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	Nota di contenuto	Natural Ventilation of Buildings: THEORY, MEASUREMENT AND DESIGN; Contents; Preface; Acknowledgements; Principal Notation; 1 Introduction and Overview of Natural Ventilation Design; 1.1 Aims and Scope of the Book; 1.1.1 Aims; 1.1.2 Scope; 1.2 Natural Ventilation in Context; 1.2.1 Hierarchy of Ventilation Systems; 1.2.2 Advantages and Disadvantages of Natural Ventilation; 1.2.3 Differences between Natural and Mechanical Ventilation; 1.3 Overview of Design; 1.3.1 Overall Design Process; 1.3.2 Stage 1: Assessing Feasibility; 1.3.3 Stage 2: Choosing a Ventilation Strategy 1.3.4 Stage 3: Achieving the Ventilation Strategy1.3.5 Stage 4: Internal Air Motion and Related Phenomena; 1.3.6 Stage 5: Commissioning; 1.4 Notes on Sources; 1.4.1 Coverage of Recent and Past Developments; 1.4.2 Natural Ventilation and Safety; References; 2 Physical Processes in Natural Ventilation; 2.1 Introduction; 2.1.1 Fundamental Principles of Fluid Mechanics; 2.1.2 Numerical Analysis and CFD; 2.2 The Effect of Gravity on Ventilation Flows; 2.2.1 Navier-Stokes Equations; 2.2.2 Hydrostatic and Piezometric Pressures; 2.2.3 Envelope Flows; 2.2.4 Internal Air Motion 2.3 Types of Flow Encountered in Ventilation2.3.1 Reynolds Number; 2.3.2 Laminar Flow; 2.3.3 Transitional Flow; 2.3.4 Turbulent Flow; 2.4 Fluid Mechanics - Other Important Concepts and Equations; 2.4.1 A

Fluid as a Continuum; 2.4.2 Transport Mechanisms; 2.4.3 Momentum Principle - Newton's Laws of Motion; 2.4.4 Momentum Equations for a Defined Body of Fluid and a Control Volume; 2.4.5 Hydrostatic Equation; 2.4.6 Steady Flow; 2.4.7 Mass Conservation for an Envelope; 2.4.8 Bernoulli's Equation; 2.4.9 Energy Equations for a System and a Fixed Control Volume

2.4.10 Loss Coefficient and Resistance Coefficient2.4.11 Still-air Discharge Coefficient and Resistance Coefficient; 2.4.12 Flow Separation; 2.4.13 Irrotational Flow; 2.5 Steady and Unsteady Ventilation; 2.6 Flow Through a Sudden Expansion; 2.6.1 Momentum and Continuity Equations; 2.6.2 Energy Equation; 2.6.3 Diffusion (Molecular and Turbulent); 2.7 Dimensional Analysis; 2.8 Heat Transfer between Air and Envelope; 2.9 Definitions Relating to Ventilation Rate; 2.9.1 Envelope Flows - Single Cell; 2.9.2 Envelope Flows - Multi-cell Buildings; 2.9.3 Measurement of Ventilation Rate

2.9.4 Effectiveness of Ventilation and Local Ventilation Rates2.10 Errors and Uncertainties; 2.11 Mathematical Models; 2.11.1 Envelope Flow Models (Chapters 4 and 5); 2.11.2 Zonal Models (Chapter 6); 2.11.3 Dynamic Thermal Models; 2.11.4 CFD; 2.12 Boundary Conditions; 2.12.1 Velocity; 2.12.2 Temperature; Bibliography; References; 3 Steady Flow Characteristics of Openings; 3.1 Introduction; 3.1.1 Still-air Discharge Coefficient; 3.1.2 Installation Effects; 3.2 Classification of Openings; 3.2.1 Shapes of Openings; 3.2.2 Sizes of Openings; 3.2.3 Reynolds Numbers Encountered in Practice

3.2.4 Types of Opening

Sommario/riassunto	Natural ventilation is considered a prerequisite for sustainable buildings and is therefore in line with current trends in the construction industry. The design of naturally ventilated buildings is more difficult and carries greater risk than those that are mechanically ventilated. A successful result relies increasingly on a good understanding of the abilities and limitations of the theoretical and experimental procedures that are used for design. There are two ways to naturally ventilate a building: wind driven ventilation and stack ventilation. The majority of buildings employing natural