

1. Record Nr.	UNISA996210783703316
Autore	Hens Hugo S. L. C.
Titolo	Building physics : heat, air and moisture : fundamentals and engineering methods with examples and exercises // Hugo Hens
Pubbl/distr/stampa	Berlin, Germany : , : Ernst & Sohn, , [2012] ©2012
ISBN	9783433602355 9783433602348 9783433602362 9783433602379 3433602379 1283665212 3433602344 3433602352
Edizione	[2nd edition]
Descrizione fisica	1 online resource (64 pages) : illustrations
Disciplina	697
Soggetti	Buildings - Environmental engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Title; Preface; Table of Contents; 0 Introduction; 0.1 Subject of the book; 0.2 Building Physics; 0.2.1 Definition; 0.2.2 Criteria; 0.2.2.1 Comfort; 0.2.2.2 Health; 0.2.2.3 Architecture and materials; 0.2.2.4 Economy; 0.2.2.5 Sustainability; 0.3 Importance of Building Physics; 0.4 History of Building Physics; 0.4.1 Heat, air and moisture; 0.4.2 Building acoustics; 0.4.3 Lighting; 0.4.4 Thermal comfort and indoor air quality; 0.4.5 Building physics and building services; 0.4.6 Building physics and construction; 0.4.7 What about the Low Countries?; 0.5 Units and symbols; 0.6 Literature 1 Heat Transfer1.1 Overview; 1.2 Conduction; 1.2.1 Conservation of energy; 1.2.2 Fourier's laws; 1.2.2.1 First law; 1.2.2.2 Second law; 1.2.3 Steady state; 1.2.3.1 What is it?; 1.2.3.2 One dimension: flat assemblies; 1.2.3.3 Two dimensions: cylinder symmetric; 1.2.3.4 Two and three dimensions: thermal bridges; 1.2.4 Transient regime; 1.2.4.1 What?; 1.2.4.2 Flat assemblies, periodic boundary conditions; 1.2.4.3

Flat assemblies, random boundary conditions; 1.2.4.4 Two and three dimensions; 1.3 Convection; 1.3.1 Heat exchange at a surface; 1.3.2 Convective heat transfer
1.3.3 Convection typology
1.3.3.1 Driving forces; 1.3.3.2 Flow type;
1.3.4 Calculating the convective surface film coefficient; 1.3.4.1 Analytically; 1.3.4.2 Numerically; 1.3.4.3 Dimensional analysis; 1.3.5 Values for the convective surface film coefficient; 1.3.5.1 Flat assemblies; 1.3.5.2 Cavities; 1.3.5.3 Pipes; 1.4 Radiation; 1.4.1 What is thermal radiation?; 1.4.2 Quantities; 1.4.3 Reflection, absorption and transmission; 1.4.4 Radiant surfaces or bodies; 1.4.5 Black bodies; 1.4.5.1 Characteristics; 1.4.5.2 Radiant exchange between two black bodies: the view factor
1.4.5.3 Properties of view factors
1.4.5.4 Calculating view factors; 1.4.6 Grey bodies; 1.4.6.1 Characteristics; 1.4.6.2 Radiant exchange between grey bodies; 1.4.7 Coloured bodies; 1.4.8 Practical formulae; 1.5 Applications; 1.5.1 Surface film coefficients and reference temperatures; 1.5.1.1 Overview; 1.5.1.2 Indoor environment; 1.5.1.3 Outdoor environment; 1.5.2 Steady state, one dimension: flat assemblies; 1.5.2.1 Thermal transmittance and interface temperatures; 1.5.2.2 Thermal resistance of a non ventilated, infinite cavity; 1.5.2.3 Solar transmittance
1.5.3 Steady state, cylindrical coordinates: pipes
1.5.4 Steady state, two and three dimensions: thermal bridges; 1.5.4.1 Calculation by the control volume method (CVM); 1.5.4.2 Practice; 1.5.5 Steady state: windows; 1.5.6 Steady state: building envelopes; 1.5.6.1 Overview; 1.5.6.2 Average thermal transmittance; 1.5.7 Transient, periodic: flat assemblies.; 1.5.8 Heat balances; 1.5.9 Transient, periodic: spaces; 1.5.9.1 Assumptions; 1.5.9.2 Steady state heat balance; 1.5.9.3 Harmonic heat balances 103; 1.6 Problems; 1.7 Literature; 2 Mass Transfer; 2.1 Generalities
2.1.1 Quantities and definitions

Sommario/riassunto

Bad experiences with construction quality, the energy crises of 1973 and 1979, complaints about 'sick buildings', thermal, acoustical, visual and olfactory discomfort, the need for good air quality, the move towards more sustainability, all have accelerated the development of a field, which until some 40 years ago was hardly more than an academic exercise: building physics. Building physics combines several knowledge domains such as heat and mass transfer, building acoustics, lighting, indoor environmental quality and energy efficiency. In some countries, also fire safety is included. Through the application of existing physical knowledge and the combination with information coming from other disciplines, the field helps to understand the physical phenomena governing assembly, building envelope, whole building and built environment performance, although for the last the wording "urban physics" is used. Building physics has a true impact on performance based building design. This volume focuses on heat, air, moisture transfer and its usage in building engineering applications.
