Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council (Text with EEA relevance)

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ANNEX VII

Data monitoring methods

7. RULES FOR DETERMINING NET MEASURABLE HEAT

7.1. **Principles**

All specified amounts of measurable heat shall always refer to *net* amount of measurable heat, determined as the heat content (enthalpy) of the heat flow transmitted to the heat consuming process or external user minus the heat content of the return flow.

Heat consuming processes necessary for operating the heat production and distribution, such as deaerators, make-up water preparation, and regular blow offs, shall be taken into account in the efficiency of the heat system and can therefore not be considered heat consuming processes eligible for allocation.

Where the same heat medium is used by several consecutive processes and its heat is consumed starting from different temperature levels, the quantity of heat consumed by each heat consuming process shall be determined separately, unless the processes fall within the same sub-installation. Re-heating of the transfer medium between consecutive heat consuming processes should be treated like additional heat production.

Where heat is used to provide cooling via an absorption cooling process, that cooling process shall be considered as the heat consuming process.

7.2. **Methodologies for determining net amounts of measurable heat**

For the purpose of selecting data sources for quantification of energy flows in accordance with section 4.5, following methodologies for determining net amounts of measurable heat shall be considered:
Method 1: Using measurements

Under this method, the operator measures all relevant parameters, in particular temperature, pressure, state of the transmitted as well as the returned heat medium. The state of the medium in case of steam shall refer to its saturation or degree of superheating. The operator furthermore measures the (volumetric) flow rate of the heat transfer medium. Based on the measured values, the operator determines the enthalpy and the specific volume of the heat transfer medium using suitable steam tables or engineering software.

The mass flow rate of the medium is calculated as

$\dot{m} = \dot{V} / \upsilon$	(Equation 3)

Where $\dot{m}$ is the mass flow rate in kg/s, V is the volumetric flow rate in m^3/s and υ is the specific volume in m^3/kg.

As the mass flow rate is considered the same for transmitted and returned medium, the heat flow rate is calculated using the difference in enthalpy between the transmitted flow and the return, as follows:

$\dot{Q} = (h_{flow} - h_{return}) \cdot \dot{m}$	(Equation 4)

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Where Q is the heat flow rate in kJ/s, h_{flow} is the enthalpy of the transmitted flow in kJ/kg, h_{return} is the enthalpy of the return flow in kJ/kg, and $\dot{m}$ is the mass flow rate in kg/s.

In case of steam or hot water used as heat transfer medium, where the condensate is not returned, or where it is not feasible to estimate the enthalpy of the returned condensate, the operator shall determine h_{return} based on a temperate of 90 °C.

If the mass flow rates are known to be not identical, the following shall apply:

— Where the operator provides evidence to the satisfaction of the competent authority that condensate remains in the product (e.g. in 'life steam injection' processes), the respective amount of condensate enthalpy is not deducted;
— Where heat transfer medium is known to be lost (e.g. due to leakages or sewering), an estimate for the respective mass flow shall be deducted from the mass flow of the transmitted heat transfer medium.

For determining the annual net heat flow from the above data, the operator shall – subject to the measurement equipment and data processing available, use one of the following methods:

— Determine annual average values for the parameters determining the annual average enthalpy of the transmitted and returned heat medium, and multiply with the total annual mass flow, using equation 4;
— Determine hourly values of the heat flow and sum up those values over the annual total operating time of the heat system. Subject to the data processing system, hourly values may be substituted by other time intervals as appropriate.

Method 2: Using documentation

The operator determines net amounts of measurable heat based on documents in accordance with section 4.6 of this Annex, provided that heat quantities provided in such documents are based on metering, or on reasonable estimation methods in accordance with section 3.4 of this Annex.

Method 3: Calculation of a proxy based on measured efficiency

The operator determines amounts of net measurable heat based on the fuel input and the measured efficiency related to the heat production:

$Q = \eta_H \cdot E_{IN}$	(Equation 5)
$E_{IN} = \Sigma\, AD_i \cdot NCV_i$	(Equation 6)

Where Q is the amount of heat expressed in TJ, η_H is the measured efficiency of heat production, E_{IN} is the energy input from fuels, AD_i are the annual activity data (i.e. quantities consumed) of fuels i, and NCV_i the net calorific values of fuels i.

The value of η_H is either measured by the operator over a reasonably long period, which sufficiently takes into account different load states of the installation or taken from the manufacturer's documentation. In that regard the specific part load curve is to be taken into account by using an annual load factor:

$L_F = E_{IN}/E_{Max}$	(Equation 7)

Where L_F is the load factor, E_{IN} the energy input as determined using Equation 6 over the calendar year, and E_{Max} the maximum fuel input if the heat producing unit had been running at 100 % nominal load for the full calendar year.

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The efficiency should be based on a situation in which all condensate is returned. A temperature of 90 °C should be assumed for the returned condensate.
Method 4: Calculating a proxy based on the reference efficiency

This method is identical to method 3, but using a reference efficiency of 70 % ($\eta_{Ref,H}$ = 0,7) in Equation 5.

7.3. **Distinguishing district heating, EU ETS and non-ETS heat**

Where an installation imports measurable heat, the operator shall determine separately the quantity of heat coming from installations covered by the EU ETS, and heat imported from non-EU ETS entities. Where an installation consumes measurable heat exported from a nitric acid product benchmark sub-installation, the operator shall determine that amount of heat consumed separately from other measurable heat.

Where an installation exports measurable heat, the operator shall determine separately the quantity of heat exported to installations covered by the EU ETS, and heat exported to non-EU ETS entities. Furthermore, the operator shall determine separately quantities of heat qualifying as district heating.

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