

CEN SDG 2
05-02 E rev. 4

Uniform Rules and Requirements of the CEN/CENELEC European Mark Scheme

for

Heat Cost Allocators for the Determination of Consumption of Room Heating Radiators

- **according to EN 834
(appliances with electrical power supply)**
- **according to EN 835 (appliances without electrical
power supply working on the evaporation principle)**

Date of approval by the CEN Certification Board:

19th September 2002

presented by CEN SDG 2 Working Group:

J. P. Fischer-Hansen, F. Kuppler, Dr. G. Mügge, C. Sperber, B. Wiegers
with the assistance of A. Dicke and D. Grewe

Contents

1. Preamble.....	4
2. Scope of Application	4
3. Definitions	5
4. Protection of European Mark	5
5. Requirements for Application	6
5.1 Quality Management System.....	6
5.2 Quality Plan	7
6. Application	7
7. Requirements for Conformity Compliance	8
7.1 Quality Management System.....	8
7.2 Quality Plan	8
7.3 Retention Period for Documents and Records.....	9
8. Testing of the Appliance and its Application.....	9
8.1 Testing of the Appliance: Initial Test.....	9
8.1.1 Type and Quantity of Samples.....	9
8.2 Initial Inspection	10
8.2.1 Procedure	10
8.2.2 Recording of Initial Inspection	10
9. Surveillance Procedures	11
9.1 Control Test of Product	11
9.2 Control Inspection	11
10. Requirements for Test and Surveillance Procedures	12
10.1 Requirements on Measuring Methods	12
10.1.1 Basic Equipment	12
10.1.2 Additional Equipment	12
10.2 Requirements on Personnel	13

10.2.1 Proof of Competence of Personnel in Charge	14
10.3Saveguarding of Trade Secrets.....	14
11. Marking	14
11.1Attaching the Mark	14
11.2Validity	15
12. Appeals and Corrective Actions.....	15
12.1. Appeals	15
12.2Corrective Actions	15
12.3Suspension of the Right of Use	15
12.4Withdrawal / Cancellation of the Right of Use.....	16
12.5Marketing of Products with the Mark in Case of Suspension or Cancellation.....	16
13. Publications	17
14. Annex to Chapter 5.2. resp. 7.2: Quality Plans for Heat Cost Allocators according to EN 834 and EN 835	17
15. Annexes A and B	17
16. Literature / Reference to relevant Documentation	18

1. Preamble

The circles involved in the consumption-based billing and allocation of energy costs (heating) in the European market have agreed unanimously on a European certification system for heat cost allocators with and without electrical power supply according to the valid European standards EN 834 and EN 835.

The certification guarantees to the user that the respective high quality level of the products as per EN product norms is observed. The mark is visible proof for high quality, confidence and market transparency.

Certification is performed according to the rules and requirements of the CEN/CENELEC European Mark System for heat cost allocators, comprising product conformity tests, manufacturer's quality system assessment for the related production line, production site inspection and market surveillance.

The conditions for certification are regular tests/inspections of the product and its application by independent third parties.

The European Mark by CEN/CENELEC documents the conformity with European standards.

The members of the CEN SDG 2 recognise that heat cost allocators being certified (keymark) according to the rules and requirements of the European Mark Scheme CEN/CENELEC guarantee a high quality level. Besides the consumption value registered by the heat cost allocator is a measuring result containing the qualities of the measuring device, the room heating radiators, further frame conditions as well as other instabilities of the evaluation factors and the installation. Drifts (errors of dimension) of the registered heat are therefore not only dependent on the measuring device. Consequently heat cost allocators shall not be calibrated the same way as heat meters.

Hence the granting of the certificate has to be dependent on the observation of certain factors contained in chapter 14.

2. Scope of Application

The area of application of the CEN/CENELEC European Mark Scheme includes heat cost allocators with and without electrical power supply for which the CEN/TC171 has elaborated the product standards EN 834 and EN 835.

It contains the requirements for conformity assurance as well as the procedures for initial testing, surveillance, marking, complaints etc.

3. Definitions

Applicant

is a supplier utilising heat cost allocators manufactured in its sphere of responsibility and applying for the use of the CEN/CENELEC European Mark at a certification body.

Approval

Certificate issued according to the rules of this certification system by which the certification body confirms to a company the conformity of its products with the respective EN product standards and grants the right of use of the CEN/CENELEC European Mark.

Licence Holder

is an applicant having been granted the right of use of the CEN/CENELEC European Mark by a certification body authorised by the CEN Certification Board.

Certifier

are certification bodies empowered by the CEN Certification Board.

Testing laboratory and Inspection Authorities

are competent bodies empowered by the certifier to effect testing and surveillance.

HCAEL

Heat cost allocators according to EN 834 (appliances with electrical power supply)

HCAEV

Heat cost allocators according to EN 835 (appliances without electrical power supply working on the evaporation principle)

Documents

are instructions for the quality management system concerning the procedures to be followed and the results to be obtained in order to implement the quality plan for heat cost allocators.

Records

document the results of the implementation of the quality plan of heat cost allocators.

4. Protection of European Mark

The basis for the utilisation of the Mark are the CEN/CENELEC Internal Regulations part 4 "Certification".

The right of use of the Mark shall only be granted at conformity with the present CEN/CENELEC European Mark Scheme rules, observance of which the licence holder is bound to respect by contract.

5. Requirements for Application

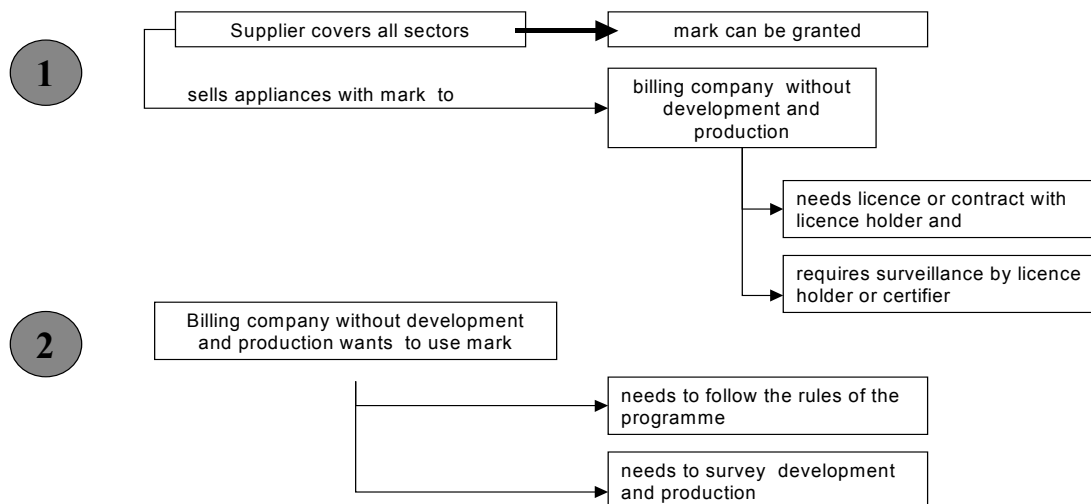
5.1 Quality Management System

The applicant shall apply a quality management system fulfilling the requirements for the production and application of heat cost allocators according to EN834/835. The quality management system shall be based on the quality standards which are at least of the level of the EN ISO 9001 standard.

The application of the quality management system is subject to a transitional period of 3 years as from date of application.

Should a supplier without own production (billing company) buy heat cost allocators with the Mark from a licence holder whose management system comprises production as well as application, the requirements of the quality management system concerning the application of heat cost allocators are guaranteed by the surveillance (contract, licence) of the licence holder (see diagram 1).

Should an applicant (billing company) buy heat cost allocators from a manufacturer, he will have to ensure that the requirements of the quality management system concerning surveillance of development and production (contract) are fulfilled (see diagram 2).



Existing certificates of the quality system having been issued by another accredited certification body shall be taken in consideration and recognised by the certifier when granting the licence.

5.2 Quality Plan

The applicant shall apply a quality plan (see chapter 7.2) ensuring by the relevant testing facilities the conformity of the product with the respective EN product standard.

6. Application

An applicant wishing to obtain the right of use of the CEN/CENELEC European Mark, submits an application to a member of CEN or a certifier of his choice. If the member of CEN cannot accept the application, he will provide the applicant with a list of relevant certifiers.

An application form (see annex) shall be duly filled in and signed for each type of heat cost allocator. The product information given shall be according to standards EN 834 respectively EN 835.

The applicant shall provide the certifier with the following information for each product line:

- a) product documentation according to EN 834 respectively EN 835, depending on the type of heat cost allocator;
- b) documentation on that part of the quality system as per EN ISO 9001 or equal referring to the product line and the characteristics of the heat cost allocator;
- c) the quality plan assessing the conformity of the heat cost allocators with the requirements of standards EN 834 respectively EN 835;
- d) the quality plan assessing the compliance with the requirements of standards EN 834 respectively EN 835 in regard to use, installation and evaluation;
- e) documents ensuring the conformity with the requirements of standards EN 834 respectively EN 835 related to maintenance, meter-reading / utilisation of display values and evaluation as well as documentation on the observance of the resolutions of the CEN SDG 2 (resolutions on certification).

This includes drawings, specifications (technical descriptions), test plans and records on tests effected by applicant.

After confirming the acceptance of the application, the certifier and the applicant agree on the necessary type test and inspection in accordance with the present rules.

7. Requirements for Conformity Compliance

7.1 Quality Management System

The quality system to be applied by the applicant according to chapter 5.1 covers the requirements for the specific processes resulting from standards EN 834 and EN 835, split up as follows:

- a) Initial testing (requirements for the appliances) and requirements for the production site (see chapter 8.1);
- b) Process control and inspection of the production;
- c) Process control and inspection of the appliance selection according to the designing of the heating installation;
- d) Process control and inspection of the installation;
- e) Process control and inspection of the meter reading / utilisation of display values;
- f) Process control and inspection of the rating;
- g) Process control and inspection of the maintenance.

The specific requirements for the different types of heat cost allocators are included in the quality plan (see chapters 7.2 and 14: annex to chapter 7.2).

7.2 Quality Plan

The quality plan to be applied by the applicant or licence holder as per chapter 5.2 refers to the product line of the respective heat cost allocator and includes the minimum requirements defined in the annex (chapter 14) for the following sectors:

- initial test
- control test
- production
- design of the appliances
- installation
- meter-reading / utilisation of display values
- rating and
- maintenance.

On the basis of these minimum requirements the applicant develops his product-specific quality plan.

The results of the tests conducted according to the quality plan are to be recorded in its last version as proof of implementation.

7.3 Retention Period for Documents and Records

The licence holder shall preserve the documents (requirements) at least 10 years after marketing the last certified unit of the production line.

The retention period of records has to be stipulated by the licence holder in order to provide the proof of conformity for the utilisation period of the device. The licence holder may choose the means of recording.

8. Testing of the Appliance and its Application

8.1 Testing of the Appliance: Initial Test

For the initial test of heat cost allocators for product certification a recognised test laboratory shall ascertain that the product to be certified is in conformity with the requirements of standards EN 834 respectively EN 835. The criteria for the initial test are contained in the quality plan (chapter 14, paragraph I).

Already executed standard conformity tests by authorised test laboratories as well as partial tests (e.g. concerning electromagnetic compatibility (EMC) having been effected in other accredited test laboratories shall be recognised.

8.1.1 Type and Quantity of Samples

The applicant shall submit with his application to the certifier or the authorised test laboratory a declaration of commitment stating that the heat cost allocators subjects to testing correspond to the current or future production.

For the type tests the certifier or the authorised test laboratory shall receive at least 25 heat cost allocators of each type.

(Documents see chapter 6)

8.2 Initial Inspection

8.2.1 Procedure

At the initial inspection the following shall be verified:

- a) The quality management system of the applicant concerning the respective production line according to EN ISO 9001, e.g. presentation of certificate.
- b) The quality plan including the respective tests to ensure the conformity of the products with the relevant product standards.

The certifier shall verify whether the documentation of the application meets the stipulated requirements. If the requirements are met, the certifier and the applicant agree on a date for inspection on site.

The certifier shall ensure that the initial inspection is conducted according to the requirements of the uniform rules.

The initial inspection includes the checking of the quality plan and the quality system applied by the applicant. In this connection the respective state of art of the product is to be considered.

Provided a quality system certified according to EN ISO 9001 exists, guaranteeing the integration of the quality plan and the special requirements of the scheme, the external audits according to EN ISO 9001 replace the inspection on site. In such cases the inspection is a pure verification of documents and records.

8.2.2 Recording of Initial Inspection

The report of the initial inspection should include the following:

- a) details of the performance of the initial inspection:
 - applicant
 - product line
 - inspectors
 - scope of inspection
 - date of inspection
- b) details of the result of the initial inspection
 - overall evaluation
 - assessed deviations
 - stipulated corrective measures within a set time

9. Surveillance Procedures

The surveillance system of this programme contains the following elements:

9.1 Control Test of Product

The control test comprises selected parts of the initial test according to chapter 8.1 to ensure that the products meet the requirements of the corresponding EN product standards. The certifier is responsible for the control test. Non-scheduled control tests may only be made in case of complaints (see chapter 12.1).

A control test of the type of appliance shall be effected every

2 years

after its certification or after the last control test.

Should a licence holder produce the same type of appliance at several locations, the test shall be made using samples manufactured at the different factories.

The control test includes the conformity test with the initially tested samples of the initial test, especially considering the criteria in the annex under II. (chapter 14).

In case of nonconformity with a requirement, the measures according to chapter 12.3 or 12.4 enter into force.

9.2 Control Inspection

The control inspection verifies by spot checks the conformity with the criteria at the initial inspection. The surveillance audits according to EN ISO 9001 shall be recognised as inspection report.

The intervals of these control inspections should not be longer than

2 years.

If an applicant has more than one manufacturing site, the surveillance of the quality plan shall be conducted in all plants by the same inspection body.

The certifier may demand to repeat inspections to a reasonable extent in case of justified doubts concerning the conformity of heat cost allocators bearing the CEN/CENELEC Mark.

Should the quality plan or its application not comply with the requirements, the measures according to chapter 12.3 or 12.4 enter into force.

10. Requirements for Test and Surveillance Procedures

10.1 Requirements on Measuring Methods

The measuring equipment of the test laboratories shall comply with the following minimum requirements. Additional equipment may be required if measuring methods prove it necessary.

10.1.1 Basic Equipment

The basic measuring equipment consists of:

- a climate controlled test console for radiators;
- a set of officially approved thermometers for the range of 20°C to 100°C with a tolerance of 0,02°C. If this set consists of glass tube mercury thermometers they need to be calibrated;
- one to three water thermostats depending on the type of heat cost allocator to be examined. In the steady state the temperatures may fluctuate locally (in the test console) and time-wise within a temperature interval of 0,04°C. The sensors used to determine the variations in temperature shall have a similar capacity as the appliances to be tested;
- equipment registering temperatures to ascertain the steady state. Differences of temperature of 0,1°C have to be recognisable;
- a convection chamber with suitable temperatures for testing. In the chamber where the appliances to be tested are assembled, once the steady state has been reached, the temperature intervals may vary locally by 0,4°C and within 24 hours by 1°C.

10.1.2 Additional Equipment

For the testing of heat cost allocators without electrical power supply working on the evaporation principle the following equipment is needed:

- a calibrated special accuracy weighing machine with a calibration value $e = 1$ mg and a division value $d = 0,1$ mg or smaller to determine the evaporation rate of the liquid in the tubes. The scale shall be placed in an appropriate room;

-
- a measuring microscope with sufficient magnifying power and graduations of 0,1 mm or smaller. The tolerance of the linear graduation amounts to 0,02 mm.

For the testing of heat cost allocators with electrical power supply the following equipment is needed:

- A 5 ½ digit digital multi-meter or single electrical measuring devices of similar precision. The tolerance for constant voltage in the range of 1 volt to 100 volt amounts to 0,004 % of the measured value + 2 digit within 24 hours. If resistance of exchangeable temperature sensors is measured directly, the tolerance for resistance measuring in the applied measuring range is commensurate.
- A precision current source for direct-current; range 1µA to 20 mA, 10 volt. The tolerance amounts to 0,1% of the pre-set value + 0,1 µA.

A precision voltage source for constant-voltage; range 1 µV to 10 volt. The tolerance amounts to 0,1% of the pre-set value + 10 µV.

Current and voltage source are to be officially approved or calibrated. This can be omitted if at least two officially tested standard resistors of 100 ohm and 1000 ohm with relative tolerances of $5 * 10^5$ are available for the testing of the current and voltage sources.

- An oscilloscope.
- A voltage and current amplifier.

Calibration protocol:

Clearly arranged records shall be kept on the tests of the test laboratory for the not officially approved measuring devices in which the effected connection measurements are apparent.

10.2 Requirements on Personnel

The control of heat cost allocators according to this programme does not only require competent, experienced and reliable personnel. In addition, the testing laboratory must be a guarantee for neutral and objective testing.

It shall be guaranteed that the personnel's remuneration is not dependent on number and result of tests performed. Knowledge obtained by performing tests is confidential.

The testing laboratory shall have a manager and at least one deputy.

10.2.1 Proof of Competence of Personnel in Charge

The necessary competence is generally proved by:

- a university degree or graduation at a college of technology as engineer or in a relevant field or as physicist as well as
- by appropriate knowledge in the respective field and of the products as well as data processing. This includes knowledge about:
 - radiators
 - heating installations
 - electronics / mechanics
 - process chain of billing heating costs
 - the relevant applicable standards and technical specifications (e.g. EN 834, EN 835).
- The required knowledge can in principle be proven by a respective professional experience of at least three years.

10.3 Saveguarding of Trade Secrets

Those organisations participating in the mark scheme and in the certification procedures are committed to maintain confidentiality. The documentation submitted by the manufacturer to obtain certification remain with the test laboratory. To grant third parties access to the documentation submitted by the manufacturer is prohibited. The certifier only receives the written result of the test. Specific equipment related data necessary for the application shall be mentioned in the test results.

11. Marking

11.1 Attaching the Mark

The European Mark CEN/CENELEC shall be used in accordance with annex A (chapter 15).

The Mark shall in principle be put on the product itself. If placing on the product is not possible or practical, the Mark shall be put on the product's package, the label attached to it, the instructions for use or accompanying commercial documentation.

The proposals of the applicant as to the placing of the European Mark CEN/CENELEC shall be considered by the certifier.

11.2 Validity

The licence of the right of use of the CEN/CENELEC European Mark granted by the certifier has an unlimited validity.

12. Appeals and Corrective Actions

12.1. Appeals

If the investigations of the certifier reveal non-compliance with the requirements of the Scheme Rules, the provisions of chapter 12.2 to chapter 12.4 apply.

If the investigations of the certifier or the authorised test laboratory reveal that a non-compliance with the requirements of the Scheme Rules does not exist, the complainant bears the cost.

12.2 Corrective Actions

If the results of the surveillance show non-compliance with the rules of this Scheme, the certifier shall require the licence holder to take corrective actions within a defined period – which will not normally exceed three months -. Additional surveillance of corrective actions may be carried out to a reasonable extent at the expense of the licence holder.

12.3 Suspension of the Right of Use

Certifiers may suspend the right of use of the CEN/CENELEC European Mark in the following cases:

- The heat cost allocators are no longer in conformity with the respective European standards. However, this non-conformity does not require a total withdrawal.
- The licence holder does no longer fulfil the clauses of the contract through which he has been granted the right of use of the European Mark CEN/CENELEC.
- If corrective actions have not been taken as referred to in chapter 12.2.
- If safety, health or environmental factors are involved.
- Upon request of the licence holder, for example, if the production of the heat cost allocator concerned is temporarily halted. The conditions of the suspension are then agreed between the certifier and the licence holder.

The certifier notifies the licence holder of the suspension of the right of use, stating the following:

- The period of suspension.
- The justification.
- The practicalities of implementing the suspension, in particular with respect to the heat cost allocators already on the market with the mark (i.e. cancellation of the mark (Keymark), advising the purchasers etc.).
- The conditions to be fulfilled by the licence holder for the lifting of the suspension. These may include a successful inspection at the initiative of the certifier at the end of the suspension period.

The certifier notifies the licence holder of the lifting of the suspension. At the same time, the certifier notifies all other certifying organisations and the CEN Management Center.

12.4 Withdrawal / Cancellation of the Right of Use

The cancellation of the right of use may be initiated by the certifier, either when measures described in chapter 12.2 and 12.3 had no effect or in serious cases. The other participating certifiers and the CEN Management Center are notified of the cancellation. The licence holder may appeal against the decision of the certifier.

12.5 Marketing of Products with the Mark in Case of Suspension or Cancellation

In the case of suspension or cancellation of the right of use as described in chapter 12.3 and 12.4, the certifier may, depending on the non-conformity, require the licence holder to remove the European Mark CEN/CENELEC from the affected products in the plant and on the market.

In the case of a cancellation and where the certifier has authorised the clearance of products bearing the European Mark CEN/CENELEC, this authorisation will be limited to a fixed period. In these cases, the certifier reserves the right to exercise the controls over the clearance option.

13. Publications

The lists of the products certified according to these European rules being published by the CEN Management Center will be made available regularly to the CEN SDG 2.

14. Annex to Chapter 5.2. resp. 7.2: Quality Plans for Heat Cost Allocators according to EN 834 and EN 835

(see separate document)

15. Annexes A and B

A: Design of the CEN/CENELEC European Mark

(see separate document)

B: Application form for the right of use of the Keymark:
see for example CEN/CENELEC Internal Regulations part 4 annex B1

16. Literature / Reference to relevant Documentation

- CEN CEN/CENELEC Internal Regulations part 4: Certification, Second Revision, July 2001
- Council Directive 93/76/EEC dated 13.09.1993 for the reduction of carbon dioxide emissions by more efficient energy usage (SAVE)
- Heat cost allocation in Europe, published in "Die Heizkostenabrechnung" no. 7/1997
- EN 834 Heat cost allocators for the determination of consumption of room heating radiators (appliances with electrical power supply)
- EN 835 Heat cost allocators for the determination of consumption of room heating radiators (appliances without electrical power supply working on the evaporation principle)
- EN ISO 9001 Quality Management Systems - requirements
- EN ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories
- EN 45002 General requirements for the surveillance of testing laboratories
- EN 45003 General requirements for bodies accrediting testing laboratories
- EN 45011 General requirements for bodies operating product certification systems
- EN 45012 General requirements for bodies operating assessment and certification/registration of quality systems
- WSPCert Quality and testing conditions for radiators made of steel
- PTB information 96 (1/86)
- Requirements by the Physikalisch-Technische Bundesanstalt (PTB) for metrological facilities of expert bodies for heat cost allocators dated 1.01.1986
- Guidelines for the appointing of expert bodies according to § 5 of the decree on heat cost allocation dated 16.04.1985
- E.V.V.E. Guidelines for the billing of heating, air-conditioning and hot water heating costs according to the actual consumption
1. edition 1996, ISBN 3-923420-15-3 (Guidelines Part 1)
- E.V.V.E. Energy Cost Allocation in Buildings: A European Overview
Documentation on the achieved state of implementation of measures until 1998 in the Member States regarding article 3 of the SAVE directive 93/76/EEC
1. edition 1999, ISBN 3-923420-17-X (Guidelines Part 2)

Appendix to 7.2 Quality Plans for Heat Cost Allocators as per EN 834 and EN 835

I. Initial test

The type testing for heat cost allocators according to EN 834 or EN 835 includes the following check-ups:

		HCA-E	HCA-E radio	HCA-EP
1.	the construction	+	+	+
2.	the sealing	+	+	+
3.	the temperature durability	+	+	+
4.	the maximum permissible errors	+	+	-
5.	the ageing	+	+	-
6.	the ampoule	-	-	+
7.	the measuring liquid concerning its purity, adverse health effects when used correctly, meter characteristic and hygroscopicity	-	-	+
8.	the external influences concerning electrical, electrostatic and magnetic influences, thermal influence, influence on transmission systems	+	+	-
9.	the upper temperature limit	-	-	+
10.	the measuring liquid concerning the over-fill for idle evaporation	-	-	+
11.	the scale system (scale geometrie)	-	-	+
12.	the c-values of the basic radiators	+	+	+
13.	taking into account the resulting rating factor	+	+	+
14.	life time testing (e.g. battery balance)	+	+	+
15.	testing handicaps for the production	+	+	+

II. Control Test

The control test includes procedures / verification of conformity with the initially tested samples of the initial test:

		HCA-E	HCA-E radio	HCA-EP
1.	Electronic	+	+	-
2.	Thermal coupling	+	+	+
3.	Case	+	+	+
4.	Ampoule	-	-	+
5.	Measuring liquid	-	-	+
6.	Maximum permissible errors	+	+	-
7.	Initial metering/start of metering	+	+	-

III. Manufacture

The applicant shall determine useful procedures / tests in the production process in order to ensure the following criteria:

		HCA-E	HCA-E radio	HCA-EP
1.	Temperature durability of materials, prefabricated parts and components	+	+	+
2.	Maximum permissible errors: compliance with the technical measuring requirements of each appliance concerning materials, prefabricated parts and data (e.g. calibration) as well as testing means (start temperature: single-sensor device; temperature difference: multi-sensor device; start temperature)	+	+	-
3.	Durability: compliance with the requirements for the defined operational time, e.g. materials, parts	+	+	+
4.	Resistance to foreign influences, e.g. materials, parts	+	+	+
5.	Compliance with the operational time of specific materials and parts considering their special conditions of durability and storage (e.g. batteries, displays, sensors, components connected to thermal couplings, printed boards, micro controllers, scale system) considering tolerances, characteristics of material, assurance to assign the correct components	+	+	+
6.	Visible marking of type of heat cost allocator for later identification (e.g. serial number)	+	+	+
7.	Testing requirements for the production by development (depending on life time durability)	+	+	+

IV. Design of appliances

The applicant shall determine useful procedures / tests in the design process in order to ensure the following criteria:

		HCA-E	HCA-E radio	HCA-EP
1.	Determination of conditions for use and frame conditions. Documentation of frame conditions and conditions of heating system to select the appropriate heat cost allocator (e.g. type of checking list)	+	+	+
2.	Selection, selection-check and documentation of the design of the heat cost allocator (e.g. parameterization, type of installation, type of appliance, etc.)	+	+	+
3.	Modifications to 1. imply the verification of the adequate design of the heat cost allocators. If the licence holder realises that appliances with the mark are no longer suited for the heating system, he ought to point this out to the proprietor.	+	+	+
4.	Uniformity of heat cost allocators (product, model, evaluation system) in the billing unit/user group	+	+	+

V. Installation

The applicant shall determine useful procedures / tests of the installation in order to ensure the following criteria:

		HCA-E	HCA-E radio	HCA-EP
1.	Installation instruction (i.e. regularity of the thermal coupling, durability of attachment, protection against manipulation, etc.)	+	+	+
2.	Installation, installation-check as well as self-checking by the mechanic of the respective radiator in comparison to the order	+	+	+

VI. Reading / Utilisation of display values

The applicant shall determine useful procedures / tests in the meter-reading process / utilisation of display values in order to ensure the following criteria:

		HCA-E	HCA-E radio	HCA-EP
1.	Recording readings (date and classification of reading, if necessary identification of electronic reading device resp. Identification of heat cost allocator, display values) on appropriate data carrier	+	+	+
2.	Uniform reading of fluid gradation (at the side or the center of the ampoule)	-	-	+
3.	Division of billing unit into user groups	+	+	+
4.	Determination of total heat consumption	+	+	+

Non normative recommendations to the E.V.V.E. guidelines part 1, items 15 to 18 (no basis for controls):

announcement of meter reading date, estimation of consumption values, plausibility controls, meter reading in special cases (i.e. change of user)

VII. Evaluation

The applicant shall determine useful procedures / tests for the evaluation in order to ensure the following criteria:

		HCA-E	HCA-E radio	HCA-EP
1.	Recording of radiator criteria and radiator measurements: the records are to be preserved for the duration of use	+	+	+
2.	Compliance with evaluation criteria by presentation of the following proofs:	+	+	+
	a) unique identification criteria of radiator types	+	+	+
	b) radiator measurements and type of connection	+	+	+
	c) identification of standard heat capacity of a) and b)	+	+	+
	d) determination of c-values of a) and b)	+	+	+
	e) ascertainment of layout room temperature < 16°C	+	+	+
	f) determination of total evaluation factors and the scales a) to e) according to the rules of the initial test	+	+	+
3.	At the occurrence of non-plausibilities as per 2. a) and / or 2. b) the cause shall be ascertained and eliminated (if applicable the procedure as per 1. shall be repeated or verified if a new radiator was installed)	+	+	+
4.	The evaluation according to 2. a) to f) shall at least be available before effecting the first billing	+	+	+

VIII. Maintenance

The applicant shall determine useful procedures / tests for the maintenance in order to ensure the following criteria:

		HCA-E	HCA-E radio	HCA-EP
1.	Checking of the correct sealing of the heat cost allocator	+	+	+
2.	Checking of clearness of display	+	-	+
3.	Checking of data transmission	-	+	-
4.	Checking of the function	+	+	+
5.	Checking of obvious existence of defects	+	+	+
6.	In case of defects, the same shall be eliminated within a determined reasonable time. At the exchange of a heat cost allocator the respective quality plan since installation shall be observed.	+	+	+
7.	Observation of device failures depending on their defects	+	+	+

Annex A to chapter 15: Design of the CEN / CENELEC European Mark

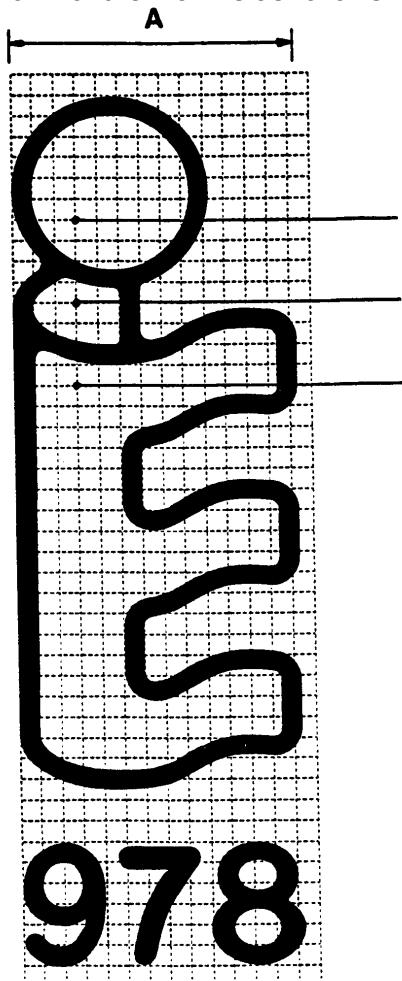
The Mark may be reproduced in the colours indicated below, or in black or white against the background. It may also be engraved, pressed or printed on the housing of the related product.

The Mark may be reproduced in any size, provided that the proportions given in the graduated drawing given below are respected, provided that the Mark remains clearly visible and that the identification code remains easily legible.

Although the minimum size of the Mark, assuring its visibility and legibility, may vary depending on the way it is reproduced, dimension A of the Mark must in no case be less than 3 mm.

National Marks used in conjunction with the Keymark shall not create confusion with it nor shall they reduce its legibility and visibility.

The form of the Mark is as follows:



Colour codes:

„Pantone Yellow C 2X“

„Black“

„Pantone Reflex Blue“

Font codes: „AG Buch Rounded Gras“

Note: The drawing of this annex is indicative. For the purpose of the representation of the mark, the definitive artwork can be obtained from the CEN Management Centre or CENELEC Central Secretariats or from the empowered organisations.

Identification code of the body granting the licence to use the Mark. The allocation of this code will be administered by the CEN Certification Board for CEN and CENELEC Conformity Assessment Forum (CCAF) for CENELEC.

Copyright © 1994 by CEN/CENELEC

All rights reserved. This mark may not be reproduced or disseminated in any form or by any means, without permission of CEN/CENELEC.