

DIN EN 16480:2022-07 (E)

Pumps - Rotodynamic pumps - Minimum required efficiency of water pumps and determination of Minimum Efficiency Index (MEI)

Contents		Page
European foreword		3
Introduction		4
1	Scope	5
2	Normative references	5
3	Terms and definitions	5
3.1	List of quantities with definitions	5
3.2	General definitions	7
4	Symbols and abbreviations	8
5	Minimum Required Efficiencies and Minimum Efficiency Index	10
5.1	The concept of "house of efficiency"	10
5.2	Mathematical representation of minimum required efficiency	12
5.3	Minimum efficiency at part load and overload	13
5.4	Minimum Efficiency Index	13
6	Determination of the Efficiency of a Test Pump	16
6.1	General	16
6.2	Test Procedures	16
6.3	Test conditions	17
6.4	Measurement uncertainties	18
6.4.1	Relevance	18
6.4.2	Fluctuations	18
6.4.3	Statistical evaluation of overall measurement uncertainty	18
6.5	Evaluation of test data	20
6.5.1	Conversion of the test results to the nominal speed of rotation or to the nominal electric frequency	20
6.5.2	Performance curves	21
6.5.3	Determination of the values relevant for the qualification of MEI	22
6.5.4	Procedures for testing and/or evaluation of special pump types	23
7	Proving the Minimum Efficiency Index of a pump size	24
7.1	General remarks	24
7.2	Determination of the Minimum Efficiency Index of a pump size	24
Annex A (normative) Pump types in scope		27
Annex B (informative) General remarks on the efficiency of rotodynamic pumps		29
Annex C (informative) Mean Values of Minimum Efficiency Index for a Pump Size		31
C.1	General	31
C.2	Confidence interval on the mean value	32
C.3	Outlier test	34
C.4	Numerical example	35

Annex ZA (informative) Relationship between this European Standard and the Ecodesign requirements of Commission Regulation (EU) No 547/2012 [OJEU L 165/28 of 26 June 2012] aimed to be covered	37
Bibliography	38