

DIN EN 15377-3:2007-12 (E)

Heating systems in buildings - Design of embedded water based surface heating and cooling systems - Part 3: Optimizing for use of renewable energy sources

Contents

Page

Foreword.....	3
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms, definitions and symbols.....	6
3.1 Data referred to the circuit:.....	7
3.2 Data referred to the room geometry and the boundary conditions:	7
3.3 Data referred to the slab and its partitions:	8
3.4 Data referred to the initial temperature profile	8
3.5 Calculation of the temperature profile and the heat fluxes in the generic time-step n	9
4 Relation to other EPBD standards	9
5 Optimisation of systems for facilitating the use of renewable energy sources	9
6 The concept of Thermo-Active-Building-Systems (TABS)	11
7 Calculation methods	16
7.1 General.....	16
7.2 Rough sizing method	16
7.3 Simplified sizing method using diagrams.....	16
7.4 Simplified model based on finite difference method (FDM).....	23
7.4.1 Cooling system	23
7.4.2 Hydraulic circuit.....	23
7.4.3 Slab	23
7.4.4 Room.....	23
7.4.5 Limits of the method	25
7.5 Dynamic building simulations program	26
8 Input for computer simulations of energy performance	26
Annex A (informative) Simplified diagrams	27
Annex B (normative) Calculation method	31
B.1 Pipes level	31
B.2 Subdivision of the slab	31
B.3 Choice of the calculation time step:	35
B.4 Calculations for the generic n-th time step.....	35
B.5 Sizing of the system	38
Annex C (informative) Tutorial guide for assessing the model	39
Annex D (informative) Computer program.....	43
Bibliography	72