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EAST AFRICAN STANDARD

Water conditioning equipment inside buildings — Installation, operation, maintenance and repair

EAST AFRICAN COMMUNITY

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

BS EN 15161:2006, *Water conditioning equipment inside buildings — Installation, operation, maintenance and repair*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

Draft for comments only — Not to be cited as East African Standard

Water conditioning equipment inside buildings — Installation, operation, maintenance and repair

1 Scope

This East African Standard specifies general requirements for installation (including ancillaries) methods for checking the functionality during normal operation and requirements for maintenance and repair to prevent and repair failures of water conditioning devices inside buildings for the treatment of drinking water.

This East African Standard concerns devices which are permanently connected to the water distribution system in a building at the point of entry (downstream from the delivery point of the mains supply) and/or at the point of use.

NOTE Influence of the water quality on the distribution system downstream of the device is not covered by this East African Standard but is covered by documentation for specific devices.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CD/K/003:2009, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

3 Terms and definitions

For the purposes of this East African Standard, the following terms and definitions apply.

3.1

ancillaries

parts, components or products necessary to make the installed device complete and ready for operation

3.2

cleaning

removal of soil, dirt, organic/inorganic deposits or other objectionable matter by means of water, mechanical action and/or chemical agents

3.3

'commissioning'

series of actions intended to put in operation the assembled system and to hand it over, as well as instruct the keeper

3.4

competent person

individual or enterprise having the necessary qualifications in accordance with national regulation, if any, to be working on water conditioning devices

3.5

conditioned water

water passed through the water conditioning device to the distribution system

3.6

device

water conditioning equipment in the scope of this East African Standard complying with the relevant product standard (see [1] to [9])

3.7

domestic water distribution system

pipework, fittings and appliances that are installed between taps that are normally used for human consumption and the distribution network

3.8

installation

permanent connection of the water conditioning device inside the building to the water distribution system including the electrical supply and ancillaries possibly needed for the correct operation of the equipment and for fulfilling the requirements of the relevant product standards (see [1] to [9]) and/or the existing legislation

3.9

keeper

individual or enterprise operating and monitoring the device

3.10

logbook

document supplied together with the device or released to the keeper on which there are recorded the main actions required to be performed on the device during its lifetime starting from its commissioning

NOTE The logbook in its simplest form could be a sticker.

3.11

maintenance

periodic action for keeping and ensuring the continuous design performance of the device at the appropriate time, irrespective of the frequency of the required actions

NOTE Maintenance can include cleaning the device and replacing predefined worn or exhausted parts.

3.12

maintainer

individual or enterprise performing maintenance

3.13

manufacturer

enterprise that manufactures, assembles or imports the water conditioning device

NOTE The manufacturer may be the supplier.

3.14

operation

series of automatic and non-automatic actions undertaken for the correct functioning of the water conditioning device

3.15

owner

person responsible and authorized for the domestic water distribution system

3.16

point of entry system

system used to treat all or part of the water for the premises inside buildings

3.17

point of use system

system used to treat the water upstream from a single tap or multiple taps but not to the entire facility

3.18**removable**

fabricated to be taken away from the system using no or simple tools (e.g. screw-drivers; pliers, open-end wrenches)

3.19**repair**

occasional action, performed by competent personnel only, intended to restore the performance of a defective water conditioning device

3.20**supplier**

enterprise that puts products and/or services on the market which may be the actual product manufacturer (e.g. private brand name)

NOTE For the scope of this East African Standard, the supplier is assumed to be sufficiently expert to undertake the task of providing clear instructions for the equipment installation, operation, maintenance and repair.

4 Device selection and supply**4.1 Device selection and sizing**

Selection of a device that is appropriate to the performance and operational expectations, and to the intended installation site of the purchaser, is essential. Prior to purchase, information that is available in brochure form, specification sheets or that is clearly marked on the external product packaging, shall be available with the equipment, outlining the key installation and operation requirements. It shall specify limitations on the location for installation in terms of dimensional requirements and environment (e.g. temperature). It shall identify frequency of periodic operation and maintenance and the associated accessibility required. It shall also specify the water supply requirements (pressure limitations, pipe sizes) and proximity requirements for other ; services which may be necessary such as availability of electric power, drainage facilities etc.

4.2 Device supply

All necessary information for installation, commissioning, operation and maintenance (stressing the importance of maintenance) shall be provided with the equipment so that it can be confirmed that the equipment is appropriate for the application, location, resources available, consumable requirements etc.

Maintenance and repair are presumed to be specialist activities and their availability shall be part of the product documentation.

As far as the repair is concerned, it shall be specified, whether the product requires disposal in case of failure/exhaustion (including instruction for disposal) or whether it can be restored almost to the original performance, if properly repaired.

All the documentation (e.g. label, logbook, instruction manual) provided with the device shall be presented in the official language(s) of the country in which the device is purchased.

Where the device is purchased to include the service of installation and commissioning, this shall be clearly stated in the supply contract and the activities shall be conducted in accordance with the requirements of this East African Standard.

5 Installation requirements**5.1 General**

Proper installation of a device is a prerequisite not only for achieving the expected results but also for realizing them continuously and safely.

Installation of devices shall be performed in accordance with national or local provisions.

If the device, as delivered, does not include the parts or ancillaries necessary to meet the relevant requirements and regulations, they shall be included in accordance with the equipment instructions during installation.

5.2 Place of installation

The water conditioning system shall be installed only in a suitable place (e.g. clean, well ventilated, adequately illuminated and protected against pests and frost) within the domestic water distribution system. It shall be remote or insulated from sources of heat (e.g. washing machines, dishwashers, boilers, cookers and hot water pipe work). Location shall take into consideration location of the existing distribution system as well as accessibility of other services (e.g. floor drainage may be essential under some circumstances). Accessibility for operation and maintenance is, however, of high importance.

For cleaning purposes, drinking water shall be available. The drainage shall be suitably designed for collecting and discharging wastewater, where necessary.

5.3 Hydraulic connection

Connection to the piping of the domestic water distribution system shall comply with the following main requirements:

- suitable backflow prevention shall be fitted where appropriate which complies with the national implementation of CD/K/003:2009;
- device and the related fittings which require regular inspection for operation maintenance and repair purposes (e.g. water meters, check valves, anti-vacuum valves, air gaps, pressure gauges, stop valves, ancillaries), shall be easily accessible and should be kept unobstructed (e.g. by stored goods, furniture);
- connections shall be made in accordance with the equipment instructions;

NOTE To accommodate foreseeable (e.g. maintenance) or unforeseeable (e.g. failure) events, it is recommended, particularly for point of entry devices, that the installation can supply untreated drinking water downstream of the device (e.g. with bypass or isolation valves).

- sampling taps shall be kept at relevant points for checking the device performance, where applicable.

5.4 Commissioning

Detailed instructions on the commissioning steps shall be provided with the equipment.

Commissioning is performed by a competent person and shall include any necessary operation (e.g. washing, regeneration, conditioning) and will replicate or mimic all the functional steps that occur during operation.

Appropriate checks shall be carried out to ensure that the equipment has been installed so that it is performing, and will continue to perform. The collected data on the commissioning shall be recorded in the device logbook, if appropriate.

During commissioning the device keeper should be trained to operate and monitor the device properly. Documentation provided with the equipment should also be handed over.

5.5 Device logbook

All data collected during commissioning and normal operation, maintenance and repair operations shall, be recorded in the logbook that accompanies each device.

6 Operation requirements

Operation of the water conditioning devices includes normal and day-to-day use of the water conditioning device as well as the actions necessary for keeping them in good operating condition (e.g. supply of salt for the softeners, chemicals for dosing systems). It also includes the actions needed for dealing with foreseeable situations (e.g. prolonged non-use during vacation, climate variations) and tests for checking performance, if applicable.

By following the operation instructions, it shall also be possible to readily detect device malfunction (common troubleshooting) and any requirement for maintenance and/or repair.

Systems and devices shall be properly operated to ensure their reliable function and compliance with applicable regulations.

7 Maintenance requirements

7.1 General

Maintenance consists of routine and periodic actions at least once per year, that are needed to prevent malfunction, failures, loss of performance etc. It concerns easily accessible and removable parts or components only, and can be performed by a relatively unskilled individual without safety risks.

The maintenance protocol is provided with the equipment.

The continued efficient functioning of the installation relies upon regular maintenance of the installed water conditioning device.

The owner of the water conditioning device is strongly recommended to conclude a maintenance contract. All spare parts including disposables should be obtained from the equipment manufacturer.

If equivalent alternatives are adopted, they shall be suitable for the relevant equipment and application in accordance with the relevant product standards (see [1] to [9]).

7.2 Maintenance elements

The following elements should be part of the maintenance work:

- a) raw and treated water tests, where appropriate, to the application;
- b) evidence of effective operator attention (e.g. presence of salt in brine tank);
- c) control of the bypass valve, if required to be installed;
- d) cleaning, if applicable;
- e) replacement of worn, exhausted and/or disposable parts.

If for any reason and in spite of maintenance the device cannot be restored to the optimum operating conditions, the device shall be taken out of service.

7.3 Maintenance recording

7.3.1 General

The maintenance events and all operations performed during maintenance (see 7.2) shall be carefully recorded in the logbook after each maintenance intervention.

The logbook shall contain at least two types of information: general and specific (see below). The following minimum general information about the device shall be recorded in the logbook:

- a) device type and identification;
- b) device location, if applicable;
- c) owner/keeper coordinates;
- d) maintainer coordinates;
- e) name of the actual maintainer;
- f) date of commissioning;
- g) date of the intervention;
- h) type of intervention (see 7.3.2).

7.3.2 Type and description of the intervention (check-list)

The following check list is not exhaustive and shall be adapted to each type of water conditioning device. The listed items below should be included in the maintenance programme and recorded in the logbook in compliance with the relevant equipment instructions:

- a) hydraulic controls;
- b) control of the pertinent test parameters, where appropriate to the application;
- c) cleaning of the components in accordance with the instructions;
- d) replacement of parts as per maintenance protocol;
- e) check consumption of consumables (e.g. salt, chemicals);
- f) check of correct functioning of the assembled device;
- g) visual inspection for damage (leakage, corrosion, scaling);
- h) other maintenance operations as appropriate (e.g. lubrication, integrity of resins, membranes).

8 Repair requirements

8.1 General

Device repair is aimed at supplying expert attention for emergency breakdown.

Repairs shall be performed in accordance with the equipment instructions and the device technical manual. Competent people shall be properly instructed and trained to repair the specific brand and type of device.

All spare parts including disposables should be obtained from the equipment manufacturer.

If equivalent alternatives are adopted, they shall be suitable for the relevant equipment and application in accordance with the relevant product standards (see [1] to [9]).

A detailed report of the intervention shall be recorded in the device logbook.

8.2 Repair or breakdown

Any repair shall be performed by isolating the device, if necessary.

During repair particular care shall be taken to prevent any contamination of the inlet (feed) and outlet (treated) water.

After repairing, the device shall be examined as indicated in 7.2 and, if necessary, commissioned as per installation procedure.

If the device cannot be restored to the optimum operating conditions, the device shall be taken out of service.

Maintenance operations that require dismantling the system, such that water contact parts are exposed, should be subject to careful, hygienic control to avoid contamination of the system. Preferably, disposable gloves should be used to avoid personal contamination of the system parts; any tool used that may come into contact with the wetted parts should be cleaned and disinfected in accordance with the instructions before use. For example, for filters, the spent cartridge should carefully be disposed of and the replacement cartridge should remain sealed in its protective wrapping until the last practical moment.

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