

DIN EN 15316-2-3:2007-10 (E)

Heating systems in buildings - Method for calculation of system energy requirements and system efficiencies - Part 2-3: Space heating distribution systems

Contents		Page
Foreword		4
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	7
4	Symbols, units and indices	9
5	Principle of the method and definitions	10
6	Auxiliary energy demand	12
6.1	General	12
6.2	Design hydraulic power	12
6.3	Detailed calculation method	13
6.3.1	Input/output data	13
6.3.2	Calculation method	14
6.3.3	Correction factors	15
6.3.4	Expenditure energy factor	17
6.3.5	Intermittent operation	21
6.4	Deviations from the detailed calculation method	23
6.5	Monthly auxiliary energy demand	23
6.6	Recoverable auxiliary energy	24
7	System thermal loss of distribution systems	24
7.1	General	24
7.2	Detailed calculation method	24
7.2.1	Input/output data	24
7.2.2	Calculation method	25
7.2.3	Thermal losses of accessories	26
7.2.4	Recoverable and un-recoverable system thermal loss	27
7.2.5	Total system thermal loss	27
7.3	Calculation of linear thermal transmittance (W/mK):	27
7.4	Calculation of mean part load of distribution per zone	28
8	Calculation of supply and return temperature depending on mean part load of distribution	28
8.1	Temperature calculation of heat emitters	28
8.1.1	General	28
8.1.2	Continuous control depending on outdoor temperature	29
8.1.3	Continuous control with thermostatic valves	29
8.1.4	On-Off control with room thermostat	30
8.2	Effect of by-pass connections	30
8.3	Effect of mixing valves	31
8.4	Parallel connection of distribution circuits	32
8.5	Primary circuits	33
Annex A (informative)	Preferred procedures	34

A.1	Simplified calculation method for determination of annual auxiliary energy demand	34
A.1.1	Input/output data	34
A.1.2	Calculation method	35
A.1.3	Correction factors	37
A.1.4	Expenditure energy factor	37
A.1.5	Intermittent operation	38
A.1.6	Monthly auxiliary energy demand and recoverable auxiliary energy	38
A.2	Tabulated calculation method for determination of annual auxiliary energy demand	39
A.2.1	Input/output data	39
A.2.2	Calculation method, tabulated values	39
A.2.3	Monthly auxiliary energy demand and recoverable auxiliary energy	41
A.3	Simplified calculation method for determination of annual system thermal loss	41
A.3.1	Input/output data	41
A.3.2	Calculation method	42
A.3.3	Approximation of the length of pipes per zone in distribution systems	42
A.3.4	Default values of the outer total surface coefficient of heat transfer (convection and radiation)	43
A.3.5	Approximation of α-values	43
A.3.6	Equivalent length of valves	44
A.3.7	Default values for the exponent of the heat emission system	44
A.4	Tabulated calculation method for determination of annual system thermal loss	44
A.4.1	Input/output data	44
A.4.2	Calculation method, tabulated values	45
A.5	Example	46
	Bibliography	49