

TECHNICAL REGULATION ON ECODESIGN REQUIREMENTS FOR
GLANDLESS STANDALONE CIRCULATORS AND GLANDLESS CIRCULATORS
INTEGRATED IN PRODUCTS, NO (XXX) FOR THE YEAR 2012, ISSUED IN
ACCORDANCE TO ARTICLE (XXX) AND ARTICLE (XXX) OF STANDARDS AND
METROLOGY LAW NO 22/2000

Article 1:

This Technical Regulation shall be referred to as the "Technical Regulation on ecodesign requirements for glandless standalone circulators and glandless circulators integrated in products, No...".

Article 2:

This Technical Regulation represents an implementing Technical Regulation to Technical Regulation on ecodesign requirements for energy related products, No. ... (hereinafter: Framework Technical Regulation), both of which shall be used to establish the ecodesign requirements for glandless circulators.

Section 2
Definitions

Article 3:

In addition to the definitions laid down in Article 2 of the Framework Technical Regulation, the following definitions shall apply for the purpose of this implementing Technical Regulation:

3-1 Circulator: an impeller pump which has the rated hydraulic output power of between 1 W and 2 500 W and is designed for use in heating systems or in secondary circuits of cooling distribution systems;

3-2 Glandless circulator: a circulator with the shaft of the motor directly coupled to the impeller and the motor immersed in the pumped medium;

3-3 Standalone circulator: a circulator designed to operate independently from the product;

3-4 Product: an appliance that generates and/or transfers heat;

3-5 Drinking water circulator: a circulator specifically designed to be used in the recirculation of drinking water.

Section 1
Subject matter and scope

Article 4:

4-1 This implementing Technical Regulation establishes ecodesign requirements for placing on the market of glandless standalone circulators and glandless circulators integrated in products.

4-2 This implementing Technical Regulation shall not apply to:

(a) drinking water circulators, except as regards information requirements of Annex A, point 2(4);

(b) circulators integrated in products and placed on the market not later than 1 January 2020 as replacement for identical circulators integrated in products and placed on the market no later than 1 August 2015. The replacement product or its packaging must clearly indicate the product(s) for which it is intended.

Section 3 Requirements, conformity assessment and market surveillance

Article 5: Ecodesign requirements

5-1 The ecodesign requirements for circulators are set out in Annex A.

5-2 Compliance with ecodesign requirements shall be measured in accordance with requirements set out in Annex B, point 1.

5-3 The calculation method for the energy efficiency index of circulators is set out in Annex B, point 2.

Article 6: Conformity assessment

The procedure for assessing conformity referred to in Article 10 of the Framework Technical Regulation shall be the internal design control system set out in Annex B to that Technical Regulation or the management system for assessing conformity set out in Annex C to that Technical Regulation.

Article 7: Verification procedure for market surveillance purposes

When performing the market surveillance checks referred to in Article 15 of the Framework Technical Regulation, the Organization shall, for the requirements set out in Annex A to this implementing Technical Regulation, apply the verification procedure set out in Annex C to this implementing Technical Regulation.

Article 8: Benchmarks

The indicative benchmarks for best-performing circulators available on the market at the time of entry into force of this implementing Technical Regulation are set out in Annex D.

Section 4 Related documents

9-1 This Technical Regulation represents transposition of EU Commission Regulation 641/2009 on ecodesign requirements for glandless standalone circulators and glandless circulators integrated in products.

9-2 Technical Regulation on the ecodesign requirements for energy related products, No. ...

9-3 Jordan Standards and Metrology Law, No. 22/2000.

9-4 Instructions on Market Surveillance, No. ...

Section 5 Entry into force and application

Article 10:

10-1 This Technical regulation shall enter into force on 1/1/2014.

10-2 It shall apply from 1 August 2015 for glandless standalone circulators and glandless circulators integrated in products regarding the efficiency level defined in Annex A point 1-2.

ANNEX A ECODESIGN REQUIREMENTS

1. Energy efficiency requirements

1. Glandless standalone circulators, with the exception of those specifically designed for primary circuits of thermal solar systems and of heat pumps, shall have an energy efficiency index (EEI) of not more than 0,27, calculated in accordance with Annex B, point 2.

2. From 1 August 2015 glandless standalone circulators and glandless circulators integrated in products shall have an energy efficiency index (EEI) of not more than 0,23, calculated in accordance with Annex B, point 2.

2. Product information requirements

1. The energy efficiency index of circulators, calculated in accordance with Annex B, shall be indicated on the name plate and packaging of the product and in the technical documentation as follows: 'EEI = 0,[xx]';

2. The following information shall be provided: 'The benchmark for most efficient circulators is EEI = 0,20.';

3. Information concerning disassembly, recycling, or disposal at end-of-life of components and materials, shall be made available for treatment facilities;

4. The following information shall be provided on the packaging and in the technical documentation of drinking water circulators: 'This circulator is suitable for drinking water only'.

Manufacturers shall provide information on how to install, use and maintain the circulator in order to minimise its impact on the environment.

The information listed above shall be visibly displayed on freely accessible websites of the circulator manufacturers.

ANNEX B
MEASUREMENT METHODS AND METHODOLOGY FOR CALCULATING THE
ENERGY EFFICIENCY INDEX

1. Measurement methods

For the purposes of compliance and verification of compliance with the requirements of this implementing Technical regulation, measurements shall be made using a reliable, accurate and reproducible measurement procedure that takes into account the generally recognised state of the art measurement methods, including methods set out in Jordanian standards adopting EU documents, the reference numbers of which have been published for that purpose in the Official Gazette.

2. Methodology for calculating the energy efficiency index

The methodology for calculating the energy efficiency index (EEI) for circulators is as follows:

1. Where a circulator has more than one setting of head and flow, measure the circulator at the maximum setting.

'Head' (H) means head (in metres) produced by the circulator at the specified point of operation.

'Flow' (Q) means the volume flow rate of water through the circulator (m³/h).

2. Find the point where Q · H is maximum and define the flow and head at this point as: Q_{100 %} and H_{100 %}.

3. Calculate the hydraulic power P_{hyd} at this point.

'Hydraulic power' means an expression of the arithmetic product of the flow (Q), Head (H) and a conversion factor that aligns the units used in the calculation.

'P_{hyd}' means hydraulic power delivered by the circulator to the fluid being pumped at the specified point of operation (in watts).

4. Calculate the reference power as:

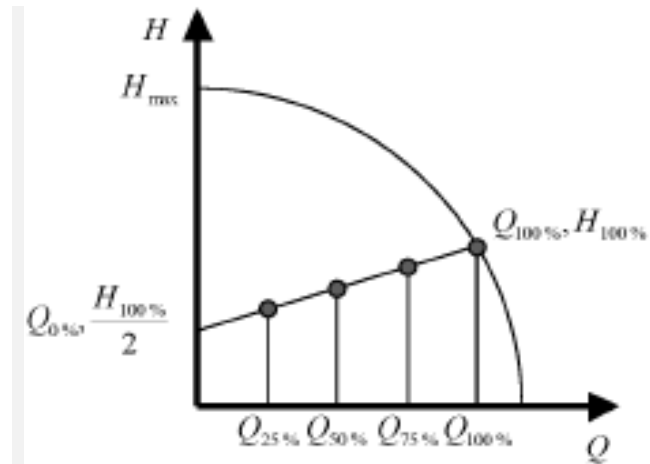
$$P_{ref} = 1,7 \cdot P_{hyd} + 17 \cdot (1 - e^{-0,3 \cdot P_{hyd}}), 1 \text{ W} \leq P_{hyd} \leq 2\,500 \text{ W}$$

'Reference power' means a relation between hydraulic power and power consumption of a circulator, taking into account the dependency between circulator efficiency and size.

'P_{ref}' means the reference power consumption (in watts) of the circulator.

5. Define the reference control curve as the straight line between the points:

(Q_{100 %} , H_{100 %}) and (Q_{0 %} , H_{100 %} / 2)



6. Select a setting of the circulator ensuring that the circulator on the selected curve reaches $Q \cdot H = \text{max}$ point.

7. Measure P_1 and H at the flows:

$$Q_{100\%}, 0,75 \cdot Q_{100\%}, 0,5 \cdot Q_{100\%}, 0,25 \cdot Q_{100\%} .$$

' P_1 ' means the electrical power (in watts) consumed by the circulator at the specified point of operation.

8. Calculate at these flows

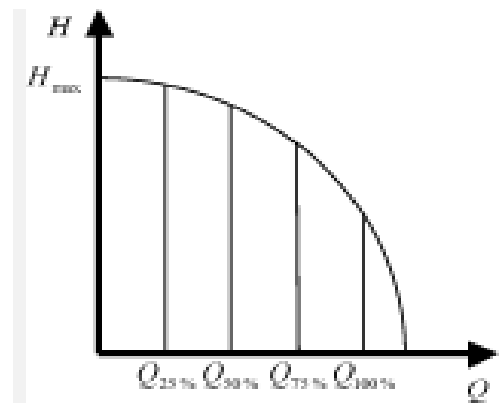
$$P_L = (H_{ref} / H_{meas}) \cdot P_{1,meas} , \text{ if } H_{meas} \leq H_{ref}$$

$$P_L = P_{1,meas}, \text{ if } H_{meas} > H_{ref}$$

Where H_{ref} is the head on the reference control curve at the different flows.

9. Using P_L and this load profile:

Flow [%]	Time [%]
100	6
75	15
50	35
25	44



Calculate the weighted average power $P_{L,avg}$ as:

$$P_{L,avg} = 0,06 \cdot P_{L,100 \%} + 0,15 \cdot P_{L,75 \%} + 0,35 \cdot P_{L,50 \%} + 0,44 \cdot P_{L,25 \%}$$

Calculate the energy efficiency index (¹) as:

$$EEI = (P_{L,avg} / P_{ref}) \cdot C_{20 \%}, \text{ where } C_{20 \%} = 0,49$$

(¹) $C_{xx \%}$ means a scaling factor that ensures that at the time of defining the scaling factor only $xx \%$ of circulators of a certain type have an $EEI = 0,20$.

ANNEX C
VERIFICATION PROCEDURE

For the purposes of checking conformity with the requirements laid down in Annex A, the Organization shall use the measurement and calculation procedure set out in Annex B.

The Organization shall test a single circulator. If the energy efficiency index exceeds the values declared by the manufacturer by more than 7 %, the measurements shall be made on three more circulators. The model shall be considered to comply if the arithmetical mean of the measured values for the latter three circulators do not exceed the values declared by the manufacturer by more than 7 %.

Otherwise, the model shall be considered not to comply with the requirements of this Technical Regulation.

In addition to the procedure set out in this Annex, the Organization shall use reliable, accurate and reproducible measurement methods, which take into account the generally recognised state of the art, including methods set out in Jordanian standards adopting EU documents, the reference numbers of which have been published for that purpose in the Official gazette.

ANNEX D
INDICATIVE BENCHMARKS

At the time of the adoption of this Technical Regulation, the benchmark for the best available technology on the market for circulators is $EEI = 0,20$.