1. Record Nr. UNINA9910778542303321

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Titolo	The handbook of sustainable refurbishment : non-domestic buildings / / Nick V. Baker
Pubbl/distr/stampa	London ; ; Sterling, Va. : , : Earthscan : , : RIBA Pub., , 2009
ISBN	1-136-57351-8 1-136-57352-6 1-282-40238-2 9786612402388 1-84977-022-0
Descrizione fisica	1 online resource (185 p.)
Disciplina	690/.24
Soggetti	Buildings - Repair and reconstruction Public buildings - Repair and reconstruction Commercial buildings - Remodeling Sustainable buildings - Design and construction
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 and index.
Nota di contenuto	Cover; The Handbook of Sustainable Refurbishment: Non-Domestic Buildings; Copyright; Contents; Preface; List of Acronyms and Abbreviations; Part One Principles; 1 Strategy for Low Emission Refurbishment; 1.1 The case for low emission refurbishment: Energy use in buildings; 1.2 Refurbishment versus rebuild: Economics and environmental impact; 1.3 The building, plant and occupants as a system; 1.4 Implications for change of use; Impact on energy consumption; 1.5 Environmental comfort standards; 1.6 Passive environmental strategies; Natural ventilation; Daylighting 1.7 Prioritizing refurbishment optionsQuantifying energy benefits; 1.8 Integration with newbuild; 1.9 Eco-communities and urban renewal; 1.10 Environmental regulation; Energy Performance of Buildings Directive; Using other legislation in the UK; Voluntary schemes and drivers; Part Two Practice; 2 Floors; 2.1 Solid ground floors; Insulation options; Underfloor heating or cooling; 2.2 Suspended ground floors; Insulation options; Underfloor heating or cooling; 2.3 Intermediate

floors; 2.4 Thermal response implications of floor insulation; 3 Walls; 3.1 Solid walls; External insulation
Implications for external insulationInternal insulation; Thermal response; Cold bridges; Interstitial condensation; 3.2 Cavity walls; Insulation options; Practical considerations; Interstitial condensation; Thermal implications; Retrofit inner or outer leaf; 4 Roofs; Roof types; 4.1 Insulating roofs with attic spaces; Ventilation of attic space; 4.2 Insulating roofs with voids; 4.3 Insulating solid roofs (or roofs withinaccessible voids); Insulation above the waterproof membrane; Insulation between waterproof membrane and structural deck; Insulation below the structural deck
4.4 Other thermal issuesSurface reflectance; Low-emissivity membranes in cavities; Thermal mass; Cold bridges; 4.5 Green roofs and roof ponds; Green roofs; Roof ponds; 5 Windows; 5.1 Glazing materials; Heat transmission through glazing; Radiation transmission through glazing; High performance glazing; 5.2 Framing and support systems; Obstruction of light due to framing; Thermal performance of framing; Framing material; 5.3 Modifying apertures; 5.4 Shading systems; Daylight redistribution; Shading options for refurbishment; External shading; Internal shading; 5.5 High performance daylighting
6 Atria and Double Skins6.1 Atria and energy: Principles; Thermal performance; Winter performance; Summer performance; 6.2 Effect on daylighting; 6.3 Planting and vegetation; 6.4 Double skins and energy; 6.5 Other environmental factors; 6.6 Atria and double skins as part of sustainable refurbishment; 7 Mechanical Services and Controls; 7.1 Boilers; 7.2 Heat distribution; Water; Air; 7.3 Heat emitters; Positioning emitters; Sizing emitters; Coolth emitters; 7.4 Fans and pumps; 7.5 Refrigeration; 7.6 Lighting installations; Luminous efficacy; Illuminance level and distribution; 7.7 Controls
Local control

Sommario/riassunto

The refurbishment of existing buildings is a crucial yet often neglected subject within sustainable architecture; attention is usually focused on new buildings. Many old buildings waste large amounts of energy and provide poor internal conditions for occupants through poor lighting, poor ventilation, solar penetration and glare, and poor control of heating and cooling. Demolition is an option but the refurbishment alternative is increasingly seen as more sustainable in terms of architectural value, materials use, neighbourhood disruption and waste disposal. In addition, the potential impact of