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CERTIFICATION RULES NF MARK – DOMESTIC SOLAR WATER HEATERS



DOMESTIC SOLAR
WATER HEATERS

www.marque-nf.com

AFNOR Certification identification number: NF 441

Review 3 – June 2014

This version invalidates and replaces the previous version

Approval by AFNOR Certification: May 2nd, 2014

First implemented on May 19th, 2010

Reference document:

GENERAL RULES OF THE NF MARK

Approved by the AFNOR Board of Directors, on April 23, 2013

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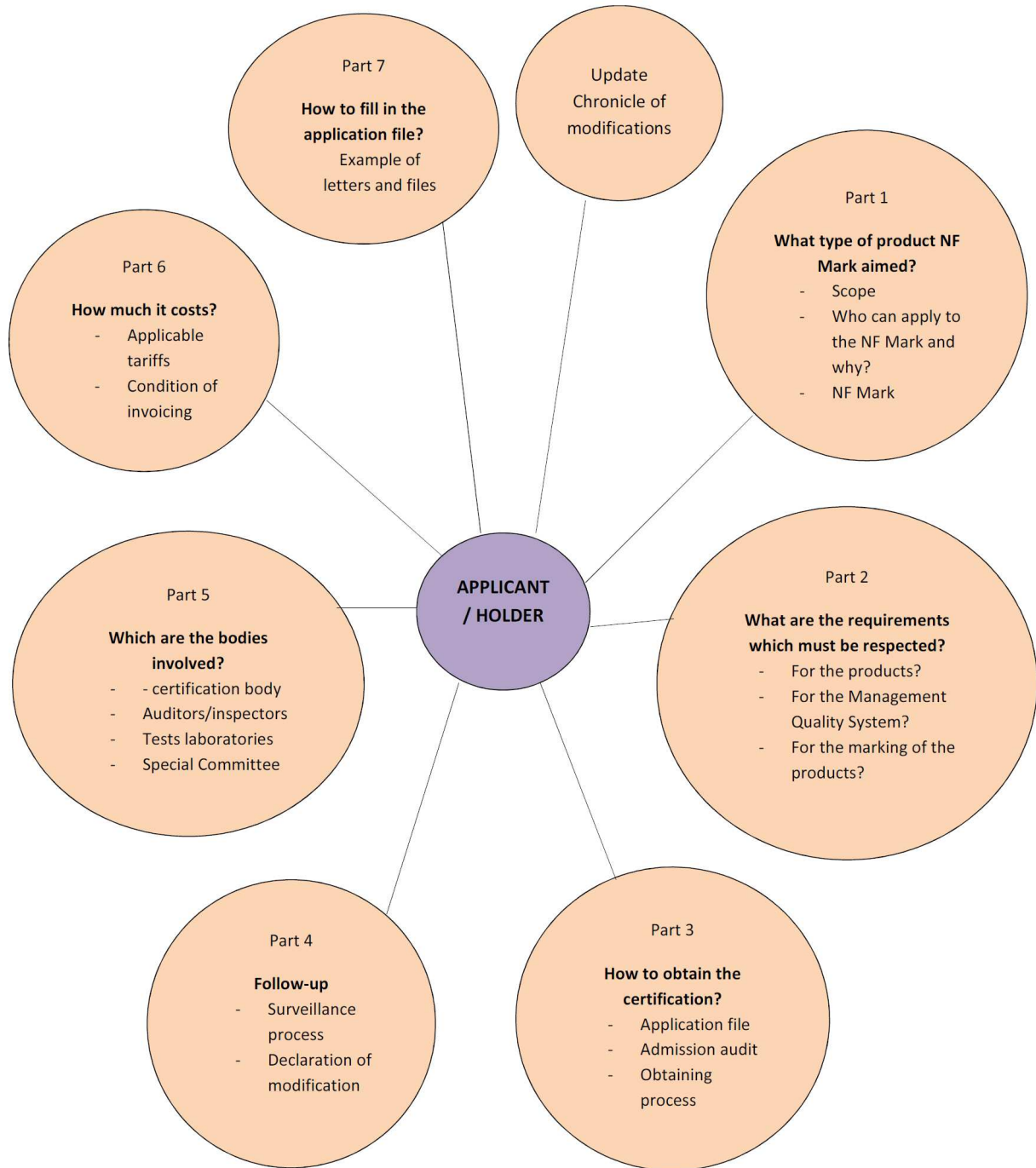
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The present certification rules were submitted to AFNOR Certification for acceptance in the NF certification system. It has been approved by the Managing Director of AFNOR Certification on 2014, May 2nd.

It cancels and replaces all previous versions.

As a certification body accredited by COFRAC under the n°5-0517, scope of accreditation is available on www.cofrac.fr, EUROVENT CERTITA CERTIFICATION commits to elaborate the certification rules which granted an appropriate requirement level for the quality of products, its fitness of use and its sustainability.

The accreditation proves the independence, the fairness of EUROVENT CERTITA CERTIFICATION and its technical abilities of developing the NF Mark.

The certification rules can be updated, entirely or partially by EUROVENT CERTITA CERTIFICATION and, after consultation of involved bodies. The update is approved by the Managing Director of AFNOR CERTIFICATION, for acceptance in the NF certification system.

UPDATES

Modified part	Number of revision	Date	Modification made
5	3	April 2014	AENOR subcontractor added
3			Specification: (paragraph on the conformity of tests of manufacturer's statement withdrawn...)
3			Paragraph on the process of Ranges of products at a commercial ending withdrawn
Entire certification rules			Application of CERTI A 0233 guidelines
Part 1	2	January 2012	Scope. Marking <i>Precision concerning the scope</i>
Part 2			Quality requirements the manufacturer must respected <i>Editorial modifications and updates</i> <i>Modification of requirements of internal inspection of fabrication plant</i>
Part 3			Obtaining the certification <i>Production range at a commercial ending taken into consideration</i>
Part 4			Follow-up of certified products process – modifications and development
Part 5			Participating organisations
Part 6			Applicable fees – Terms of payment <i>Modifications and precisions for 2012</i>

Part One PRESENTATION AND SCOPE

1.1. SCOPE

The products concerned by the certification rules are domestic solar water heaters with forced circulation with or without supplementary heating built into the storage tank which can be tested according to the NF EN 12 976

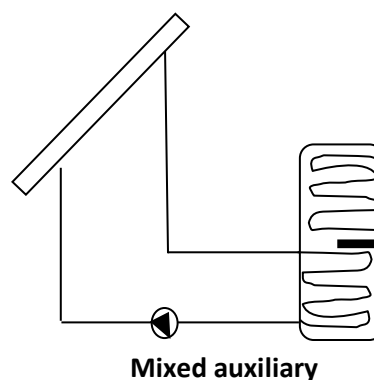
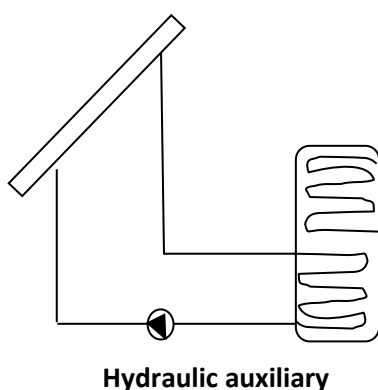
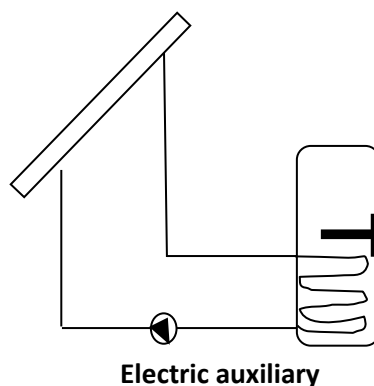
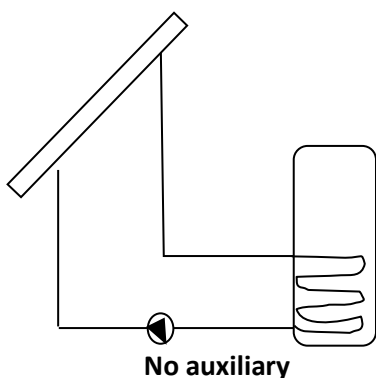
Water heaters implementing provisions for mitigating the risk of the development of legionella bacteria, in application of the Order of 30/11/05 cited in § 2.1.1., do not fall within the scope of these certification rules. The case of systems implementing, in accordance with the abovementioned Order, provisions having no significant impact on energy performance are reviewed on a case by case basis in consultation with the Mark Committee.

Implementation is not concerned by these rules.

Henceforth, the term "Mark" shall be used to designate the application of the NF Mark.

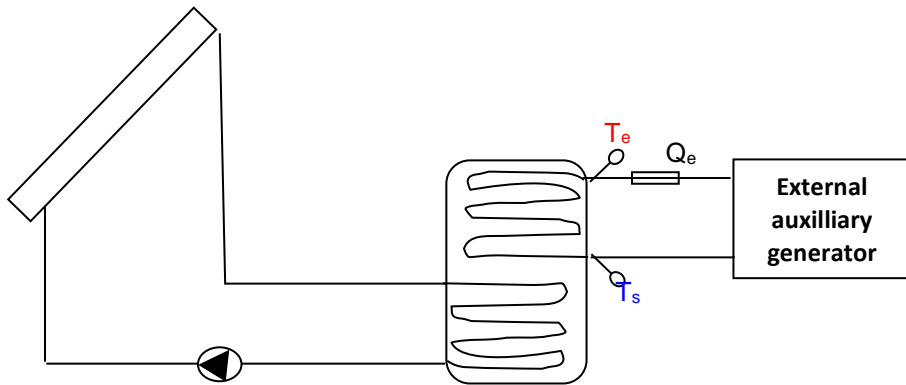
1.1.1. Precision and schematics of systems which can be tested according to the NF EN 12976

- Split systems
 - Classical Domestic Solar Water Heaters



Note: thermal performances determination for mixed auxiliary heat systems is performed by two sets of tests, each covering the operation of the system with only one of two types of auxiliary.

- Domestic Solar Water Heaters with hydraulic auxiliary powered by a device inseparable from the tank.

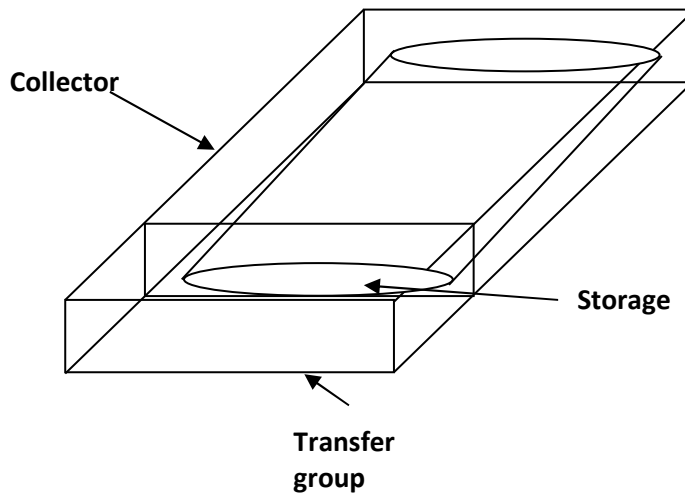


Note: The power measurement at the terminals of the auxiliary exchanger should be possible (input-output temperature + flowmeter sensors)

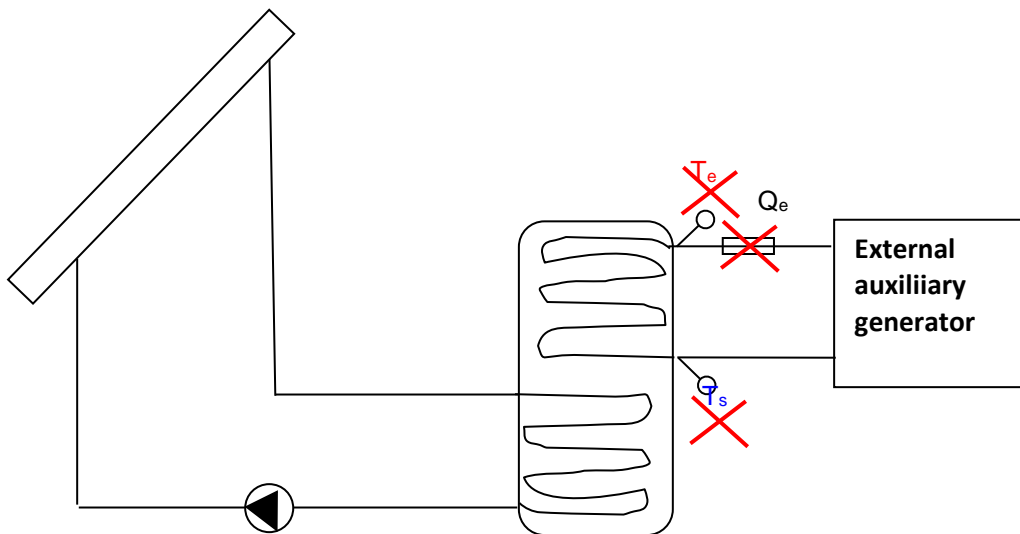
For example

- Floor standing boiler
- Domestic Solar Water Heater with a heat pump auxiliary whose condenser is an exchanger external to the tank.

- **Packaged systems**



1.1.2. Precisions and schematics of systems which cannot be tested regarding the NF EN 12 976



Systems where the power measurement at the terminals of the auxiliary exchangers is impossible are not covered by this certification rule.

Examples of systems excluded from this certification rule

- Boiler which compactness makes impossible the installation of input-output and the flowmeter temperature sensors.
- Domestic Solar Water Heaters with a heat pump auxiliary whose condenser is immersed in the tank (biphasic in the exchanger)

1.2. WHO CAN APPLY TO NF MARK AND WHY?

All applicants which products fall into the scope described below and comply with the technical requirements described in chapter 2 of the present document can have access to the certification rules.

1- Applicant/holder

Legal person who insures the management and/or the responsibility of the respect of all requirements described in this NF Domestic Solar Water Heaters (DSWH) certification rules.

These requirements cover at least the following steps: conception, manufacturing, assembly, quality control, marking, conditioning also as the marketing and precise critical points of the different steps.

2- Authorised representative

Natural person or legal entity in the European Economic Area (EEA) who have a representation function and a mandate given by the applicant/holder located outside the EEA allowing him to take action on its behalf and explaining him in what framework (missions and associated responsibilities, financial aspects, reclamations, contact of the certification body...) in the NF mark certification process following the provisions of the certification rules.

The authorised representative can be the distributor or the importer; its different missions are clearly identified.

3- Distributor

Person who sell products of the applicant/holder, and does not act on the products to modify its conformity to the NF mark requirements.

The types of distributors can be:

- Distributors who sell product under the trademark of the holder. In this case, no action is necessary as part of the NF Mark.
- Distributors who sell product under a different trademark. The applicant/holder must send an application of maintenance of right of use.

If the distributor does not want to refer explicitly to the manufacturer, a NF mark admission application must be sent by the distributor. In this case, the fabrication plant will not be mentioned on the certificate.

Following the undertaken operations by the applicant/holder, or the distributor, the audited sites and the length of time of the audit as part of the initial certification or the surveillance are defined on a case by case basis.

1.3 CERTIFIED CHARACTERISTICS

The certified characteristics are:

- Considered parameters (A_c^* , U_c^* , U_s , C_s)
- Energy efficiency
- Production for DSWH with no auxiliary

During the transitional period of determining the thermal performances by simulation, only the first two characteristics are available.

1.4 LISTS OF CONTACTS

Who should you contact?

EUROVENT CERTITA CERTIFICATION
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www.eurovent.com / www.certita.fr

Your contact : Sophie BOCQUILLON
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Part 2

CERTIFICATION RULES REQUIREMENTS

2.1. –General rules of the NF marks

The certification rules of the present NF mark application, according of the Consumer Code is composed of:

- The General Rules of the NF mark which set the general organisation and the terms of use of the NF Mark,
- The present certification rules which describe the technical characteristics to be respected also as the conformity follow-up terms of these characteristics,
- Standards referred in the present certification rules, associated to potential complementary technical specifications.

The certification rules which fit into products certification and services other than alimentary as set out in the Consumer Code¹, point out the terms of application of the NF Mark General Rules to products described in part 1.

2.2. Reference Documents

- NF EN 12976-1 (April 2006)– Thermal solar systems and components - Factory made systems. Part 1: General requirements
- NF EN 12976-2 (April 2006)– Thermal solar systems and components - Factory made systems. Part 2: Test methods
- ISO 9459-5 (2007) Solar heating – Domestic water heating systems – Part 5: characterisation of system performance by means of tests conducted on the entire system and by computer simulation.
- NF EN ISO 9488 (January 2000)- Solar energy - Vocabulary
- NF EN 15316-4-3 (2007) - Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 4-3: Heat generation systems - thermal solar systems
- NF EN 60335-1 (2003) – Safety of household and similar electrical appliances – Part 1: general requirements.
- NF EN 60335-2-21 (2005) – Safety of household and similar electrical appliances – Part 2-21: particular requirements for storage water heaters.
- NF EN 60335-2-73 (2005) - Safety of household and similar electrical appliances - Safety - Part 2-73: Particular requirements for fixed immersion heaters.
- NF EN 60335-2-102 (2007) - Safety of household and similar electrical appliances- Safety. Part 2 -102 Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections
- **NF EN 60730-1 (2001): Automatic electrical controls for household and similar use. Part 1: General requirements**
- **NF EN 60730-2-9/A2 (2005): Automatic electrical controls for household and similar use Part 2-9: Particular requirements for temperature sensing controls**
- NF EN 50106 (2009) - Safety of household and similar electrical appliances – Particular rules for routine tests referring to appliances under the scope of EN 60335-1
- NF EN ISO 9001 (2008)- Quality management systems – Requirements

¹ Articles R 115 à R 115-3 and L 115-32 of the Consumer Code

2.3 Regulations

- (2004/18/EC) Directives "Electromagnetic compatibility" and 2006/95/EC "Low voltage equipment"
- Standard departmental sanitary regulations
- Circular of 2 July 1985 relative to the thermal treatment of water intended for human consumption (Official Journal of the French Republic (JORF) of 15/08/1985)
- Circular of 2 March 1987 relative to the updating of lists of fluids and additives used in the thermal treatment of water intended for human consumption (JORF of 7/04/1987)
- (2006/121/EC) REACH Directives
- Directive 2006/121/EC of the European parliament and the and of the council relative to the recording, the evaluation, the authorization and the limitations on chemicals products (REACH).
- Order of 30 November 2005 modifying the order of 23 June 1978 relative to fixed installations designed to heat and supply domestic hot water in housing, occupational premises or public facilities (JORF of 15/12/05).

2.4. Quality management system requirements

2.4.1 For the applicant or the holder

These provisions apply to the applicant (or licensee) of the mark and, as the case may be, to the production units of the main components of the product: collectors, storage tanks and controllers. The applicant (or licensee) shall take the appropriate measures to ensure that the requirements are being met by the units producing the abovementioned components.

These measures encompass certain requirements of ISO 9001:2008 designed to ensure product compliance. They do not involve the certification of the quality management system.

As such, it is recommended that applicants or licensees of the NF Mark support the quality system established for the products to be certified, based on the model defined by standard NF EN ISO 9001-2008, and establish quality plans and the quality manual in accordance with the requirements specified by this standard.

The organisation set up to manage quality assurance shall be formalised by documents made available to the mandated body. The later shall determine whether or not the system is designed to achieve the established objectives, and check, at the production site, to determine whether or not these objectives have been actually attained.

For companies whose Quality Management System is certified by a body accredited by the EA (European Cooperation for Accreditation), the requirements of ISO 9001:2008 are considered as satisfied since the company's Quality Management System applies to the products considered.

The quality assurance is:

- Descriptive in nature:
 - o . general organisation rules,
 - o . procedures for obtaining and verifying quality,
- And technical in nature:
 - o . definition of inspection procedures for products and equipment
 - o . definition of methods for verifying and measuring characteristics

2.4.1.1 Quality Management

a) Quality policy

In terms of quality, the manufacturer's management shall define and document its policy, objectives and commitment.

It shall ensure that this policy is understood, implemented and maintained at all levels of the organisation. It shall define the means required to meet these objectives (installation of the necessary equipment, designation of persons trained for audits).

b) Responsibilities and authority

The responsibilities, authority and relationships of all individuals who manage, perform and verify tasks having an impact on quality, shall be defined and written.

In particular, a management representative, acting on its behalf, independent of other corporate functions as soon as the size of it allows it, shall be designated.

This individual shall have the necessary authority to:

- Ensure that the requirements of the quality are established, implemented and maintained in accordance with the requirements of these rules.
- Report on operation of the quality system to management for review and as a basis for improving the quality system.

1.

c) Quality organisation

The manufacturer shall define and document, in a format adapted to the company's operating procedure, how to meet the quality requirements.

It shall:

- Compile a quality manual and/or a quality plan describing the company's general organisation in terms of quality, for the purposes of these rules,
- Establish written procedures consistent with the requirements of these rules and with the quality policy formulated by its management,
- Effectively implement the written procedures and the quality system.

d) Requirements relative to the documentation

The manufacturer shall establish and maintain written procedures for managing all documents and all the data relative to the requirements of these rules (including documents of external origin such as standards or these rules).

These procedures shall ensure that:

- The pertinent issues of the appropriate documents are available in all operational areas;
- Invalid and/or obsolete documents are promptly removed from all points of distribution or use.

Approval and distribution of documents

Prior to their distribution, the documents shall be reviewed and approved by authorised persons. A reference list or any equivalent document control procedure indicating the current issue of the documents shall be established and be readily available to prevent the use of invalid and obsolete documents.

Document changes

Unless otherwise specified, document modifications shall be reviewed and approved by the same departments/organisations that originally reviewed and approved them.

Where practicable, the nature of the change shall be identified in the document or the appropriate sections.

2.4.1.2 Purchasing - § 7.4 of standard ISO 9001: 2008

The manufacturer shall establish and maintain up to date written procedures to ensure that the product supplied is in compliance with the specified requirements.

The manufacturer shall:

- define the specifications of products to be supplied (and possibly establish specifications with its suppliers)
- define its supplier selection criteria
- compile and maintain a regularly updated list of its authorised suppliers
- Establish and maintain records relating to the quality of its acceptable suppliers.

Orders shall clearly describe the product ordered (technical specifications, quantities, lead times, ...) provide references to technical characteristics in the specifications and stipulate the request for a certificate of compliance, as required.

2.4.1.3 Identification and traceability - § 7.5.3 of standard ISO 9001: 2008

The manufacturer shall prepare instructions for identifying the product with marking that complies with the requirements of § 2.3. below.

Traceability is a requirement of the NF Mark; accordingly, the provisions set out in ISO 9001:2008 concerning unique product identification shall be taken into account. This identification must ensure traceability in order to be able to find information on the product's history.

2.4.1.4 Verification of purchased product - § 7.4.3 of standard ISO 9001: 2008

The manufacturer shall ensure the quality of raw materials and components used in the manufacture of products for which it holds the right to use the NF Mark.

For example, controls defined and regular upon receipt or certificate of compliance to supplier technical characteristics or specifications.

Checks performed shall be recorded and include an indication of the acceptance criteria and decisions taken in cases of non-compliance.

2.4.1.5 Validation of processes for production and service provision - § 7.5.2 of standard ISO 9001: 2008

Before the commissioning of manufacturing facilities, the applicant or subcontractor shall conduct inspect all equipment. A periodic maintenance programme of this equipment shall be established. Operating instructions shall be drafted which taken into account the duties of the workstation and the definition of performance criteria (reference to standards, specifications).

In the event of subcontracting, precise specifications must be compiled for the subcontractor.

2.4.1.6 Monitoring and measurement of product - § 8.2.4 of standard ISO 9001: 2008

The manufacturer shall monitor and measure the product characteristics to verify that product requirements are met.

The following checks are conducted:

- by the manufacturer directly on the production line or in a laboratory installed at the production site,
- by the manufacturer in an external laboratory, in accordance with provisions recognised by CERTITA,
- By an identified subcontractor.

The product sampling method for these checks shall be precisely described in the quality plan. It should not be left to the sole discretion of the operator.

For each new device presented for NF Mark certification, all tests required by the Certification Rules of the NF application are to be performed by the manufacturer in order to validate the design.

Within the scope of the NF Mark, the inspection plan implemented must at least consist of the tests and checks outlined below:

In final inspection:

The implemented inspection plan must ensure that the products are in compliance with the specifications of reference standard.

It shall contain at least the tests set out below:

Regular check performed on packaged products at the end of the production line with a frequency to be determined by the manufacturer, in order to ensure that all components, assembly instructions, NF information sheet, and various markings (CE, NF, ect...)

The attention of applicants or manufacturer is drawn to the need for functional testing on control elements when changes (i.e. programming) are made to the intrinsic features of the equipment supplied.

Collectors					
Components	Inspections	Characteristics	Frequency	Comments	Position
Absorber	General appearance	In accordance with specifications	On each batch delivery or during production by sampling	When the absorber is delivered in reels, inspection takes place during production. Inspection performed by the supplier or subcontractor if the manufacturer does not have the necessary measuring equipment	Incoming goods / Production
	Dimensional				
	Optical characteristics <i>(the optical characteristics shall comply with those in the specifications to within $\pm 2\%$)</i>	☑ absorption coefficient			
		☑ emissivity coefficient			
Transparent cover	General appearance	In accordance with specifications	On each unit	/	Production
	Dimensional				
	Optical characteristics <i>(the optical characteristics shall comply with those in the specifications to within $\pm 2\%$)</i>	☑ Transmission coefficient	On each batch delivery by sampling	Inspection performed by the supplier or subcontractor if the manufacturer does not have the necessary measuring equipment	Incoming goods
Hydraulic connection	Dimensional	In accordance with specifications	On each batch delivery by sampling On master during production	/	Incoming goods / Production
	Tightness	- Using water :1.5 times the stated service pressure - Using air : 1,3 times the stated service pressure	On each unit		Production

Collectors (continued)					
Components	Inspections	Characteristics	Frequency	Comments	Position
Manufactured insulation	General appearance	In accordance with specifications	On each unit	/	Production
	Dimensional				
	Cohesion <i>(except P.U. foam)</i>				
	Density	Nominal value ± 5kg/m ³	On each batch delivery by sampling		Incoming goods
Insulation produced by injection	Injection time	In accordance with specifications	By periodic sampling, after prolonged stoppage and change of injection products	The storage conditions of Isocyanate and Polyol components shall comply with the supplier's instructions.	Production
	Temperature/Hygrometry				
	General appearance				
	Dimensional				
	Density				
Vacuum tubes	General appearance	In accordance with specifications	On each unit	/	Incoming goods
	Dimensional		On each batch delivery by sampling		
	Optical characteristics of glass <i>(the optical characteristics shall comply with those in the specifications to within ± 2%)</i>	☑ Transmission coefficient	On each batch delivery by sampling	Inspections performed by the supplier or subcontractor	Incoming goods
	Optical characteristics of the absorber <i>(the optical characteristics shall comply with those in the specifications to within ± 2%)</i>	☑ absorption coefficient		Inspections performed by the manufacturer, supplier or subcontractor	Incoming goods / Production
		☑ emissivity coefficient			
	Vacuum value	In accordance with specifications	On each batch delivery, on each unit	Production	
Heat pipe	Dimensional	In accordance with specifications	On each batch delivery by sampling	Inspections performed by the manufacturer, supplier or subcontractor	Incoming goods / Production
	Temperature release		On each unit		
	Minimum deviation release		On each batch delivery by sampling		

Storage tank						
Components		Inspections	Characteristics	Frequency	Comments	Position
Storage tank	All types	General appearance Dimensional	In accordance with specifications	On each unit for the manufacturer On each batch delivery in case of subcontracting	The subcontractor shall provide a record of the checks performed on the tanks. For control using air, specific security provisions are expected.	Incoming goods / Production
		Tightness (controls using water or using air)	Using water : 1.3 times the stated service pressure	On each unit Weekly		
			- Using air : according to manufacturer procedure	On each unit + By sampling using water or using air 1.3 times the stated service pressure		
	Stainless steel type	Anticorrosion treatment of welds	In accordance with specifications	On each unit		
	Internal protective coating by enamelling type	Monitoring of oven temperature		Continuous		
		Monitoring of oven temperature Homogeneity		Continuous		
		Monitoring of oven time		Continuous		
		Coating thickness		By sampling		
		General appearance		On each unit		
	Other type of protective coating	Coating thickness		By samplingt		
General appearance		On each unit				

Storage tank (continued)

Hydraulic heat exchangers (Solar and / or auxiliary)	All types	General appearance	In accordance with the specification	On each batch delivery	<p>The subcontractor shall provide a record of the checks performed on the exchangers.</p> <p>For a control using air, specific security provisions are expected.</p>	Incoming goods / production
		Dimensional		On each unit		
		Leaktightness	Control value using water = 1.3 times the stated service pressure	<p>On each unit + by sampling using water or using air 1.3 times the stated service pressure</p>		
			Control value using air = in accordance with the manufacturer testing procedures			

Storage tank (continued)					
Components	Inspections	Characteristics	Frequency	Comments	Position
Manufactured insulation	General appearance	In accordance with specifications	On each unit		Production
	Dimensional				
	Cohesion <i>(except P.U. foam)</i>		On each batch delivery by sampling		Incoming goods
	Density				
Insulation produced by injection	Injection time	In accordance with specifications	By periodic sampling, after prolonged stoppage and change of injection products	The storage conditions of Isocyanate and Polyol components shall comply with the supplier's instructions.	Production
	Temperature/Hygrometry				
	General appearance				
	Dimensional				
	Density				
Regulation					
Regulation	Running tests (starting point...) and electric strength	In accordance with the specifications	Each unit	Tests can be performed using signal generator	Production/finished products
Electric Safety					
Heat resistance (for DSWH with mounted heat resistance)	Test according to NF EN 50106	Earth continuity test Electrical strength test Running test	Each unit (except manufacturer specification according to § 4.1.3)		Production/finished products
Electrical components	Visual inspection of the components and assembly	According to bill of material and assembly schemes in the technical file			

2.4.1.7 Control of monitoring and measuring equipment - § 7.6 of standard ISO 9001: 2008

The measurement, inspection and testing equipment likely to have an influence on the tests conducted within the scope of NF Mark certification shall be:

- calibrated or checked at specified intervals or prior to use, based on measurement standards associated with international or national calibration standards (when such standards do not exist, the reference used for calibration shall be recorded)
- calibrated as often as required
- identified in order to determine the validity of the calibration
- protected against adjustments likely to invalidate the measurement result
- protected against damage and deterioration during handling, maintenance and storage

In addition, the manufacturer shall assess and record the validity of previous measurement results when it is determined that equipment not in compliance. The manufacturer must undertake appropriate action on equipment and any product affected. The records of calibration and verification results must be kept.

Control, measurement and testing equipment shall be used so as to ensure that the measurement uncertainty is known and consistent with required skills in measurement.

2.4.1.8 Preservation of product - § 7.5.5 of standard ISO 9001: 2008

The manufacturer shall preserve product conformity during internal operations and during delivery to the intended destination. This preservation shall include identification, handling, packaging, storage and protection. Preservation shall also apply to product components.

Storage

The manufacturer must use designated areas or storage spaces to prevent damage or deterioration of the product pending its use or delivery.

To detect deterioration, the condition of the product in stock shall be valued at appropriate and defined intervals.

2.4.1.9 Control of modification of the conception and development §7.3.7 of standard ISO 9001: 2008

Modifications in the conception and development must be identified and recording must be conserved. Modification must be reviewed, checked and validated, as it fits, and approved before its application.

The review of the modification of the conception and development must include the assessment of the consequence of the modification on components of the products and product already delivered. The recordings of results of the review and all actions needed must be conserved.

2.4.1.10 Continuous improvement

a) Control of nonconforming product - § 8.3 of standard ISO 9001: 2008

The manufacturer shall ensure that any product not in compliance with requirements is identified and controlled to prevent its unintended use or delivery.

The controls and the associated responsibilities and authorities for the treatment of non-compliant products shall be defined in written procedures.

The manufacturer shall deal with a non-compliant product bearing the NF label in one of the following ways:

- conducting actions to eliminate non-compliance
- by authorizing its use, release or acceptance by waiver in this case, the prior agreement of the mandated body must be obtained
- By carrying out actions to prevent its use (scrapping, for example).

The records of the type of non-conformities and any subsequent actions taken, including the waivers obtained, shall be retained.

When a non-conforming product is corrected, it must be retested to demonstrate compliance with requirements.

When a non-conforming product is detected after delivery or after it has been put into service, the manufacturer shall take actions that are adapted to the actual or potential effects of the non-compliance.

b) Corrective action and Preventive action - § 8.5.2 and 8.5.3 of standard ISO 9001: 2008

The manufacturer shall undertake actions to eliminate causes of non-conformities to prevent them from reoccurring. The corrective actions shall be adapted to counter the effects of the non-conformities encountered.

A written procedure must be established to define requirements to:

- review non-conformities (including customer complaints)
- determine the causes of non-conformities
- assess the need to undertake actions to ensure that non-conformities do not recur
- determine and implement the necessary actions
- record the results of the actions implemented
- review the corrective actions implemented

Records showing the claims on certified products and their treatment must be established and kept.

c) Internal audit §8.2.2

The body must performe internal audits on a regular basis in order to point out if the quality management system is:

- In compliance with the quality management systems requirements and the present certification rules,
- Application and updated in the most efficient ways.

Records of the audits and its results must be kept.

2.4.2 For the distributor and its representative.

2.4.2.1 Identification and traceability - § 7.5.3 of standard ISO 9001: 2008

The distributor shall establish and implement the provisions ensuring the identification and traceability of the domestic solar water heaters (CESI) and their components. These provisions shall ensure that the domestic solar water heaters distributed bearing the NF Mark are comprised of components that correspond to models that are actually NF Mark certified.

2.4.2.2 Corrective action - §8.5.2 of standard ISO 9001: 2008

The distributor shall establish and maintain written procedures to implement corrective actions.

The distributor shall implement and record all changes in written procedures resulting from corrective actions.

Corrective action procedures shall include:

- searching for causes of non-compliance relating to the product, and the recording the results of this research,
- determining corrective actions to eliminate the causes of non-conformities,
- the recording and the actual processing of customer complaints and product non-compliance reports,
- Provisions to ensure that corrective action is actually implemented.

Records of complaints relating to certified products and their processing must be established and kept.

2.4.2.3 Purchasing - §7.4 of standard ISO 9001: 2008

The distributor shall establish and maintain up to date written procedures to ensure that the components supplied are in compliance with the specified requirements.

The distributor shall:

- define the specifications of parts to be supplied (and possibly establish specifications with its suppliers),
- define its supplier selection criteria,
- compile and maintain a regularly updated list of its authorised suppliers,
- establish and maintain records relating to the quality of its acceptable suppliers.

Orders shall clearly describe the part ordered (technical specifications, quantities, lead times, ...) provide references to technical characteristics in the specifications and stipulate the request for a certificate of compliance, as required.

The specification must include the following requirements:

The component manufacturer shall establish and maintain written procedures defining the rules adopted to uniquely identify the component during all phases of production (from reception to final product) drawings, markings, labelling and record sheets.

This identification should enable traceability and provide a history of the product.

2.5 Marking

Marking is an integral part of the certification.

Beyond the identification of a certified product and its traceability, the product marking with the NF logo ensure a better protection for the users and allows the defence of the holders against misuse and counterfeit.

Reproduction and affixing AFNOR, AFNOR Certification, and EUROVENT CERTITA CERTIFICATION logos are strictly forbidden without prior approval of these bodies.

2.5.1 References documents

French Consumer Code

The article R 115-2 of the French Consumer Code states:

“When reference is made to certification in advertising, labelling or presentation of any product or in associated commercial documents of any kind, the following information must always be brought to the consumer's or user's attention:

- o the designation or company name of the certifying body or the collective certification mark,*
- o the name of the certification standard used,*
- o the manner in which the certification standard can be consulted or obtained.”*

NF Mark General Rules

The following marking rules should aim at holders in the respect of regulation and NF certification requirements. The NF mark General Rules point out the condition of use, of validity and terms of sanction in case of NF Mark misuse.

Without prejudice of sanctions stipulated in NF Mark General Rules, all false indications of certified characteristics and all fraudulent use of the NF logo put the holder at risk of judicial proceedings for fraud and/or misleading publicity.

Information concerning certified products is available on www.marque-nf.com or www.certita.fr. It includes:

- identification of the products
- the present certification rules
- identification of the holder
- certified characteristics

EUROVENT CERTITA CERTIFICATION provides, on request, information concerning validity of a given certification.

When the holder provides copies of documents of certification, he must reproduce it entirely.

2.5.2 NF logo

The NF logo must ensure the identification of each certified product.

The holder commits to respect the NF mark style guide. The NF logo and its style guide are available from EUROVENT CERTITA CERTIFICATION and on the website www.marque-nf.com “holder area”.

The NF certified product has a designation and a distinct identification from the other non NF certified products.

The holder must affix the NF logo only to tell the difference between the NF certified products and without any existing confusion with others non NF products in particular.

We advise the holder to submit to EUROVENT CERTITA CERTIFICATION all documents in which the NF mark is mentioned.

2.5.3 Marking mode

The present paragraph describes how the NF logo has to be affixed:

In order to comply with the requirements of the article R 115-2 of French Consumer Code, marking must be made as follows:



The NF mark holder can use the old logo (below) until the end of 2014. From January 2015, only the first logo must be used:



Reminder: If the decision has been made to suspend or withdrawal a non-compliant product, the manufacturer must cease all reference to the NF Mark on products, materials and web site.

The dimensions of the marking and the means used are left to the manufacturer's discretion insofar as the information presented remains legible and the respect of the style guide of the NF Mark, available on www.marque-nf.com, in the "mark holder" area.

Once the NF Mark is granted to the applicant, the latter will mention the NF mark in the following documents:

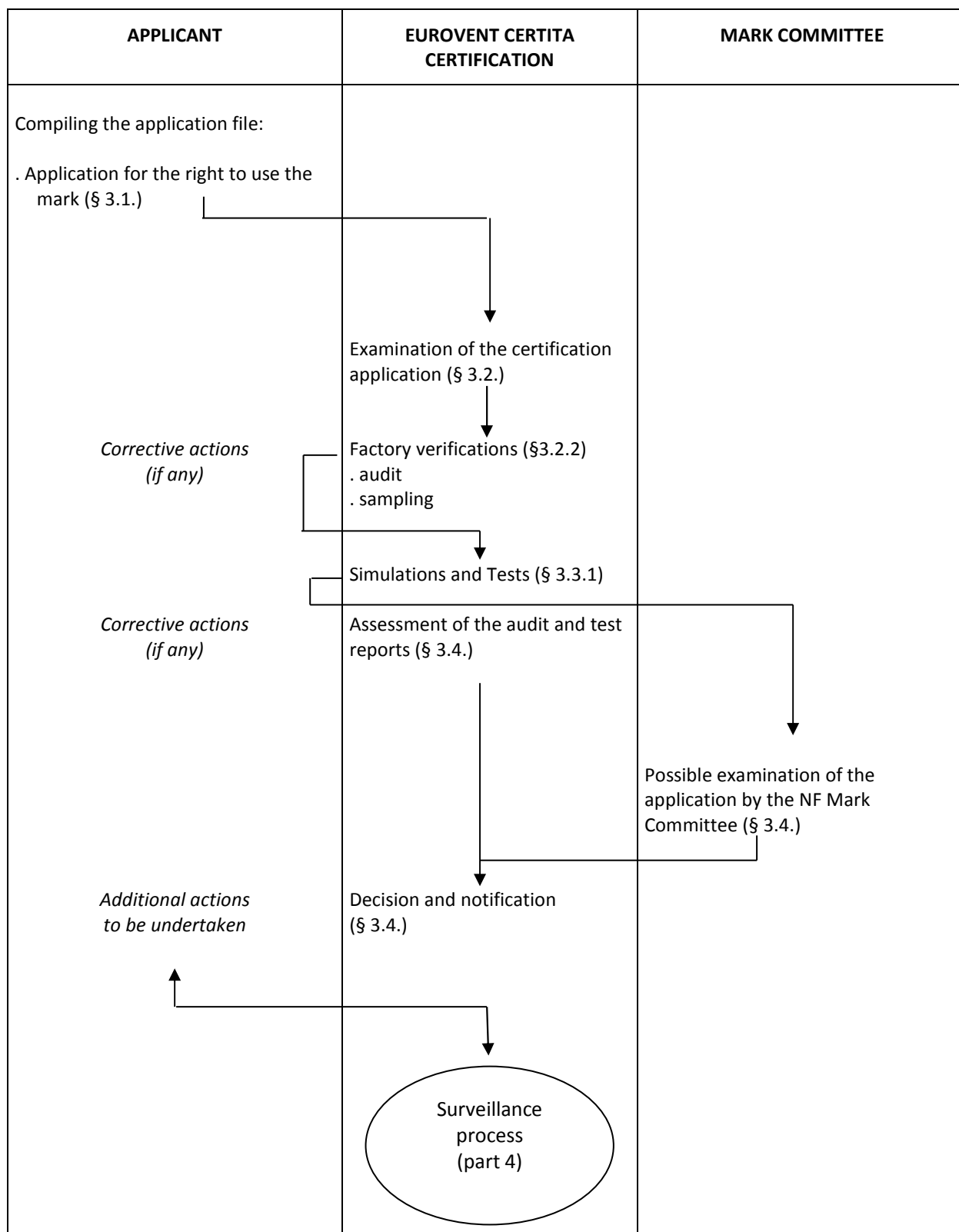
- Installation and user's manual,
- Sales documentations,
- Catalogues and tariffs

References of the NF Mark in sales documentations must be made so there are no confusion between the certified products and other products/

Reproduction of the NF Mark on documentations and ads must be in compliance with the mode described in paragraph 2.5.3

Reproduction of the NF Mark, as described in paragraph 2.5.3, on the used letterhead for the holder's correspondence is strictly forbidden except if the holder has the NF Mark for all of its products.

Part 3 HOW TO OBTAIN CERTIFICATION? – APPLICATION FORM



Any applicant wishing to obtain the right to use the NF Mark on a product must first become familiar with the mark certification rules and declare acceptance.

The application is to be formulated on the applicant's letterhead, in compliance with the model (form No. 1a), and is to be remitted to EUROVENT CERTITA CERTIFICATION.

It stipulates the models and ranges presented for admission.

Vocabulary:

Decision	Description	Type of certificate issued
Admission	Further to an initial certification request for a product covered by the current certification or for a new manufacturing site	First certificate or initial certificate
Extension	Further to a new product certification request for an applicant who is already an NF Mark holder	Modification of the existing certificate or new certificate if the range is different
Maintain	Further to a certification request for a mark and/or a commercial reference different from an NF-certified product	Modification of the existing certificate or new certificate if the distributor is different
Renewal	Publication by CERTITA of certificates arriving at their expiration date	Certificate renewal

-

- Production site:

Location where the domestic solar water heaters (CESI) are assembled, finished and packaged. When all manufacturing operations are not performed at the manufacturing site, the manufacturing site's subcontractor(s) involved in the production of products covered by this certification must be audited.

Generality:

A domestic solar water heater (CESI) consists of the following elements:

- one or more solar panels
- a storage tank
- a control system
- a transfer unit
- a thermostatic mixing valve
- a heat transfer fluid
- connecting lines

The first 6 elements listed above must be supplied by the manufacturer; the heat transfer fluid is supplied by the manufacturer unless the user requests otherwise, in which case the manufacturer shall specify the authorised fluid; the connecting lines may be prescribed by the manufacturer.

A range of domestic solar water heaters (CESI) is comprised exclusively of the following:

- **the same model of collector, built-in or separate, having a unique certificate (CSTBat, Solar Keymark);** the examination of the relevant certificate request may be conducted in parallel with that of the NF CESI application
 They may have the following differences:
 - different aperture area,
 In all cases, the performance characteristics to be considered are those given in the CSTBat or Solar Keymark certificates relative to this/these collector(s).

- **have the same solar loop hydraulic principle, i.e. with the following elements identical:**
 - types of heat transfer fluid: system water or other fluid characterised by its density ,heat capacity and viscosity
 - exchanger technology
 - functional diagrams of the solar and auxiliary loops

- **the same solar loop control principle (parameters considered), i.e. with the following elements identical:**
 - type of control (simple differential or other)
 - control parameters (temperature thresholds, algorithm)
 - temperature sensor (Pt1000...)
 - control reference
 - position of sensors (their vertical position in the tank must not vary by more than 10 % around the average position)

If a system is intended to be equipped with several control systems, it forms a single range if:

 - the various control systems are all different from a basic control system exclusively by the addition of the auxiliary function (remote communication, clock, ...), not modifying the control parameters (T, deviation, hysteresis algorithm)
 - the control taken into account is the basic control.

- **the same tank model, i.e. having the following identical elements:**
 - brand or trade reference corresponding to an identical production,
 - position (horizontal or vertical),
 - geometry (cylindrical, spherical,...),
 - relative position and type (low, high or middle) of the solar exchanger and auxiliary exchanger,
 - tank material,
 - heat losses: cooling constants (Wh/l/K/day not deviating more than 40 %)
 - internal coating

Two tanks, considered as two copies of the same range, can have the following differences:

 - dimensions, no specific criteria relating to permissible variations of the height/diameter ratio, treated on a case by case basis as necessary
 - the number of available auxiliary system types, if the other characteristics are identical: a range is defined for a given type of auxiliary (hydraulic or electric) heating. During the tests a tank with mixed auxiliary heat can be defined with respect to its electric auxiliary on the one hand, and to its hydraulic auxiliary on the other hand.
For example: (a tank with mixed auxiliary source whose electric auxiliary heating is defined belongs to the same range of tank as tanks with electrically auxiliary heating, other things being equal.

- **transfer units having the same technical characteristics; the characteristics of the pump and surge tank can be adapted to the size of the domestic solar water heater (CESI).**

The close-coupled system which the collectors cannot be certified separately is not concerned by the notion of range.

In support of its application, the applicant shall submit a file for each manufacturing site producing products for which mark certification is sought. The documents or information required are specified in § 3.1.2. below.

The application can be accepted only if the checks provided for in Part 2 of these rules are regularly conducted for the products considered for at least three months.

The application must be accompanied by payment of the corresponding fees.
If the applicant does not belong to a member country of the European Economic Area, the application must be submitted through a mandated body.

3.1 Submission of an application file

The applicant, in support of its application file, commits to:

- 1- to agree and respect the conditions lay down et described in the certification rules which applies to the concerned products and, specifically:
 - apply to certification of products in compliance with current regulations
 - set out the necessary changes by the evolution of the certification rules which are sent by the certification body
 - use the NF mark in the defined conditions by the certification rules and only for certified products
 - lead to decisions taken by the certification body as part of the certification (especially defined and implement corrective actions following an observed non-conformity or apply a sanction);
- 2- to pay certification fees off (administration, audit and potential tests) in compliance with the applicable tariffs,
- 3- not to certified counterfeit products
- 4- to take necessary provision to:
 - audit, including supplying documents in order to inspect it such as documentation and records, access to the equipment, sites, workforce and concerned subcontractor,
 - participation of outsider observers or not during the audit, if need be,
- 5- to instruct and record all claims
 - provide the certification body and the auditors with these records,
 - take appropriate actions in reference to these reclamations and observed flaws in the products which have consequence on the conformity of the requirements of the certification,
 - gather information about undertaken actions,
- 6- to keep the trade mark of the displayed products to certified products in compliance with the present certification rules only,
- 7- to apply efficiently the internal check system of the production settled to comply with the requirements of the certification rules,
- 8- to proceed the checks which falls to the applicant in order to the maintain of the right of use can be granted,
- 9- to inform the certification body of any modification made on the NF mark application file (especially any change made on the products, related to the application) without delay.
- 10- To inform the certification body of any permanent or temporary cessation of the production, related to the certification,
- 11- To state and communicate on the certification in compliance with the scope of the certification,

- 12- Not to use the certification of its products in way which can be prejudicial to the certification rules, either make a statement on the certification of its products which the certification body could consider as misleading or non-authorised, especially:
 - Not to use the NF mark in an improper or non-compliant way of the certification rules,
 - Not to use the logo of the certification body
- 13- In case of suspension, withdrawal or at the end of the certification, stop to use all communication means which refer to its products and fulfil all requirements laid down by the certification rules and fulfil all required measures;
- 14- To provide the certification body, on request, all printed ads and catalogues which refer to the NF Mark
- 15- If the applicant provides copies of documents related to the certification to someone, the holder has to reproduce it entirely or in the way described in the certification rules;
- 16- By referring to the certification of its products in communications supports such as documents, brochure or ads, the applicant has to comply to the certification rules;
- 17- To ensure that all safety provisions regarding the work conditions, sites and equipment are in compliance with the applicable rules of the work space.

Failing that respect of these rules, the review of the application file can be stopped.

Especially, it is not possible in any way to refer to the right of use NF Mark before its acquisition or to certify counterfeit products.

Failing that respects of these rules, the holder risks the suspension or the withdrawal of its certification.

The application file has to comply with the conditions and models of part 7.

Upon received of the application file, it will be processed as follows:

- Instruction/admissibility of the application file
- Settlement of checks
- Evaluation and decision

3.2 Process and admissibility of the application file

Upon received of the application file, EUROVENT CERTITA CERTIFICATION checks that:

- The applicant provides all the necessary documents
- Elements included in technical file comply with the requirements of the certification rules

All documents must be submitted in French or English, except documents intended for the installer and the user which must be in French.

- ✓ Standard application for admission reproduced on the manufacturer's letterhead, and established according to the enclosed model (Form No. 1a with its appendix in the case of applications from outside the European Economic Area), including:
- ✓ general information sheet (form 1b)
- ✓ list of models for which the NF Mark is requested (form 1c -1 and/or 1c-2)

- ✓ file on initial tests including the following elements:
 - certificates (Solar Keymark or CSTBat) of the collectors and tests reports in compliance with EN 12 975
 - .VES 40 report

(Module of calculation downloadable on CSTB website)
http://enr.cstb.fr/webzine/preview.asp?id_une=161

 - Close-coupled – tests reports of mechanical load according to § 5.9 of EN 12975-2 made by an agreed laboratory (q.v. Part 5), collectors must be in accordance with § 5.3.8 of EN 12975-1
 - declarations of CE compliance in reference to the electrical safety and electromagnetic compatibility directives, accompanied by electrical safety testing reports as per EN 60335-1 and EN 60335-2-21 (or EN 60335-2-73 or EN 60335-2-102),
 - all other information required to perform tests

- ✓ technical file including the following documents
 - a dimensioned drawing of all the products,
 - exploded-view of each model
 - data sheet including the characteristics of the equipment and/or accessories presented and the different models,
 - description of the heat transfer fluid(s): commercial brand, name of the manufacturer, data sheet (density, heat capacity...), material safety data sheet, and compliance to hygiene and health standards,
 - user manual accompanying the apparatus and/or the accessories,
 - the assembly instructions intended for the installer (§ 4.6.2 of EN 12976-1)
 - the assembly instructions intended for the installer (§ 4.6.2 of EN 12976-1)
 - identification plate of the DSWH
 - parts list of the component parts of each apparatus presented, specifying whether these parts are produced by the manufacturer or subcontractors,
 - sales catalogue of products and/or accessories manufactured, distribution method(s),

- ✓ Quality file including the following documents:
 - presentation of the production unit: location, other main products manufactured in the unit, general plant organisation, subcontracting,
 - manual of quality plan,
 - description of the manufacturing process and associated inspection plan (measurement accuracy and tests performed and their frequency),
 - certificate of compliance of the quality management system (if any),
 - general organisation chart of the plant and organisation chart of the department in charge of quality,
 - description of the various processes with a definition of inputs, outputs, activities included in each process in reference to standard ISO 9001 (2008)...

3.3 Checking mode

The application and the attached file are sent to EUROVENT CERTITA CERTIFICATION are subject to an initial screening. EUROVENT CERTITA CERTIFICATION ensures to have all the means to proceed the examination of the application and may ask the applicant adding information for the admissibility if the application file is not complete.

If certain elements do not meet the requirements of the certification rules, EUROVENT CERTITA CERTIFICATION shall inform the applicant and conduct the audit only upon presentation of a new file that is deemed fully compliant with the requirements of the NF Mark.

Once the application is admissible, EUROVENT CERTITA CERTIFICATION proceeds to controls and inform the applicant the organisation methods (auditor, length of the audits, audited sites, laboratories, sampled products...)

Controls made as part of NF mark are:

- tests on products
- Performed audits (manufacturing process, distribution center...)

3.3.1 Simulations, tests and extrapolations

The tests, simulations and extrapolation calculations to be performed by the independent laboratory (see list of laboratories in Part 5) are those defined in this part concerning the models presented for admission.

The test reports prepared by laboratories other than those listed in Part 5 may be considered in the scope of the examination of an application on a case by case basis taking into account the laboratory's accreditation in relation to the relevant testing standards.

The applicant shall inform EUROVENT CERTITA CERTIFICATION of any corrective actions taken following the non-conformities found.

The minimum performance thresholds of the domestic solar water heaters shall be established shortly.

The domestic solar water heaters covered by these rules shall be supplied with all documents listed in section 4.6 of EN 12976-1.

These documents shall include the following:

- the assembly instructions intended for the installer (§ 4.6.2 of EN 12976-1)
- the operating instructions intended for the user (§ 4.6.3 of EN 12976-1)

Case of remote-storage domestic solar water heater: collectors must have a CSTBat or Solar Keymark certification.

Case of close-coupled domestic solar water heaters:

- Collectors must be in accordance with § 5.3.8 of EN 12975-1 relative to the test of mechanical load, this conformity in being proved by a test report according to § 5.9 of EN 12975-2 made by an agreed laboratory (q.v. Part 5)

The thermal performance characteristics of a range of domestic solar water heaters (DSWH) are determined in the following manner:

- By testing one (or several) reference models and extrapolating the results to the other models in the range.
- Whereas the case and as an option, by simulation before the end of the test program.

3.3.1.1 Determination of thermal performance characteristics through simulation:

Pure simulation is conducted for all models of the range concerned in compliance with standard NF EN 15316-4-3:2007 (§ 6.3 Method B).

a) Individual solar water heater simulation parameters:

The steps and the input parameters for calculating the performance regarding the standard NF EN 15316-4-3: 2007 (§6.3 Method B) are as follows:

Simulation steps		Component	Value
Step 1	Selection of the simulation module for assembly of domestic solar water heater components		
Step 2	Selecting the solar system	System without auxiliary system	
		System with built-in auxiliary system	
Step 3		Weather station	Nice
Step 4	Domestic hot water requirements		
		Daily domestic hot water requirements (litres)	Nominal volume of the tank 6 hours after the sun has past its zenith
		Domestic hot water setpoint temperature	45 °C
Step 5	Solar collector	Type of solar collector	Solar collector as per Avis Technique
		Thermal performance characteristics of the solar collector (n_0, a_1, a_2)	As per Avis Technique or Solar Keymark with $a_1 < 5 \text{ W/m}^2 \cdot \text{K}$ and $a_2 < 0.04 \text{ W/m}^2 \cdot \text{K}^2$
		Aperture area of collector(s) (A)	As per domestic solar water heater (CESI) Avis Technique or Solar Keymark
		Inclination	45 °
		Orientation	South
	Solar loop	Heat loss coefficient	Default value, as per formulas given in EN 15316-4-3: $U_{loop} = a_1 + (a_2 * 40) + U_{loop,p}/A$ with $U_{loop,p} = 5 + 0.5A$ (A= aperture area of collector(s))
		Loop efficiency factor n_{loop} or loop efficiency	Set data: 0.8
	Solar storage tank:		Rated tank volume
		Tank heat loss coefficient (W/K)	Default value: as per formula in EN 15316-4-3: $U_{st} = 0.16 * V_{sol}^{0.5}$ Or manufacturer data: based on a test report according to EN 12977-3 or EN 12897 provided during the investigation
		Tank position	Unheated room
	Auxiliary heating	Auxiliary heating management	As per domestic solar water heater (CESI) Avis Technique
			Or to be calculated
			Define permanent or night time supplement
	Auxiliary	Circulating pump	value declared by the manufacturer

b) Results obtained for the simulated domestic solar water heater:

Based on the terminology of standards of the NF EN 15316-4-3 series, the results obtained following the simulation are:

- $QW_{,sol,us}$: power requirements for heating domestic water (kWh/year)
- $QW_{,sol,out}$: energy supplied by the solar system (kWh/year)
- $QW_{,auxiliary}$: energy supplied by the auxiliary system (kWh/year) (thermal energy)

- Energy efficiency = $QW_{,sol,us} / (QW_{,auxiliary} + Q_{aux})$
- Q_{aux} = electric power consumed by the pump, based on:
 - o nominal power consumption P at maximum speed, declared by the manufacturer as per NF EN 1151-1 or equivalent
 - o and an annual operating time of 2,000 hours, in compliance with § 4.6.3.h3 of NF EN 12976-1.

For a system with auxiliary heating the energy efficiency is the pertinent calculated value, for a domestic solar water heater it is $QW_{sol,out}$

3.3.1.2 Determination of the thermal performance and characteristics of domestic solar water heaters by testing:

This method consists of performing tests in compliance with standards ISO 9459-5 and NF EN 12976-2, on one or more reference domestic solar water heaters depending on the extent of the product range. The results obtained are then used to extrapolate, through simulation, to the other domestic solar water heaters of the range. In the case of systems with auxiliary heating, for a given range, the performance characteristics are determined by the type of auxiliary heating selected by the applicant and stipulated in its application.

a) Definition of the reference system(s) of the domestic solar water heater range:

Definition of a reference tank

The reference tank is that of median volume in relation to the range. This tank can cover tanks having a volume of +/- 50 % in relation to the volume of the reference tank.

If a single tank does not cover the entire range, as many tanks as needed shall be used.

However, in the case of tanks used for preheating applications, an examination on a case-by-case basis may allow you to reduce the number of tanks to be tested, as determined by the above rule.

Definition of the number of reference collectors

The aperture area S of reference collectors for the reference tank is the value for which ($V_{reference\ tank} / S_{reference\ collectors}$) is the closest to (V/S) median; it allows coverage of the collectors corresponding to $(V/S)_{median} \pm 50\%$.

For each reference tank, the collectors of the systems tested are selected from those that may be associated with it.

Definition of auxiliary system types

The reference system is defined so as to cover the type of auxiliary heating system in the manufacturer's application.

b) Determination of thermal performance characteristics:

For the reference system

The tests and the calculation of performance characteristics from the test results are conducted on the reference systems in compliance with standards ISO 9459-5 and NF EN 12976-2.

This calculation is performed based on the following assumptions:

- **reference stations: Nice and 4 reference stations mentioned by standards ISO 9459-5 and NF EN 12976-2**
- **Draw-off profile: the volume of the tank is completely drawn 6 hours after the sun has past its zenith**

The results provided by the calculation are determined using the terminology of standard NF EN 15316-4-3:

- $Q_{W,sol,us}$: power requirements for heating domestic water (kWh/year)
- $Q_{W,sol,out}$: energy supplied by the solar system (kWh/year)
- $Q_{W,auxiliary}$: energy supplied by the auxiliary system (kWh/year) (thermal energy)

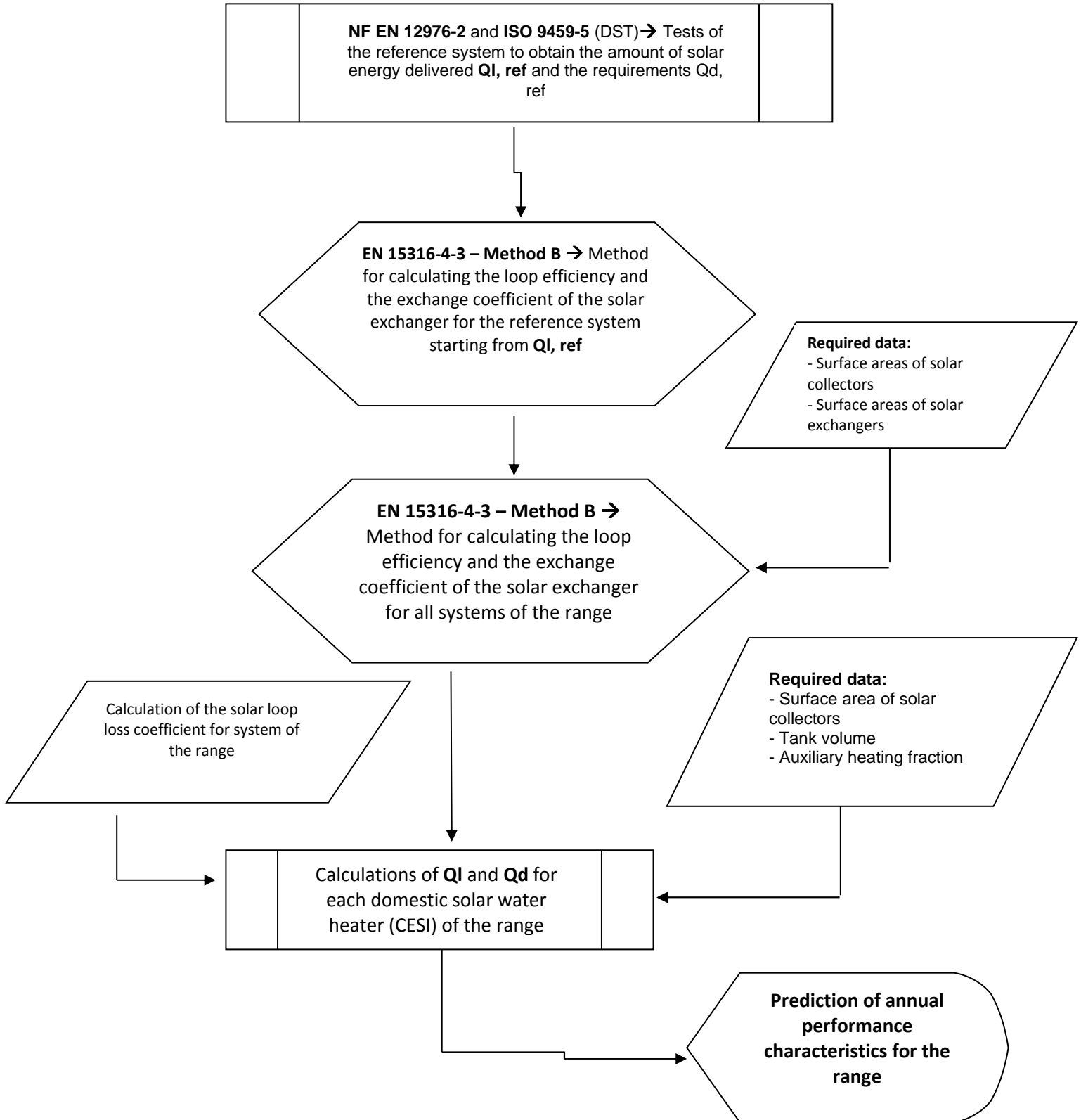
$$\text{Energy efficiency} = Q_{W,sol,us} / (Q_{W,auxiliary} + Q_{aux})$$

For a system with auxiliary heating the energy efficiency is the pertinent calculated value, for a domestic solar water heater it is $Q_{W,sol,out}$

Extrapolation to the range:

The thermal performance characteristics for a range of domestic solar water heaters are determined by an extrapolation method based on the method B of standard EN 15316-4-3 (for example, using the SOLEN software developed by the CSTB and available as freeware on their web site). The principle used involves determining the loop efficiency to be used in the software to determine the performance characteristics of the entire range.

- Step 1: Determination of the efficiency of the reference system's solar loop based on tests results by minimizing the deviation between $Q_{w,sol,out,EN15316}$ and $Q_{w,sol,out,essai\ ref}$. When there are several reference models, loop efficiency is calculated as the average of the loop efficiencies of the various reference models. The precision sought for the loop efficiency is 2 decimal places.
- Step 2: Extrapolation of the performances to the remaining part of the range : The solar loops' efficiencies are calculated for each system of the range which enables the calculation of the system performance using extrapolation following method B of standard NF EN 15316-4-3 in accordance with the assumptions of 2.1.3.1a. The diagram below illustrates the method used for this extrapolation phase:



c) Identification of a range's parameters:

The results of the performance tests on the reference system are exploited in accordance with § 7 of standard ISO 9459-5 (DST (Dynamic Testing System) method) to identify the following parameters:

Symbol	Unit	Designation
A_C^*	[m ²]	Effective collector loop area
u_C^*	[Wm ⁻² K ⁻¹]	Heat loss coefficient of the collector
U_S	[WK ⁻¹]	Heat loss coefficient of the storage tank
C_S	[MJK ⁻¹]	Heat capacity of the storage tank
f_{aux}	N/A	Fraction of the volume of the storage tank used for auxiliary heating

Extrapolation of the parameters identified to the entire range is performed according to the process represented in the diagram below.

The data and identified parameters are processed with software ("In situ" or equivalent); the same software shall be used for all steps of the process.

The process takes place in two phases:

Phase 1

A phase designed to check the consistency of test data obtained on the reference system with the extrapolation method:

The results obtained, derived from the prediction of annual performance characteristics and using the parameters identified above, are compared with those obtained by setting the values of A_C^* and u_C^* equal to the values calculated using the following equations:

$$A_C^* = F''' \cdot \eta_{0a} \cdot K_{50^\circ} \cdot A_a \text{ with: } A_a: \text{aperture area of the collector (m}^2\text{)}$$

η_{0a} : zero-loss collector efficiency

K_{50° : incidence angle modifier at 50° incident angle

F''' : thermal exchange coefficient

$$F''' \text{ is defined by: } F''' = 1 - \Delta\eta_h \text{ with } \Delta\eta_h = \eta_{0a} \cdot K_{50^\circ} \cdot (A_a \cdot a_c + U_{loop}) / UA$$

where: $a_c = a_{1a} + a_{2a} \cdot 40 \text{ W}/(\text{K} \cdot \text{m}^2)$ – heat loss coefficient of the collector at T_m -

$T_a = 40\text{K}$ ($T_a = \text{T}^\circ\text{C}$ air, $T_m = \text{average T}^\circ\text{C}$ of the collector)

a_{1a} : first-order loss coefficient (W/(Km²))

a_{2a} : second-order loss coefficient (W/(K²m²))

$UA = U \cdot A$ = thermal exchange coefficient of the solar exchanger (W/K)

U_{loop} = heat loss coefficient of the collector loop (W/K)

$$U_C^* = (a_c + U_{loop} / A_a) / (\eta_{0a} \cdot K_{50^\circ})$$

If the difference between the results of the performance prediction is less than 15 %, the extrapolation method is applicable and the process is continued according to 2. Otherwise, it does not apply and the test data must be checked and another test on the reference system is performed as required.

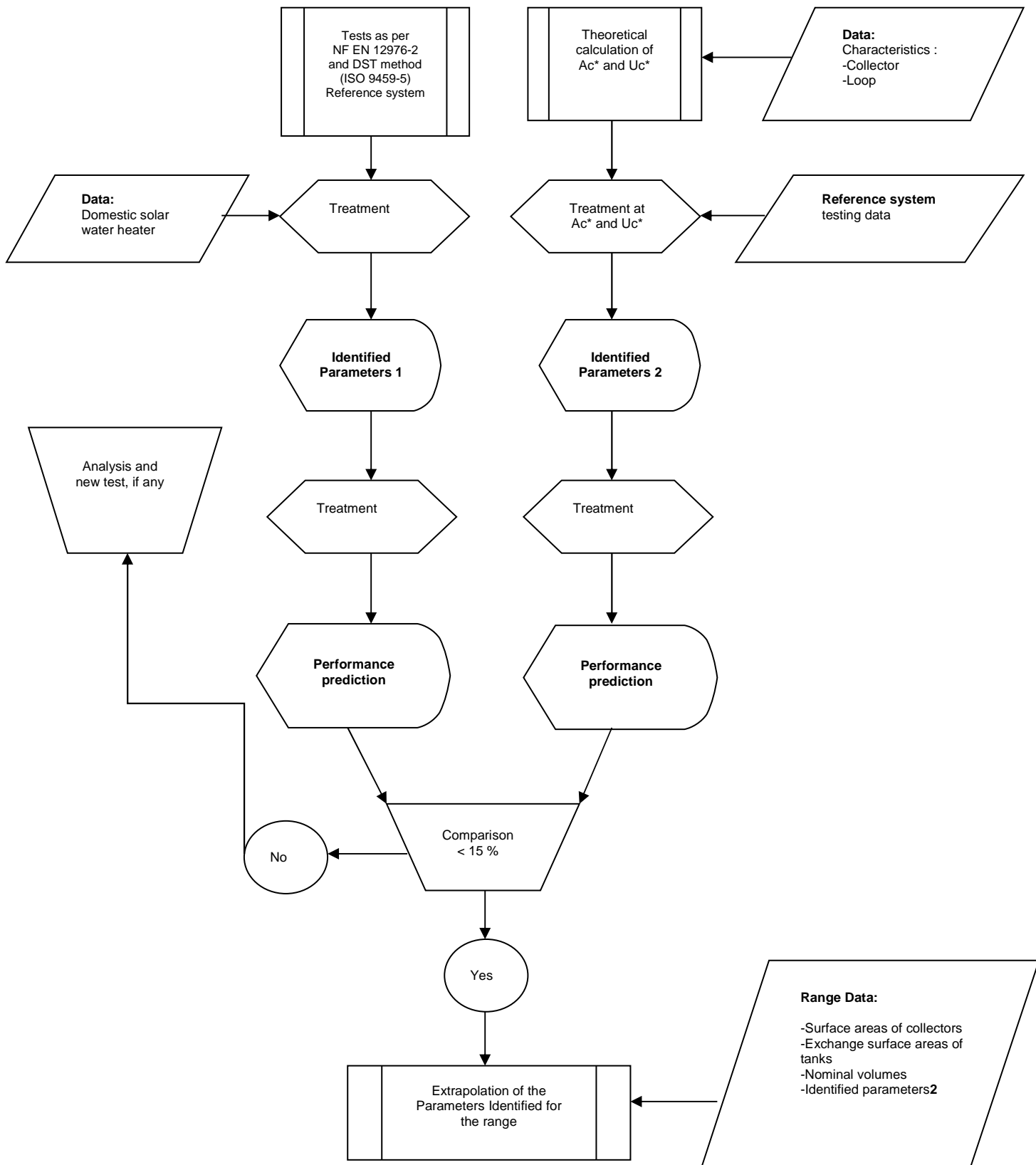
Phase 2

Strictly speaking, an extrapolation phase where the identified parameters A_c^* and U_c^* are determined for each system of the range considered using the equations above and the other parameters identified are calculated according to the following equations from the values of the identified parameters of the reference system:

$U_s = U_{sref} \cdot A_{storage} / A_{storage\ ref}$ where $A_{storage}$ designates the surface area of the storage tank and the index ref refers to the reference system

$C_s = C_{sref} \cdot V / V_{ref}$ where V is the volume of the storage tank

$f_{aux} = f_{aux\ ref}$



3.3.2 Audits

The audit performed by an auditor whose qualification was granted by EUROVENT CERTITA CERTIFICATION, aims to ensure the implemented provisions by the applicant in the conception/manufacturing/selling process, comply to the requirements described in part 2 of this certification rules.

An observer, bounded to the respect of confidentiality (this observer is chosen by EUROVENT CERTITA CERTIFICATION by standards and agreements which he has signed), can take part to the audit. The holder is systematically informed by EUROVENT CERTITA CERTIFICATION of the presence of this observer before the audit.

EUROVENT CERTITA CERTIFICATION might suggest the applicant the involvement of another observer.

The process of the application file includes a preliminary audit:

- Of the fabrication plant where the soon-to-be certified product are assembled
- Of the fabrication plant of the principal component: collectors (if not certified), storage tank, boilers if need be.
- the authorise representative (distributor), if need be

In the case where the applicant outsources a part of its activity, on the basis of the same certification, EUROVENT CERTITA CERTIFICATION reserves the right to send a qualified auditor to perform an audit at the subcontractors' manufacturing plants.

The auditor(s):

- Conduct(s) an audit designed to verify the existence and implementation of the quality provisions established by the manufacturer and their compliance with the requirements set out in Part 2 of these rules. In the case of close-coupled systems and, due to the lack of CSTBat or Solar Keymark certification of the collector, the corresponding internal control requirements are checked during the audit. This audit is carried out according to the general principles defined by standard NF ISO 19011 regarding the quality audit, in particular the scope of the audit and the details of the procedures are stipulated in an audit plan sent to the company before the audit.
- Verify(ies) that the checks required in Part 2 have been conducted regularly for at least for the last 3 months.

With the manufacturer's agreement, the auditor may make a copy any document he/she considers necessary. The duration of the site audit is 1 to 3 days (including audit preparation, the audit itself and report writing).

All means (sites, plants, equipment) allowing the NF auditor to perform his/her mission have to be made available, as well as the skilled workforce to implement it.

Following the audit, the lead auditor establishes an audit report detailing the effectiveness of the quality organisation implemented the strengths, weaknesses and an explicit statement of non-conformities. It also includes a sample sheet.

The lead auditor establishes 2 copies of this report and sends one to CERTITA. The applicant is given the original. The applicant shall inform CERTITA of any corrective actions taken following the non-conformities observed

The audit reports prepared by the quality management system certifying body must be sent to the auditor or consulted on site.

Cases of other applications

Extension request

NF-certified products shall comply with the technical file submitted with the application for acceptance, and shall take into account any observation made when the right to use the Mark was granted.

Consequently, any modification (including modifications concerning the manufacturing and inspection resources and the quality assurance system that could have a determining effect on production conformity) that the licensee wishes to make on accepted products must also be communicated to EUROVENT CERTITA CERTIFICATION in writing.

An application for a new model and/or a new range takes the form of an application for extension of the right to use the NF Mark (forms 1a and 1c defined in Part 3 and updating of the file).

Following examination of the application and the corresponding file, EUROVENT CERTITA CERTIFICATION determines which verifications and tests are to be conducted, if any, and inform the applicant of acceptance "as is", preliminary inspections or referral to the Mark Committee.

The samples required for carrying out tests are sent by the holder and under its responsibility, to the independent laboratory charged with carrying out the tests. They must be marked in a way that allows later authentication and be accompanied by information allowing the material batches used for their manufacture to be identified.

Application for distributors

The right to use the NF Mark awarded to a product under a given designation or brand is not automatically extended to products which are similar and of the same origin, sold under a different name or brand.

The procedure which allows this involves the application to maintain the right to use the NF Mark.

A holder of the NF Mark wanting to market this product through a distributor and under the commercial name of the latter must apply to maintain the right to use the NF Mark using the attached form.

This application must be countersigned by the distributor.

3.4 Evaluation and decision

EUROVENT CERTITA CERTIFICATION evaluates the reports intended for the applicant in compliance the applicable procedure.

If need be, in each report, EUROVENT CERTITA CERTIFICATIN asks the applicant to answer the non-conformities observed during the audit within a certain time limit.

For each non-conformity, the applicant must provide the actions implemented with a setup time.

EUROVENT CERTITA CERTIFICATION analyses the suitability of the given answer and can asks the performance of a complementary audit in order to check the implementation of the corrective action plan (complete or partial audit with or without tests).

If needed, EUROVENT CERTITA CERTIFICATION can present to the Special Committee (see part 5) all the evaluation results.

The documents studied during the Special Committee meeting have to be presented anonymously.

Given the results obtained during the process of the application and the potential propositions of the Special Committee, EUROVENT CERTITA CERTIFICATION notifies to the applicant on of this decision:

- Approval of certification
- Denial of certification

A decision may be deferred in order to further investigate the application.

In compliance with article 12 General Rules of the NF Mark, the applicant may contest the decision.

Once the approval of certification is given, AFNOR Certification granted the right of use of the NF Mark, and EUROVENT CERTITA CERTIFICATION sent to the applicant – which becomes holder – the NF certificate and/or the letter which notifies the decision.

When the right to use the NF Mark is granted, its beneficiary is referred to as the "holder". Maintaining this right is subject to the results of the verifications defined in Part 4.

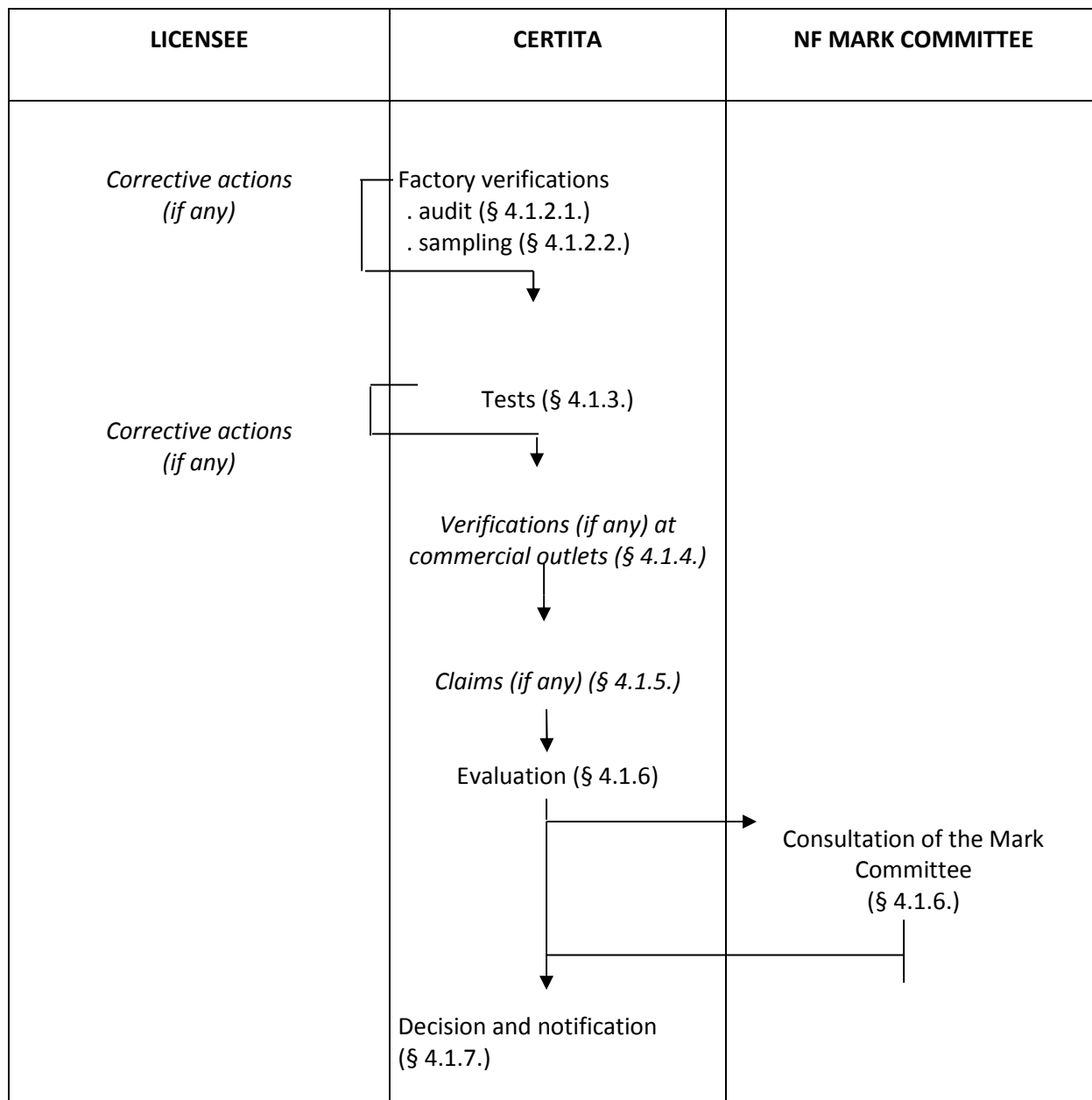
Exercising the right to use the Mark shall be strictly limited to products for which it has been granted, i.e. duly defined products produced in duly defined plants, and manufactured in the conditions stipulated in these Rules.

The granting of the right of use cannot be substituted the responsibility of EUROVENT CERTITA CERTIFICATION to whose legally falls to the company holder of the right of use of the NF Mark.

Certification communication methods are described in part 2.5 of the present certification rules.

PART 4 CERTIFIED PRODUCT SURVEILLANCE PROCESS

A follow-up of certified products is made by EUROVENT CERTITA CERTIFICATION as soon as the right of use of the NF mark is granted as shown on the following flowchart:



During all the period of the certification, the holder must:

- Respect the requirements and the marking methods described in part 2,
- Update its certification application using models provided in part 7,
- Inform systematically EUROVENT CERTITA CERTIFICATION of any changes of a characteristic of a certified products, ad/or its organisation which could have an impact on the certification.

Besides, EUROVENT CERTITA CERTIFICATION reserves the right to proceed of all necessary checks (audit, tests, and verifications) following:

- A modification regarding certified product or the quality organisation of the manufacturing plants (fabrication plants, fabricants plants of subcontractors...)
- Claims, appeals, disputes... related to the use of the NF mark and known by EUROVENT CERTITA CERTIFICATION

4.1 Surveillance methods

Follow-up of certified products includes inspections, analysis or tests on products and audits at manufacturing and or selling plants.

It also includes on the surveillance of the right of use of the mark on all communication means.

- Follow-up methods depend on decisions taken following the previous checks
- Potential lighter process described in §3.3.2

The examinations carried out primarily concern any modifications made since the previous audit and that affect manufacturing, inspection methods or any modification of the quality management system.

During each audit, a quality audit is carried out according to the general principles defined by standard ISO 19011 (in particular, the scope of the audit and the details of the procedures are stipulated in an audit plan sent to the company before the audit begins). In the case of close-coupled systems and, due to the lack of CSTBat or Solar Keymark certification of the collector, the corresponding internal control requirements are checked during the audit.

Furthermore, every one or two years, depending on the ranges admitted (see § 4.1.2.2) a sample of products is taken from stock (or failing this, during the manufacturing process) for tests at the Mark laboratory in order to validate the results obtained by the manufacturer (see § 4.1.1).

During the audit, the auditor may have compliance tests conducted on admitted products, in his/her presence, in order to verify the conditions under which inspections are carried out by the manufacturer. Preferably, these tests are carried out on the type sampled for tests in the Mark laboratory.

With the manufacturer's agreement, the auditor may copy any document he/she considers necessary.

4.1.1 Tests on certified product

Verification tests of certified performance characteristics are made on DSWH sampled during the (described) below and performed by Mark laboratories (see Part 5).

Sampling:

Samplings are based on a model of DSWH tested during the admission tests.

Up to 5 certified ranges, a sample is taken every 2 years.

Beyond 5 certified ranges, a sample is taken of a model on a yearly basis.

Samplings must be accompanied by information which allows the manufacturing batch to be identified.

They are marked by the auditor and sent within 15 days by the manufacturer, under its responsibility, to the independent laboratory in charge of carrying out the tests.

A sheet listing the samples taken is established on site and submitted to the manufacturer. It is recognized that in the event these samples cannot be taken, the manufacturer shall send the samples required by the auditor to the Mark's laboratory within the prescribed deadlines.

Verification testing programme:

The model sampled is tested according to the S-Store sequence of § 6.3.5 of ISO 9459-5. This sequence is carried out using In Situ software by integrating the results of admission tests of the other sequences.

If, for a given model, the recalculated values of the thermal performance characteristics differ from the reference values by more than 10 %, the mandated body may conduct a full test in accordance with the requirements specified in Part 2 of these rules.

Electrical safety: if the holder chooses not to perform unitary testing of the electric hot water tanks stipulated in § 2.2.1, electrical safety tests are performed by the Mark laboratory on the sampled product.

The licensee is sent a test report on the samples taken during the audit.

The licensee shall inform EUROVENT CERTITA CERTIFICATION of any corrective actions adopted following the detection of non-conformities.

Based on the conclusions of the follow-up audit and findings established for this occasion, EUROVENT CERTITA CERTIFICATION may have the Mark laboratories perform additional tests to verify product compliance.

Verification a commercial outlets

In addition to the previous measures, checks can be carried out on samples taken from commercial outlets at CERTITA's recommendation. The results are sent to the licensee concerned.

4.1.2 Audit of manufacturing plant

The audit is performed in compliance with the conditions described in 3.3.2

a) Case of companies with a certified quality management system

If the conformity of the quality management system has been recognised by certification awarded by an organisation meeting the requirements of standard NF ISO/IEC 17021 and recognised by AFNOR Certification or EUROVENT CERTITA CERTIFICATION, the verification of the quality management system is reduced: the duration of the audit is adjusted.

-

However, it includes obligatory verification of the special requirements imposed by the NF Mark (see § 2.2.2., part 2).

The general requirements (§ 2.2.1. part 2) can be verified during various annual follow-up audits by sampling.

The audit reports prepared by the quality management system certifying body must be sent to the auditor or consulted on site.

The length of the site audit is 1 to 2 days (including audit preparation, the audit itself and report writing).

b) Case of companies without a certified quality management system

Verification of the quality management measures must include, during each audit, verification that the specific requirements of the NF Mark (§ 2.2.2. Part 2) and the following chapters of standard NF EN ISO 9001 (2008), are observed, through the process defined by the manufacturer:

-

- 7.5.3. Identification and traceability,
- 7.5.4. Preservation of product,
- 7.6. Control of monitoring and measuring equipment,
- 8.2.4. Product monitoring and measurement,
- 8.3. Control of nonconforming product,
- 8.5.2. Corrective action.

The other processes (and chapters of the standard) are verified during the various annual follow-up audits (in alternation).

In this case, the duration of the site audit is 1.5 to 3 days (including audit preparation, the audit itself and report writing).

At the end of the audit, the lead auditor prepares an audit report drawing special attention to the effectiveness of the quality system set up, the strong points, weak points and a commented report of non-conformities. It also includes the report of tests carried out during the audit and the sampling sheet.

If tests are carried out during the audit, the test report and the sampling sheet must be attached to this report.

The lead auditor establishes 2 copies of this report and sends one to EUROVENT CERTITA CERTIFICATION. He/she gives the original copy to the licensee.

The licensee shall inform EUROVENT CERTITA CERTIFICATION of any corrective actions adopted following the detection of non-conformities.

4.2 Evaluation and decision

Evaluation methods are identical to those described in part 3 (§3.4)

Based on all inspection results EUROVENT CERTITA CERTIFICATION can decide:

- To renew the certification. This renewal may include comments or a request for corrective action, if necessary
- To renew the certification with some warnings and with or without increased inspections
- To suspend or withdraw of the right to use
- To proceed to additional inspection or verification before giving a decision

In case of maintenance of the right of use, AFNOR Certification maintains the right of use of the NF mark.

In case of suspension or withdrawal of the certification, AFNOR Certification suspends or withdraws the right of use of the NF mark.

EUROVENT CERTITA CERTIFICATION sends a letter which notifies the decision.

The sanction is executory once the letter of notification is received.

The holder must bear the adding verification fees caused by the sanction

The holders are responsible of the right of use of the NF mark related to the concerned product and commit to implement measures which ensue from the suspension or the withdrawal of the right of use, taken in compliance with the present certification rules.

All suspension or withdrawal of the right of use of the NF mark result from a ban using the NF and to refer to it on all new production. For production prior to the suspension or withdrawal of the right of use, EUROVENT CERTITA CERTIFICATION can, on a case of case basis, take specific measures.

The holder can contest the decision taken by sending a request in compliance with the General Rules of the NF Mark.

4.3 Declaration of modifications

Any modification to the original NF mark granting conditions must be communicated to EUROVENT CERTITA CERTIFICATION in writing.

Non-compliance of this requirement noticed by EUROVENT CERTITA CERTIFICATION can lead to a suspension, even a withdrawal of the right of use of the NF Mark.

For cases unplanned in parts from 4.3.1 to 4.3.5, EUROVENT CERTITA CERTIFICATION ascertains if modifications bring the certification up to standard and if a complementary check should be made.

4.3.1 Modifications regarding the holder

The holder must notify in writing to EUROVENT CERTITA CERTIFICATION any legal modification of its company or any changes of corporate name.

In the case of merger, liquidation or acquisition of the licensee's company, any right to use the Mark shall cease automatically (see Article 4.4 of the General Rules).

EUROVENT CERTITA CERTIFICATION is empowered, after consulting the Mark Committee if necessary, to examine the means by which any new application might be accepted.

4.3.2 Modification regarding fabrication plant(s)

Before any total or partial transfer of production to a different manufacturing site, the licensee shall inform EUROVENT CERTITA CERTIFICATION, in writing, of new production arrangements under consideration and cease using the mark until the latter makes a decision following the verifications on a case by case basis, which may include an audit of the new manufacturing site and, if necessary, the case is put before the Mark Committee (renewal of the right to use the NF Mark or examination of a new application, with reduced or complete testing).

Renewal evaluation and decision method of certification are identical to admission ones; described in part 3.

4.3.3 Modifications regarding the quality organisation of the manufacturing and/or sells

The holder must notify, in writing, to EUROVENT CERTITA CERTIFICATION any modification related to the quality organisation which may have consequence on the conformity of the manufacturing and/or selling to the requirements of the present certification rules (modifications regarding its installations, quality plans, its authorised representative...)

Besides, any temporary cessation of internal verification of NF certified product leads to an immediate end of NF marking of the product by the holder in any form. The holder must notify EUROVENT CERTITA CERTIFICATION.

Renewal evaluation and decision method of certification are identical to admission ones; described in part 3.

If need be, if the distribution is made by a third party, the holder must immediately inform EUROVENT CERTITA CERTIFICATION of any changes brought on the distribution of its products, in particular, any end of provision to the mentioned third party.

4.3.4 Modification regarding the NF certified product

Certified products must be in compliance with the technical application file, object of the admission, by taking into account potential observations made when the right of use of the NF mark was granted.

As a consequence, any modification (including modifications concerning the manufacturing and inspection resources and the quality assurance system that could have a determining effect on production conformity) that the licensee wishes to make on accepted products must also be communicated to EUROVENT CERTITA CERTIFICATION in writing.

An application for a new model and/or a new range takes the form of an application for extension of the right to use the NF Mark (forms 1a and 1c defined in Part 3 and updating of the file).

Following examination of the application and the corresponding file, EUROVENT CERTITA CERTIFICATION determines which verifications and tests are to be conducted, if any, and inform the applicant of acceptance "as is", preliminary inspections or referral to the Mark Committee.

The samples required for carrying out tests are sent by the licensee and under its responsibility, to the independent laboratory charged with carrying out the tests. They must be marked in a way that allows later authentication and be accompanied by information allowing the material batches used for their manufacture to be identified.

4.3.5 Temporary cessation of production or inspection

The licensee must immediately inform EUROVENT CERTITA CERTIFICATION of any temporary cessation of production or inspection of an accepted product.

- ✓ If production is stopped for less than 6 months, EUROVENT CERTITA CERTIFICATION, after consulting the Mark Committee, can notify the licensee of the suspension or withdrawal of the right to use the Mark for the products concerned.

If the stoppage lasts 6 months or more, the licensee must request a temporary suspension of the right to use the mark (maximum duration: 1 year). After this period, the right of use is withdrawn.

If production is restarted, the manufacturer must notify EUROVENT CERTITA CERTIFICATION which will carry out an audit before the products are marketed under the NF Mark.

4.4 Conditions of cessation of marking, or removal of marking in case of suspension or withdrawal

Remove the marking is mandatory in case of notification of a suspension or withdrawal of the right of use of the NF mark. Once the sanction is notified, any use of the NF mark is strictly forbidden. Removal of the marking must be done as soon as the reception of the certification.

The removal of the certification in the most distinctly way so any ambiguity remains.

The holder must remove or take off the entire mark logo or any reference to the mark on all media (see §2.5.3). If necessary, the media must be destroy.

EUROVENT CERTITA CERTIFICATION can check, by any mean available, the remove of marking.

If the removal of the marking is not perfectly made, the holder – which has lost its right – exposes itself to legal actions for fraud and/or misleading advertising.

Part 5

PARTICIPATING ORGANISATIONS

Mandated body which take part in the delivery of the NF right of use process and the surveillance of NF certified products are listed below.

5.1 AFNOR Certification

AFNOR owns the NF mark and has granted to AFNOR Certification exclusive operating license.

AFNOR Certification manages and runs NF certification system, which defines, especially, the governance rules and the methods of NF mark functioning.

AFNOR Certification

11, rue Francis de Préssencé
93571 LA PLAINE ST DENIS Cedex
Tél : 01 41 62 80 00 – Fax : 01 49 17 90 00

5.2 EUROVENT CERTITA CERTIFICATION

In accordance with the General Rules of the NF Mark, AFNOR Certification entrusts the management of the NF Mark Domestic Solar Water Heaters to the following organization, also known as mandated body:

EUROVENT CERTITA CERTIFICATION

Le Titien
48/50, rue de la Victoire
75009 PARIS

EUROVENT CERTITA CERTIFICATION is liable to AFNOR Certification of entrusted operations, object of a contract.

5.3 Audit organisations

Depending on the audit of the fabrication plant and, potentially in operating premises, are carried out by the following organization – also known as audit bodies:

EUROVENT CERTITA CERTIFICATION

Le Titien
48/50, rue de la Victoire
75009 PARIS
Tel. : (+33) (0)1 75 44 71 71

Laboratoire National de métrologie et d'Essais (LNE)

1, rue Gaston Boissier
75724 PARIS CEDEX 15
Tel. (+33) (0)1 40 43 37 00

Centre Scientifique et Technique du Bâtiment (CSTB)

84, avenue Jean Jaurès
77447 Marne la Vallée Cedex 2
Tel. (+33) (0)1 64 68 83 16

AENOR

Genova, 6
28 004 MADRID
ESPAGNE
Tel/ (00 34) 914 326 000

The licensee or applicant shall facilitate the operations undertaken by auditors in the performance of their duties.

The list of organisations above may be revised or updated by the mandated body following consultation with the Mark Committee.

As part as their mission, auditors have the right of inspection on all applicants or holders.

5.4 Tests organisations / Laboratories

When verifications made include tests on products, these are performed, on EUROVENT CERTITA CERTIFICATION's request, by the following laboratories – also known as authorised laboratories:

Centre d'essais et de recherche des systèmes solaires BELENOS

190, Parc Georges Besse
30035 NIMES Cedex

Centre Scientifique et Technique du Bâtiment (CSTB)

290, route des Lucioles
BP 209 – 06904 SOPHIA ANTIPOLIS Cedex

5.5 Special Committee

The dominative composition of the committee is approved by EUROVENT CERTITA CERTIFICATION, each member being informed by EUROVENT CERTITA CERTIFICATION.

The term of office for members is 3 years and may be renewed by tacit agreement.

The Chairman of the NF Mark Committee is nominated in observance of the same conditions, following consultation of the NF Mark Committee. The position is held in alternation among colleges. However, the Chairman's term of office may be extended one or more years, if none of the other colleges submit a candidate.

The performance of the duties of an NF Mark Committee member is strictly personal. However, if the member is unable to discharge his/her duties, an alternate is designated and named under the same conditions.

Special Committee venture decisions and due to their entrusted missions, its members cannot receive any pay.

Members of the Special Committee commit to carry out their mission with fairness and to respect the confidentiality of the information given during the meetings.

EUROVENT CERTITA CERTIFICATION compiles the observations and proposals formulated during committee meetings. This report is sent to all members of the NF Mark Committee.

5.6 Composition of the Special Committee

The composition of the Special Committee is made so the different concerned parties are fairly represented; don't lead to predominance of one of the parties and which guaranteed its suitability.

1 Chairman (to be designated by the Committee members)

2 Vice Chairman:

1 AFNOR Certification representative

1 representative from the mandated body: EUROVENT CERTITA CERTIFICATION

Manufacturers, distributors (5 to 7 representatives)

Representative of holders or applicants of the NF Mark

Technical organisations, laboratories (4 to 7 representatives)

Including representatives of tests or audit organisations

Users, consumers, supporters (4 to 7 representatives)

Representative(s) for organisations supporting and promoting the NF Mark

Representative of consumers associations

Representative(s) of installers

Members of the Special Committee commit to carry out their mission with fairness and to respect the confidentiality of the information given during the meetings.

EUROVENT CERTITA CERTIFICATION takes particular provisions guaranteeing the confidentiality of holders' or applicants' application files shown during the Special Committee (except in case of claim/appeal).

5.7 Working group

For certain occasional activities not requiring that all NF Mark Committee members be notified, a working group may be created whose members are designated by name and selected among members of the NF Mark Committee.

External individuals or professionals may be called upon to assist with these activities.

The missions undertaken by this working group are specified by the NF Mark Committee; its duties will generally be limited to the development of projects, proposals or providing further information on a given topic on behalf of the NF Mark Committee.

Part 6 PRICE LIST

The purpose of this part is to define the fees of services related to the NF certification and to describe the methods of recovery.

The tariffs of the service to the granting of the certification and the follow-up of the certified products are yearly variable. The tariff of the current year is sent to every holder of the mark.

The rates are expressed in Euro, and are exclusive of VAT. With regard to test fees, samples shall be delivered to the testing laboratory carriage-free and customs-cleared if necessary, within a period of time to exceed 2 weeks from the sampling date.

Once the laboratory is in possession of the samples, the laboratory invoices the tests.

Type of service	Service definition	General conditions common to NF marks
Right to use the NF mark	<p>This licence fee due to AFNOR Certification is intended to cover:</p> <ul style="list-style-type: none"> - protection of the NF mark: filing and protection of the mark, legal counsel, processing of appeals, legal services, - contribution to the general promotion of the NF mark - general operation of the NF Mark (organisation of quality assurance, monitoring of bodies in the NF network, management of the NF mark committee) - 	<p>The registration fees are paid by the company during an initial application for the right to use the NF mark. Payment of these services will not be reimbursed, even if the right to use the NF mark is not granted or if the application is abandoned during processing.</p> <p>This service is invoiced as soon as the application is received. It is charged at a flat rate.</p> <p>Payment of these services will not be reimbursed, even if the right to use the NF mark is not granted or if the application is abandoned during processing.</p>

6.1. Costs of the certification (excl. VAT)

EUROVENT CERTITA CERTIFICATION provides the tariffs by request.

Living and transportation expenses are invoiced based on actual costs

Any cancellation of an audit, the date of which has been established between EUROVENT CERTITA CERTIFICATION and audited company, shall be invoiced on the following basis:

- Cancellation 15 days to 8 days prior to the foreseen date: 50% of the audit amount
- Cancellation 7 days to 3 days prior to the foreseen date: 75% of the audit amount
- Cancellation 2 days before foreseen date: 100 % of the audit amount.

6.2. Terms of payment

6.2.1. Collecting payment

EUROVENT CERTITA CERTIFICATION, mandated body, is empowered to collect all payments.

The applicant or the licensee shall settle these invoices under the prescribed conditions: any failure on the part of the licensee prevents EUROVENT CERTITA CERTIFICATION from exercising its inspection and operating responsibilities incumbent on it by virtue of these regulations.

In cases where an initial formal notice by registered letter with acknowledgment of receipt does not result in the payment of all sums due within one month, EUROVENT CERTITA CERTIFICATION may adopt conservatory measures regarding the right to use the NF Mark for all of the holder's allowed products.

6.2.2 Granting of the certification

The services payable for each factory include the examination of files, the audit and simulation or testing on samples taken during this audit.

The fee for examination of the application is paid as a single sum when the application is filed and covers its examination (for a production site), its presentation to the Mark Committee, and contribution to the general operation of the mark and to the right to use the NF Mark paid to AFNOR Certification.

The test fee is payable once the laboratory in charge of the tests is in possession of the samples.

No fees relating to examination of the application can be refunded, regardless of the result of the examination.

6.2.3 Surveillance of the certified products

Invoicing covers the right to use the NF Mark, passed on to AFNOR Certification, application follow-up, and the audit and tests carried out on samples during this audit.

If acceptance is granted during the course of the year, the amounts invoiced correspond to the services provided. Invoices for tests are sent once the laboratory in charge of the tests is in possession of the samples.

Following product certification, EUROVENT CERTITA CERTIFICATION invoices the licensee the right to use the NF Mark on an annual basis and paid to AFNOR Certification. This license fee is included in these rates.

6.2.4. Additional verifications

Costs resulting from additional audits or tests are payable by the manufacturer, regardless of the results. Additional examination of the application is also invoiced for the processing of inadequacies or anomalies observed by EUROVENT CERTITA CERTIFICATION or following sanctions proposed by the committee. Inspections continue and the corresponding fees continue to be charged for as long as stocks of NF-marked products remain on the licensee's premises.

Part 7

CERTIFICATION FILE

7.1 File to supply in case of an application

The application of the right of use of the NF Mark must be sent to EUROVENT CERTITA CERTIFICATION. In case of the application were sent to an entity outside of European Economic Area, the holder has to appoint an authorised representative in European Economic Area which co-signs the application file.

The applicant has to fill in its application file in French or in English in compliance with the models of the different documents to provide. These document are described in chart below according to the different types of application, the content is adjust on a case by case basis.

Documents to provide: ❖ First application (for a new product) Or ❖ An extension application for a new product (complementary application)	Documents to provide: ❖ An extension application for a modified product Or ❖ A maintenance application for a new mark or commercial reference
<ul style="list-style-type: none"> • A letter of application and commitment as the form 1a • A general information sheet regarding the holder as the form 1b • A general information sheet regarding the product / range of product in compliance with the definition given in annex 3 and written as the form 1c-1 • Complementary elements fixed in annex 3 of the present certification rule 	<ul style="list-style-type: none"> • A letter of application and commitment as the form 1a

FORM No. 1a
APPLICATION FOR ADMISSION
(To be provided on the applicant's letterhead)

PURPOSE: Application for the right to use the NF Mark – CESI (domestic solar water heater)

I the undersigned (name and position)
representing the company (identification of the company - registered office)
request the EUROVENT CERTITA CERTIFICATION to carry out the verifications required to obtain the right
to use the NF Mark for the products stipulated in the enclosed table, in compliance with the requirements
of Part 2 of the NF certification rules.

These products are manufactured in the plant of (company identification and complete address of the
plant).

I hereby declare that I have read the reference standards, general rules of the NF Mark and the
certification rules and agree to respect them during the entire duration of use of the NF Mark.

Date
Stamp and signature
of the applicant

Stamp and signature
of the manufacturing site
(if different from the applicant)

APPENDIX TO THE APPLICATION FOR ADMISSION (1)

I hereby authorise the company (2).....
represented by Mr (name and position)

to act on my behalf in France for all matters relating to the use of the NF Mark.

As such, I hereby request that expenses for which I am responsible be invoiced to it directly. It hereby
accepts this mandate and agrees to pay invoices upon receipt.

I agree to immediately notify EUROVENT CERTITA CERTIFICATION of any changes in the mandated body
designated above.

Sincerely,

Date
Stamp and signature
mandated body's representative(3)

Stamp and signature
applicant's representative(3)

- (1) This appendix is to be completed only by applicants outside the European Economic Area.
- (2) The designation of the mandated company shall include the following information: corporate name, corporate status, registered office, Trade Register number.
- (3) The signatures of the **applicant** and its representative shall be preceded by the hand written endorsement "Bon pour mandat" (Valid for mandate) and "Bon pour acceptation de mandat" (Valid for acceptance), respectively.

FORM 1b

GENERAL INFORMATION SHEET

Company name and address of the applicant:

Correspondent name:

Telephone:

Fax:

e-mail:

SIRET n° **APE Code**

VAT ID number

Kit assembly location:

Name of the correspondent:

Telephone:

Fax:

Email:

Address of the fabrication plant of tanks

Name of the correspondent:

Telephone:

Fax:

Email:

Address of the fabrication plant of collectors

Name of the correspondent:

Telephone:

Fax:

Email:

As necessary, name and address of the mandated body in Europe:

Name and address of the After-Sales Service Supervisor:

Signed in

Date

Signature

FORM No. 1c-1

General informations	Company:	
	Trade mark:	
	Name of the range:	
	Type of auxilliary:	

Collector	Name of the collector :	
	Type of collector:	
	Type of certification:	
	Reference of certificate:	
	End of validity:	
	Implented	

Tank	Name, reference of the tank	
	Tank material :	
	Cooling constant	
	Of the reference tank	
	Type of auxilliary	

Heat transfer fluid	Name of the fluid:	
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Control system	Reference of the control system	
-----------------------	---------------------------------	--

Reference of the model	<i>Volume nominal(l)</i>	Volume réel(l)	Aera of the solar exchanger (m ²)	<i>Surface de captage (m²)</i>

Name of the applicant

Date

Stamp and signature

FORM No 1d-1

APPLICATION TO MAINTAIN THE RIGHT TO USE THE NF MARK
(To be established on the licensee's or mandated body's letterhead
and signed by the distributor)

EUROVENT CERTITA CERTIFICATION
Le Titien
48/50, rue de la Victoire
75 009 PARIS

SUBJECT: NF Mark – Domestic solar water heaters

Dear Sir,

It is my honour to apply for the maintenance of the right to use the NF Mark on products of my production which differ from those admitted to the NF mark only by their specific references (brand and commercial reference).

The company which is going to market these products:

(name and address of the distributor)

Admission reference of the basic model		Commercial brand(s), range(s) and commercial reference(s) requested by the distributor
Commercial brand(s), range(s) and reference(s) already certified	Certificate No. of the NF Mark	

Please find attached a copy of the distributor's commitment sheet.

Stamp and signature of the licensee
or the mandated body:

Stamp and signature
of the distributor:

Date

FORM No 1d-2
ENCLOSURE - APPLICATION TO MAINTAIN THE RIGHT TO USE THE NF MARK
(distributor's commitment to be established on its letterhead)

I, the undersigned,

acting in my capacity as

of the company:

hereby recognise that the substitution of the commercial brand name:, to that of the manufacturer on equipment of the aforementioned models, leads me to accept the associated responsibilities.

Specifically, I hereby certify that I have exclusive rights on these brands and trade references, obtained by an application made in accordance with applicable legislation in the field of industrial property rights.

I declare having read the General Rules of the NF Mark and the Certification Rules (particularly paragraphs 2.2.2 and 3.1 relative to my commitments) and its corresponding appendices and I hereby agree to respect them throughout the whole duration of use of the NF Mark:

Signed in date

Signature

FORM No. 1d-3

General informations	Company:	
	Trade mark:	
	Name of the range:	
	Type of auxilliary:	

Collector	Name of the collector :	
	Type of collector:	
	Type of certification:	
	Reference of certificate:	
	End of validity:	
	Implented	

Tank	Name, reference of the tank	
	Tank material :	
	Cooling constant	
	Of the reference tank	
	Type of auxilliary	

Heat transfer fluid	Name of the fluid:	
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Control system	Reference of the control system	
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Reference of the model	<i>Volume nominal(l)</i>	Volume réel(l)	Aera of the solar exchanger (m ²)	<i>Surface de captage (m²)</i>

Name of the applicant

Date Stamp and signature

