

**Pumbad. Labapumbad. Märgmootoriga ringluspumbad.
Osa 1: Katsetamise üldnõuded ja protseduurid ning
energiatõhususe indeksi (EEI) arvutamine**

**Pumps - Rotodynamic pumps - Glandless circulators -
Part 1: General requirements and procedures for testing
and calculation of energy efficiency index (EEI)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 16297-1:2012 sisaldab Euroopa standardi EN 16297-1:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 16297-1:2012 consists of the English text of the European standard EN 16297-1:2012.
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English Version

**Pumps - Rotodynamic pumps - Glandless circulators - Part 1:
General requirements and procedures for testing and calculation
of energy efficiency index (EEI)**

Pompes - Pompes rotodynamiques - Circulateurs sans
presse-étoupe - Partie 1: Exigences générales et
procédures pour les essais et le calcul de l'indice
d'efficacité énergétique (IEE)

Pumpen - Kreiselpumpen - Umwälzpumpen in
Nassläuferbauart - Teil 1: Allgemeine Anforderungen und
Verfahren zur Prüfung und Berechnung des
Energieeffizienzindex (EEI)

This European Standard was approved by CEN on 18 August 2012.

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Foreword

This document (EN 16297-1:2012) has been prepared by Technical Committee CEN/TC 197 “Pumps”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document, together with EN 16297-2:2012, supersedes EN 1151-1:2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 16297 consists of the following parts under the general title *Pumps — Rotodynamic pumps — Glandless circulators*:

- Part 1: General requirements and procedures for testing and calculation of energy efficiency index (EEI);
- Part 2: Calculation of energy efficiency index (EEI) for standalone circulators;
- Part 3: Energy efficiency index (EEI) for circulators integrated in products.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard has been prepared under mandate M/469 EN of 22 June 2010 given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Requirements of the EU Directive 2005/32/EC of 6 July 2005 and Commission Regulation (EC) 641/2009 of 22 July 2009 by describing procedures for measurement and calculation of hydraulic power, power consumption, and energy efficiency index of circulators.

The document comprises standalone circulators and circulators integrated in products.

NOTE For the purpose of this document, the term "product" is used in the sense of an appliance that generates and/or transfers heat.

Standalone circulator means a circulator designed to operate *independently* from the product and should be tested and calculated in accordance with EN 16297-2.

Circulator integrated in a product means a circulator designed to operate *dependently* of the products and should be tested and calculated in accordance with EN 16297-3.

The following table can be used as guidance for deciding when EN 16297-3 applies. A circulator is considered to be operated dependently if it carries at least one of the design details listed in Table 1.

Table 1 – When EN 16297-3 applies

Design	Details	Examples (non exhaustive list)
Pump housing	Designed to be mounted and used inside a product	Housings designed for use inside products e.g. with clip connections, with back panel connection or plate heat exchanger connections.
		Housings integrating electrically or thermally driven valve functions
Control	Designed to be speed controlled by the product	Circulators with product specific control signal interfaces
Safety measures	Designed with safety features not suitable for stand alone operation	Product takes over safety features (ISO IP classes)
	Circulator is a defined part of product approval or product CE marking	Circulator is part of the component list of product approval or product CE marking

1 Scope

This European Standard specifies general performance requirements and general requirements and procedures for testing and calculation of the energy efficiency index (EEI) for glandless circulators having a rated hydraulic output power of between 1 W and 2500 W designed for use in heating systems or cooling distribution systems.

All known hazards which are likely to occur at normal installation and operation are covered by the European Standards EN 809 and EN 60335-2-51.

As regards safety for electro-technical parts of circulators, EN 60335-2-51 applies.

2 Normative references

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

EN 1151-2:2006 *Pumps — Rotodynamic pumps — Circulation pumps having a rated power input not exceeding 200 W for heating installations and domestic hot water installations — Noise test code (vibro-acoustics) for measuring structure- and fluid-borne noise*

EN 50160:2007, *Voltage characteristics of electricity supplied by public distribution networks*

EN 60335-2-51:2003, *Household and similar electrical appliances – Safety – Part 2-51: Particular requirements for stationary circulation pumps for heating and service water installations*

EN ISO 9906:2012, *Rotodynamic pumps – Hydraulic performance acceptance tests – Grades 1, 2 and 3 (ISO 9906:2012)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

heating system

system where heat is generated and/or transferred

3.2

cooling distribution system

system where a cooling medium is distributed

3.3

impeller pump

machine to transfer mechanical energy through a rotating impeller to gain velocity and pressure for the pumped liquid

3.4

pump housing

part of an **impeller pump** (3.3) which is connected to the pipework of the **heating system** (3.1) or **cooling distribution system** (3.2)