments

The steps and the costs during the verification include the following (costs are exclusive VAT, taxes etc.):

Table 1 Verification Steps and costs (DKK)

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

The budget for the test is tentative and an exact budget is made during preparation of the verification protocol. If the final budget for test exceeds the tentative budget, this is subject to negotiations between FORCE Technology and {proposer}.

The payment scheme is as follows:

Table 2 Payment scheme

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

Deliverables

{The proposer} agrees to provide, without costs and delay, for the {test body}:

- Contact person for the verification
- 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 occur.

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 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

{The test body} performs the testing as described for the application of the technology as defined in this contract. This testing cannot be considered an endorsement, approval,

authorization or warranty of any kind, and the performance parameters 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 testing; they cannot be understood as guaranteeing the same level of performance in future under other conditions.

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

Confidentiality

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

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

Liability

{The test body} assumes no liability for any damages associated with the use of test results, and {proposer} agrees to indemnify and hold harmless the Verification Body for all costs that may be imposed upon the Verification Body in connection with claims raised with this respect.

{The test body} assumes no liability for any consequential losses such as but not limited to 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.

Cancellation

{The Proposer} may cancel this contract with a 15 days written notice. In case of cancellation, any costs endured by {The test body} (cf. table 1) as part of the test that cannot be averted shall be paid in full by {proposer}.

Choice of law and venue

This Contract is subject to Danish Law, but for its conflict of law provisions, and all disputed are under the jurisdiction of the Danish Courts.

Signatures

ETV Test centre		Proposer	
Name Title Date	Ole Tvede Larsen Head of Department	Name Title Date	
Signature		Signature	

Appendix 1 FORCE Technology – General Conditions

Appendix 2

Test plan template

Appendix

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 (describe type of test: laboratory test or on-site test)
     - 2.1.2. Addresses
     - 2.1.3. Descriptions
   - 2.2. Tests
     - 2.2.1. Test methods (*Standardized 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. Product maintenance *(product/technology maintenance)*
     - 2.2.9. Health, safety and wastes
3. Analysis and analytical 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 (*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

Test report template

Appendix

Title page
Table of contents
1. Introduction
   1.1. Name and contact of proposer
   1.2. Name of body/test responsible
   1.3. Reference to the test plan and specific verification protocol
   1.4. Summary of 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 summarize 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. 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

Review report template

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

Review results					
Rate items	*Satisfactory*	*Unsatisfactory*		*Overall recommendation*	
Contents					
Scope				Acceptable as is	
Organization				Minor revisions	
Data quality				Major revisions	
Method validity				Not acceptable	
Conclusions					
Other (specify)			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.

Appendix 5

Lists of lists

Appendix

List of Lists

The lists mentioned below are kept together with the rest of the ETV quality documents (internal web page).

List of external experts
The verification body keeps a list of experts used during performed verifications. The list contains information about the experts name, address, e-mail, telephone number, title, work field and engagement.

List of sub-contractors
The test body keeps a list of sub-contractors used during performed verifications. The list contains information about name of company, address, contact person, e-mail, telephone number and deliveries.

List persons authorised to draft, revise and approve documents
The ETV test centre holds a list of persons authorized to draft, revise and approve, document within the quality manual system. The list contains information about name, department, education, date of authorization and name of the person who made the authorization.

List of staff approved for functions within verification and test
The ETV test centre keeps a list of persons working within the test centre, the verification and test body. The list contains information about the person's work field and field of responsibility.

List of methods
The test body keeps a list of used in-house methods and standards.

List of protocols
The ETV test centre keeps a list of performed verifications. The list contains information about name of product/technology and name, address, web site and e-mail of the company, technology type and application.

List of internal experts
The verification body keeps a list of internal experts used during performed verifications. The list contains information about the experts name, department, e-mail, telephone number, title and work field. The persons competence is documented in an available CV.

Appendix 6

Template for report on amendment to test plan

Appendix

AMENDMENT	
Protocol / Plan document title and date	
Amendment number	
Date of Amendment: Amended:	
Amendment contents:	
Reason for amendment	
Impact of amendment	
Prevention action (If relevant, action to prevent that the same cause of amendment will reoccur in the future)	
ORIGINATED BY: (signature)	
Test responsible	
Date	
Approved by (signature)	
Verification body (signature)	
Date	
Approved by (signature)	
Proposer (signature)	
Date	

Appendix 7

Template for report on deviation from test plan

Appendix

DEVIATION	
Protocol / Plan document title and date	
Deviation number	
Date of Deviation: Amended:	
Description of deviation	
Reason for deviation	
Impact of deviation *(after suggested corrective action)*	
Corrective action *(If required, action to be taken to prevent consequences of deviations)*	
Preventative action *(If relevant, action to prevent consequences of deviations)*	
ORIGINATED BY: (signature)	
Center verification or test responsible	
Date	
Approved by (signature)	
Center verification or test organisation quality responsible (signature)	
Date	

Appendix 8

Template for internal audits

Audit report
Test system audit

Project no.:	**Date of audit:**
Verification project:	**Site:**
Present during audit Auditor: Other:	
Checklist *Conformity with test plan:* Test method in general Operation of water treatment unit Operation conditions, and measurements for monitoring them On-line measurements and sampling for performance parameters Data logging and retrieval Documentation of operation 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	
Verification responsible's conclusions Date: Signature	
Non-conformity report nr.	**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**