## Order on the metrological monitoring of meters used to measure cooling energy consumption in district cooling systems

Pursuant to § 15(1) and § 22(4) of the Trade and Industry Promotion and Regional Development Act (*Lov om erhvervsfremme og regional udvikling*) – see Consolidation Act No 1715 of 16 December 2010 – the following is hereby laid down by order:

#### Chapter 1

Scope, etc.

**§ 1.** Meters used to measure cooling energy consumption and which are covered by the Order on the individual metering of electricity, gas, water and heat are subject to and shall meet the metrological control requirements laid down in this order and in the rules cited herein.

## Chapter 2

#### **Definitions**

§ 2. In this order, the following terms shall have the following meanings:

- 1) Cooling energy meter: meter used to measure cooling energy consumption in district cooling systems.
- 2) District cooling system: cooling supply system that provides 2 or more cooling energy consumers with cooling energy and which uses liquid (including water) as a heat-transfer medium in a closed system.
- 3) District cooling energy: cooling energy supplied in a district cooling system.
- 4) Equipment suppliers: producers, importers and vendors of cooling energy meters.
- 5) Cooling energy suppliers: companies that provide cooling energy to cooling energy consumers in exchange for a fee.
- 6) Cooling energy consumers: companies, property owners or residents who, as buyers of cooling energy, represent the party in the transaction that does not have metering equipment.
- (2) The definitions in Point 1.3 of Annex 1 to Order No 436 of 16 May 2006 on the entry into force of the EC Measuring Instruments Directive (MID) and the designation of notified bodies apply to climatic, mechanical and electromagnetic environments, as well as influence quantities.

**§ 3.** The following definitions apply to cooling energy meters that have not yet been put into service:

- 1) 'Type approval' means the decision that recognises the compliance of the cooling energy meter construction with the regulatory requirements to which it is subject.
- 2) 'Type-approval certificate' means a document which certifies that a type approval has been granted.

- 3) 'Verification' means the activities which include identification, examination, calibration, marking and sealing, and which establishes and confirms that a cooling energy meter meets regulatory requirements, particularly with regards to accuracy.
- 4) 'Initial verification' means the verification of a cooling energy meter that has not been previously verified.
- **§ 4.** The following definitions apply to cooling energy meters that have been put into service:
  - 1) 'Reverification' means a verification that follows an initial verification.

2) 'Rotational replacement or periodic total monitoring' means the periodic replacement of all cooling energy meters within a given lot with statistical sample tests of the replaced cooling energy meters and varying the rotation period on the basis of the results.

3) 'Calibration of a cooling energy meter' means the procedure that, under specified conditions, can demonstrate the discrepancy between the values indicated by the instrument and the corresponding known and correct values.

4) 'Accredited calibration' means calibration performed by a calibration laboratory accredited in accordance with DS/EN ISO/IEC 17025 and where the laboratory is accredited by the Danish Accreditation and Metrology Fund (DANAK) or an equivalent accreditation body that is a signatory to the EA or ILAC multilateral agreement on mutual recognition.

## Chapter 3

## Requirements for cooling energy meters

**§ 5**. Cooling energy meters shall, prior to being placed on the market and put into service, meet the relevant requirements in DS/EN 1434 or other technical standard or regulation that meets the same safety and usability requirements.

(2) The following requirements for specific accuracy classes apply to cooling energy meters, depending on the intended use:

- 1) Cooling energy meters of accuracy class 2 or better shall be used for measuring cooling energy consumption in commercial and light industrial environments.
- 2) Cooling energy meters of accuracy class 3 or better shall be used for measuring cooling energy consumption in households.

**§ 6.** There shall be documentation of compliance with the § 5 requirement in the form of a type approval and initial verification.

**§ 7.** Cooling energy meters that have been in use prior to entry into force of this order may continue to be used (even if they are not type-approved and verified) if they are monitored as described in § 11.

(2) Such cooling energy meters that are removed for statistical sample testing or rotational replacement (see § 11(2)), etc. may not be re-used in accordance with § 1 until the accredited calibration has determined that the meter's accuracy meets the requirements for initially verified cooling energy meters.

(3) Such meters under (2) above are verified on the basis of the accredited calibration report.

Chapter 4

## Requirements for equipment suppliers

**§ 8.** Equipment suppliers may not place on the market, sell or supply cooling energy meters for use in accordance with § 1, unless the cooling energy meters are type-approved.

(2) The cooling energy meters shall also be initially verified before delivery, unless expressly stated in the meter supply contract that the buyer himself will have the initial verification performed.

#### Chapter 5

## Requirements for cooling energy suppliers and repairers

**§ 9.** Cooling energy suppliers may install cooling energy meters or allow their installation for use in accordance with § 1, if the meters have been verified.

(2) Cooling energy suppliers shall install cooling energy meters that are suitable for accurate measurement of the foreseen or foreseeable use. As the basis for the selection of meters, the cooling energy suppliers shall use the manufacturer's declared values in the following areas:

1) the climatic, mechanical and electromagnetic environment in which the cooling energy meter is intended for use, as well as the power supply and influence quantities that may affect meter accuracy; and

2) the fluid temperature, fluid pressure, flow rate and heat rating.

(3) If the cooling energy meters described above in (2) are composed of type-approved and verified sub-assemblies, the cooling energy supplier shall ensure that the selected sub-assemblies fit together and are sealed against separation.

(4) The cooling energy meters described above in (2) shall meet the requirements of § 5(2) concerning the use of specific accuracy classes for specific uses.

**§ 10.** Cooling energy meters that are used in accordance with § 1 and which have been repaired or otherwise subjected to measures/procedures that may affect meter accuracy shall be reverified before being re-used. Cooling energy meters shall also be reverified if the seal has been broken.

(2) A repairer who has performed a procedure on a cooling energy meter which then requires reverification (see (1) above) shall immediately notify the cooling energy supplier thereof.

(3) When reverification is necessary in accordance with (1), the cooling energy supplier is obligated to order reverification at an authorised laboratory — see 16.

**§ 11.** Cooling energy suppliers shall set up a system to monitor the accuracy of all cooling energy meters. This monitoring system shall be so constructed to, through its operation, obtain adequate assurance that the cooling energy meters in operation do not exceed twice the maximum permissible error upon initial verification.

(2) The monitoring system in the first paragraph above can be based on statistical sample testing of given lots of uniform cooling energy meters for which the monitoring period varies depending on the results of the monitoring or on periodic replacement of all cooling energy meters within a given lot with statistical sample tests of the replaced cooling energy meters, and varying the rotation period on the basis of the results. Control measurements shall consist of accredited calibration. Cooling energy meters that have been removed may not be re-used until they have been reverified.

(3) The monitoring system shall be fully documented in a control manual.

(4) Cooling energy suppliers are obligated to make known the monitoring system contents to the district cooling plant's cooling energy consumers, who shall also be informed of any changes that are made to said system.

**§ 12.** Cooling energy suppliers or others who replace verified sub-assemblies or have replacements performed are responsible for ensuring that the cooling energy meter as a whole continues to comply with this order's requirements and specifications in the type approval for the interconnection of sub-assemblies.

## Chapter 6

#### Requirements for cooling energy consumers

**§ 13.** Cooling energy consumers may not unduly interfere with cooling energy meters or otherwise affect proper meter functionality.

#### Chapter 7

## Type approval of cooling energy meters

**§ 14.** Type approval of cooling energy meters (see § 6) is sought from and granted by the Danish Safety Technology Authority. Applications shall include documentation that the cooling energy meter complies with legal requirements in the form of a type-test report and a draft type-test certificate from a laboratory accredited by DANAK or an equivalent accreditation body that is a signatory to the EA or ILAC multilateral agreement on mutual recognition.

(2) In the absence of laboratories with the necessary accreditation for the tests required for a given meter, the Danish Safety Technology Authority approves other laboratories.

## Chapter 8

#### Initial verification of metering equipment

**§ 15.** Initial verification of cooling energy meters that have been type-approved in accordance with § 14 is performed by laboratories that are specifically authorised to do so by the Danish Safety Technology Authority on the grounds that they have the necessary accreditation from DANAK or an equivalent accreditation body that is a signatory to the EA or ILAC multilateral agreement on mutual recognition.

(2) Verification is ordered directly from an authorised laboratory that charges a fee to do so.

(3) Verified meters shall be marked with the verification mark and year mark as shown in Annex 1 to this order.

## Chapter 9

## Reverification of metering equipment

**§ 16.** Reverification of cooling energy meters is performed by laboratories that are specifically authorised to do so by the Danish Safety Technology Authority on the grounds that they have the necessary accreditation from DANAK or an equivalent accreditation body that is a signatory to the EA or ILAC multilateral agreement on mutual recognition.

(2) Reverification is ordered directly from an authorised laboratory that charges a fee to do so.

(3) Reverified meters shall be marked with the verification mark and year mark as shown in Annex 1 to this order.

# Chapter 10

## Supervision

**§ 17.** The Danish Safety Technology Authority carries out supervision to ensure that the provisions in this order are complied with.

**§ 18.** The Danish Safety Technology Authority Agency may require the disclosure of all information deemed necessary for the performance of tasks related to this order.

(2) The Danish Safety Technology Authority has the right, if deemed necessary at any time and upon proof of identity and without a court order, to access public and private properties and premises in order to carry out metrological monitoring activities.

## Chapter 11

## Appeals

*§ 19.* Appeals against Danish Safety Technology Authority decisions made under this order cannot be lodged with any other administrative authority — see Article 17(1) of the Trade and Industry Promotion and Regional Development Act and Consolidation Act No 1715 of 16 December 2010.

## Chapter 12

## Penalty clauses

**§ 20.** The following shall be punished with a fine:

- 1) using cooling energy meters in violation of 7(2);
- 2) violating § 8, § 9, § 10(2) and (3), § 11, § 12 or § 13;
- 3) marketing cooling energy meters that are not type-approved in accordance with § 14 and initially verified in accordance with § 15;
- 4) putting into service cooling energy meters that are not type-approved in accordance with § 14 and initially verified in accordance with § 15; or
- 5) failing to meet the disclosure obligation under 18(1).

(2) Criminal liability may be imposed on companies, etc. (legal persons) in accordance with the rules of Chapter 5 of the Danish Penal Code (*Straffeloven*).

## Chapter 13

## Entry into force, transitional provisions, etc.

**§ 21.** The order shall enter into force on DD/MM/2014.

§ 22. The order does not apply to Greenland or the Faroe Islands.

The Danish Safety Technology Authority, DD/MM/2014

## XXX

Annex 1

1. Verification mark



- where XXX is the distinguishing number of the authorised laboratory that performed the verification.
- 2. Year mark



- where ZZ is the final 2 digits of the verification year.