

## Building Skins Concepts Layers Materials

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Les consommations énergétiques des immeubles de bureaux restent importantes malgré les progrès. Ce guide détermine les stratégies à mettre en œuvre pour diminuer la consommation d'énergie, en valorisant les ressources du climat (soleil, lumière, vent).

Metals open up a vast range of new possibilities in today's building industry. With standards rapidly changing, this book presents the latest processes of design and fabrication through the study of numerous examples of the use of metal in contemporary architecture. Examining the most recent advances in a systematic overview, the book includes a series of essays discussing new conceptual strategies for structures, hybrid materials systems, computer-aided design and fabrication and parametric models for the generation of form. In addition, case studies examine twenty significant recent buildings, both completed and in design, which illustrate innovative concepts. These include Frank O'Gehry's Experience Music Project in Seattle, the Millennium Bridge by Norman Foster, Sendai Mediatheque by Toyo Ito, the Seattle Library by OMA, Gigon/Guyer's Signal Box in Zurich and the Museum of American Folk Art by Tod Williams and Billie Tsien. Each project is comprehensively documented in image and text, paying particular attention to the design, fabrication and assembly of metal structural and cladding systems. The buildings selected encompass a wide range of different types and functions, providing an intriguing record of current developments in metal technology.

Perkins+Will, a global architecture and design practice, releases the first volume in a series of publications showcasing the talent of its teams and scope of their projects. Ideas + Buildings defines the essential characteristics of innovation and excellence that make Perkins+Will unique among architecture firms worldwide. The Ideas + Buildings series will include essays on design theory;

white papers on programmatic and technological innovation, client business issues and the environment; and ideas that relate directly to the practice and its work as well as broader social and cultural issues. Ideas + Buildings Collective Process / Global, Social and Sustainable Design includes 12 unique projects along with anecdotal information about the firm and its history - providing insight into the firm, who they are and what they do. The book demonstrates the progress and energy of Perkins+Will as the firm advances towards its 75th anniversary.

Drawing on examples from around the world, this book explores the ways in which climate shapes architecture. With international case studies, the illustrated guide is distinctive in its focus on comfort rather than energy.

INDICE Introduction Environmental and climatic adaptivity of the architectural envelope: a not so distant future 1. L'involucro architettonico: da barriera protettiva a interfaccia dinamico, selettivo e adattivo tra macroambiente esterno e microambiente interno 2. Smaterializzazione versus massività: alla ricerca dei nuovi requisiti ambientali della pelle degli edifici 3. Concezione aperta e flessibile di ruoli, prestazioni, configurazioni 4. Strategie adattive per la gestione degli aspetti termici e fluidodinamici dell'involucro 5. Categorie e caratteri dei sistemi tecnologici dell'involucro adattivo 6. Innovazione delle frontiere d'involucro: tre questioni centrali 7. Gli attuali sviluppi dell'innovazione tecnologica e tipologica dell'involucro architettonico 8. Nuove frontiere per le future evoluzioni dell'involucro architettonico. Conclusioni in progress Nuovi fattori prestazionali dell'involucro architettonico Riferimenti bibliografici | References Legislazione di riferimento | Reference Legislation Norme UNI di riferimento | UNI Reference Standards

This book is a collection of articles that have been published in the Special Issue "Responsive Architecture" of the MDPI journal Buildings. The eleven articles within cover various areas of sensitive architecture, including the design of packaging structures reacting to supporting components; structural efficiency of bent columns in indigenous houses; roof forms responsive to buildings depending on their resiliently transformed steel shell parts; creative design of building free shapes covered with transformed shells; artistic structural concepts of the architect and civil engineer; digitally designed airport terminal using wind analysis; rationalized shaping of sensitive curvilinear steel construction; interactive stories of responsive architecture; transformed shell roof constructions as the main determinant in the creative shaping of buildings without shapes that are sensitive to man-made and natural environments; thermally sensitive performances of a special shielding envelope on balconies; quantification of generality and adaptability of building layout using the SAGA method; and influence of initial conditions on the simulation of the transient temperature field inside a wall.

Questa collana raccoglie, opportunamente riscritte e depurate degli aspetti più 'scolastici', le migliori tesi del dottorato di Recupero, valorizzazione e tutela nei contesti insediativi e territoriali di elevato valore ambientale e paesistico (Facoltà di Ingegneria dell'Aquila). La multidisciplinarietà composita in cui è articolato il Collegio dei docenti ha prodotto, finora, filoni sicuramente troppo eterogenei, che è assai difficile tenere insieme. Ma una progressiva riflessione ha lentamente condotto ad affinare i temi e la possibilità di integrazione fra i docenti e le discipline presenti, convergendo verso ambiti più nettamente caratterizzati dai centri storiciminori e dal paesaggio/territorio. Non c'è dubbio che la recente, traumatica esperienza del terremoto del 6 Aprile, orienterà ulteriormente le tematiche di ricerca verso scienza, tecnica, storia, recupero del ben costruire, così necessario nella attuale situazione della città dell'Aquila e dei centri nell'area colpita dal sisma, dove sono tuttora irrisolti i problemi della sopravvivenza stessa e della rinascita urbana di un intero territorio. Il senso contestuale di un nuovo intervento

costituisce un campo di riflessione e sperimentazione preciso nello sviluppo dell'architettura dal secondo dopoguerra ad oggi. L'attualità della questione sta nel fatto che negli ultimi anni si è verificata un'estesa utilizzazione di quei linguaggi del moderno (spesso dissonanti con i contesti) e, contemporaneamente si è alquanto dilatata la concezione inclusiva, contestuale dell'architettura. In particolare la storia e la città hanno attenuato il peso determinante che decenni addietro mantenevano nel sapere progettuale: l'astrattezza dei linguaggi contemporanei, le assume piuttosto come terreni di problematico confronto. Questo modo di sentire la complessità contestuale imposta delle strategie progettuali che coinvolgono tutto l'organismo architettonico e che in particolare trovano un'articolazione fondamentale nel rapporto interno-esterno. Sul tema, abbondanti studi hanno recentemente esaminato i nuovi orizzonti tecnologici dell'involucro: l'involucro come vetrata complessa, come maschera, come pelle, come schermo. In questo studio di Giovanna Grella il proposito è più esaustivo vedendo in un pacchetto complesso il convergere o lo sfumarsi dell'impianto interno e di quello esterno: una problematica non solo linguistico-tecnologica, ma anche: spaziale, tipologica, funzionale, inquadrabile con una sua specificità nella cultura del progetto contemporaneo. (Sergio Rotondi) Giovanna Grella, ingegnere, è stata assegnista di ricerca presso il Dipartimento di Architettura e Urbanistica dell'Università dell'Aquila, dove collabora con il prof. Sergio Rotondi. Lavora nello Studio Transit di Roma. Prefazione di Sergio Rotondi e postfazione di Giovanni Ascarelli. This book is published on the occasion of the emeritus status awarded to Professor Richard Foque, ir. arch, MSc. His successful career as founder and partner of an architect firm, professor in design theory and Head of the Department of Design Science has provided opportunities to meet colleagues both at home and abroad. No less than twenty-two colleagues were more than pleased to write a personal contribution in the framework of their own field of expertise, to explore the boundaries between art and science, knowledge and research, theory and practice, representation and reality. Thus, the Liber Amicorum became a "book of friends" linking the evolution in science to an unheard of self-expression in architecture, product development and culture. Dit boek wordt uitgegeven ter gelegenheid van het emeritaat van prof. ir.arch. Richard Foque. Zijn rijke loopbaan als manager van een architectenbureau, professor in de ontwerptheorie en departementshoofd heeft geleid tot talrijke ontmoetingen met collega's in binnen- en buitenland. Tweeëntwintig ervan werden bereid gevonden om vanuit hun eigen kennis- en beroepsveld een persoonlijke bijdrage te schrijven, die de grenzen tussen kunst en wetenschap, kennis en onderzoek, theorie en praktijk, voorstelling en werkelijkheid, beleid en werkelijkheid zouden aftasten. Zo groeide het Liber Amicorum uit tot een volwaardig boek, waarin de actuele evolutie in de wetenschap in relatie wordt gebracht met een nooit tevoren gekende zelfexpressie in architectuur, productontwikkeling en cultuur.

The construction industry is a vibrant and active industry. The building sector is responsible for creating, modifying and improving the living environment of humanity. This volume presents solutions that facilitate and promote the adoption of policies, methods and tools to accelerate the movement towards a global sustainable built environment.

This text focuses on the wide-ranging aspects of facade design, from the selection and use of materials to the advanced technical possibilities now open to the architect. International examples with plans and details show the theory in practice.

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SISTEMI TECNOLOGICI PER IL CONTROLLO E L'OTTIMIZZAZIONE DEL RISCALDAMENTO PASSIVO 6. Sistemi solari passivi integrati in facciata 7. Sistemi solari passivi integrati in copertura o nel sistema copertura/facciata 8. Sistemi solari passivi integrati nell'attacco a terra o nel sistema attacco a terra/facciata B. SISTEMI MORFOLOGICO-SPAZIALI PER IL CONTROLLO E L'OTTIMIZZAZIONE DEL RISCALDAMENTO PASSIVO 9. Sistemi solari passivi a serra 10. Sistemi solari passivi a winter-garden 11. Sistemi solari passivi a buffer space 12. Sistemi solari passivi ad atrio PARTE III - CASI DI STUDIO: LA SPERIMENTAZIONE NEL PROGETTO DEL RAFFRESCAMENTO PASSIVO IN ARCHITETTURA - Caso di studio "A". SISTEMI TECNOLOGICI - PER IL CONTROLLO E L'OTTIMIZZAZIONE DEL RISCALDAMENTO PASSIVO - Caso di studio "B". SISTEMI MORFOLOGICO-SPAZIALI - PER IL CONTROLLO E L'OTTIMIZZAZIONE DEL RISCALDAMENTO PASSIVO Bibliografia di riferimento / References

Looks at the issues of sustainability and environmental impact in the field of building design and architecture. This book addresses sustainability in building design through development of a series of examples presented as three dimensional models of well-integrated building systems.

Presenting an analysis of different approaches for predicting the service life of buildings, this monograph discusses various statistical tools and mathematical models, some of which have rarely been applied to the field. It explores methods including deterministic, factorial, stochastic and computational models and applies these to façade claddings. The models allow (i) identification of patterns of degradation, (ii) estimation of service life, (iii) analysis of loss of performance using probability functions, and (iv) estimation of service life using a probability distribution. The final chapter discusses the differences between the different methodologies and their advantages and limitations. The authors also argue that a better understanding of the service life of buildings results in more efficient building maintenance and reduced environmental costs. It not only provides an invaluable resource to students, researchers and industry professionals interested in service life prediction and sustainable construction, but is also of interest to environmental and materials scientists.

This book presents the current state of knowledge on nanomaterials and their use in buildings, ranging from glazing and vacuum insulation to PCM composites. It also discusses recent applications in organic photovoltaics, photo-bioreactors, bioplastics and foams, making it an exciting read while also providing copious references to current research and applications for those wanting to pursue possible future research directions. Derek Clements-Croome, Emeritus Professor in Architectural Engineering, University of Reading (From the Foreword)

Demonstrating how higher energy efficiency in new and existing buildings can help reduce global greenhouse gas emissions, this book details the way in which new technologies, manufacturing processes and products can serve to abate emissions from the energy sector and offer a cost-effective means of improving competitiveness and drive employment. Maximizing reader insights into how nano and biotech materials – such as aerogel based plasters, thermochromic glazings and thermal energy adsorbing glass, amongst others – can provide high energy efficiency performance in buildings, it provides practitioners in the field with an important high-tech tool to tackle key challenges and is essential reading for civil engineers, architects, materials scientists and researchers in the area of the sustainability of the built environment.

A comprehensive reference of materials for interior designers and architects Choosing the right material for the right purpose is a critical—and often overlooked—aspect in the larger context of designing buildings and interior spaces. When specified and executed properly, materials support and enhance a project's overall theme, and infuse interior space with a solid foundation that balances visual poetry and functionality. Materiality and Interior Construction imparts essential knowledge on how materials contribute to the construction and fabrication of floors, partitions, ceilings, and millwork, with thorough coverage of the important characteristics and properties of building materials and finishes.

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Individual coverage of the key characteristics of each material explores the advantages and disadvantages of using specific materials and construction assemblies, while helping readers discover how to make every building element count. In addition, *Materiality and Interior Construction*: Is highly illustrated throughout to show material properties and building assemblies. Supplies rankings and information on the "green" attributes of each material so that designers can make informed decisions for specifications. Is organized by application for easy and quick access to information. Includes a companion website, featuring an extensive online image bank of materials and assemblies. Rather than a typical catalog of materials, *Materiality and Interior Construction* is efficiently organized so that the reader is guided directly to the options for the location or assembly they are considering. Reliable and easy to use, *Materiality and Interior Construction* is a one-stop, comprehensive reference for hundreds of commonly used materials and their integration as building components—and an invaluable resource that every interior designer or architect should add to their set of tools.

*Skin as boundary and surface, metaphorically and physically: creative and critical perspectives on skin and bodily transformation as it intersects with digital technologies.* In *re:skin*, scholars, essayists and short story writers offer their perspectives on skin--as boundary and surface, as metaphor and physical reality. The twenty-first century and its attendant technology call for a new investigation of the intersection of body, skin, and technology. These cutting-edge writings address themes of skin and bodily transformation in an era in which we are able not only to modify our own skins--by plastic surgery, tattooing, skin graft art, and other methods--but to cross skins, merging with other bodies or colonizing multiple bodies. The book's agile crossings of disciplinary and genre boundaries enact the very transformations they discuss. A short story imagines a manufactured maternal interface that allows a man to become pregnant, and a scholar describes the evolution of "body criticism"; a writer uses "faux science" to explore animal prints on faux fur, and fictional lovers experience one another's sexual sensations through the slipping on and off of skin-like bodysuits. Ubiquitous computational interfaces are considered as the "skin" of technology, and questions of race and color are shown to play out in digital art practice. The essays and narratives gathered in *re:skin* claim that the new technologically mutable body is neither purely liberating nor simply limiting; instead, these pieces show us models, ways of living in a technological culture. Contributors Austin Booth, Rebecca Cannon, Model T and Sara D(iamond), L. Timmel Duchamp, Mary Flanagan, Jewelle Gomez, Jennifer Gonzalez, Nalo Hopkinson, Alice Imperiale, Shelley Jackson, Christina Lammer, David J. Leonard, Mendi + Keith Obadike, Melinda Rackham, Vivian Sobchack, Elisabeth Vonarburg, Bernadette Wegenstein

*Design-Tech* is an indispensable, holistic approach to architectural technology that shows you in hundreds of drawings and tables the why as well as the how of building science, providing you with a comprehensive overview. In this expanded edition, measurements and examples are listed in both metric and imperial units to reflect the global reality of architectural practice. The authors also address digital fabrication, construction documentation, ultra-high-rise structures, and zoning codes. And there's more in-depth coverage of structural design and greater emphasis on environmental forces. Numerous case studies demonstrate real-world design implications for each topic, so that you can integrate technical material with design sensibilities. Short chapters explain each topic from first principles in easy-to-reference formats, focusing on what you need to know both at the drawing board and in future discussions with engineers, contractors, and consultants. This new edition incorporates material from continuing curricular experimentation in the SCI-TECH sequence at Iowa State University, which has been recognized with awards and funding from the American Institute of Architects, the U.S. Green Building Council, and the National Council of Architectural Registration Boards.

When planning buildings in which people are to work and live, the efficient use of natural daylight and solar energy is increasingly important.

The challenge is to compensate the different lighting requirements in winter and summer. Integrated daylight deflection systems buildings, utilize and store solar energy to save artificial lighting, air-conditioning and heating costs. Extensively researched and impressively illustrated with a large number of computer simulations and photographs of built examples, this volume is more than an introduction to the basic principles, functions, designs and calculation methods of advanced light-guidance technology for architects, lighting designers, building and climate engineers. In particular it provides detailed documentation of the new Retro-Technology systems, explaining the role they can and do play in integrated façade and building design and planning processes. distributed by Syndetic Solutions, Inc.

This book provides a compendium of material properties, demonstrates several successful examples of bio-based materials' application in building facades, and offers ideas for new designs and novel solutions. It features a state-of-the-art review, addresses the latest trends in material selection, assembling systems, and innovative functions of facades in detail. Selected case studies on buildings from diverse locations are subsequently presented to demonstrate the successful implementation of various biomaterial solutions, which defines unique architectural styles and building functions. The structures, morphologies and aesthetic impressions related to bio-based building facades are discussed from the perspective of art and innovation; essential factors influencing the performance of materials with respect to functionality and safety are also presented. Special emphasis is placed on assessing the performance of a given facade throughout the service life of a building, and after its end. The book not only provides an excellent source of technical and scientific information, but also contributes to public awareness by demonstrating the benefits to be gained from the proper use of bio-based materials in facades. As such, it will appeal to a broad audience including architects, engineers, designers and building contractors.

Integrate the best building envelope construction methods, materials science, and structural principles in your work using this book as a resource to help you... With more than seventy significant case studies located in North America, South America, Europe, and Asia from prehistory to the present, this book illuminates the theory and techniques of assembling exteriors. Six chapters organized by wall types, from hand-set monolithic walls to digitally fabricated curtain walls, each have a material focus section to help you understand their intrinsic properties so that you can decide which will best keep the weather out of your building. Examples from the ancient world, including the Pyramids and the Great Wall, through a range of renowned modern architects, such as Studio Gang, Sauerbruch Hutton, Herzog and deMeuron, and Rafael Moneo, illustrate how significant works in the history of architecture explored innovative use of materials – stone, brick, concrete, glass, and aluminium. Along the way, principles of construction from masonry and basic framing through ever more sophisticated envelope systems address classic problems presented by gravity, wind, rain, and sun with studies of lateral forces, building movements and materials that bridge the gaps in between them.

Few parts of a building work harder than its envelope (also known as its facade). The envelope is the part of the building most visible from the outside--so it should be visually appealing--but it can also have the biggest effect on the well-being and safety of its occupants--so the envelope should be help heat and cool the building, allow light into it, and provide necessary structure. Too often, a building's envelope is more aesthetically striking than functional, or vice versa. A great building envelope, though, architecturally integrates all of its elements. The Wessex Institute of Technology has for years been convening conferences on sustainable architecture and planning, design in nature, heritage architecture, and environmental health. With the growing importance of lighting in the creation of better, healthier environments, the enhancement of heritage architecture, and the recovery of urban areas, as well as new developments in more sustainable lighting it became clear that a conference focusing on lighting issues would be useful. This book contains the papers to be presented at the first International

Conference on Lighting in Engineering, Architecture and the Environment, discussing the latest developments in a variety of topics related to light and illumination, from its engineering aspects to its use in art and architecture and the effect of light on living systems and human health. Ranging from discussions of technical issues regarding equipment design and light measurement to human perception of light and the effect of light on human health, the book will be of interest to architects, planners, environmental health experts, and stage designers in academia, industry and government, as well as colleagues discussing the latest developments in a variety of topics related to light and illumination, from its engineering aspects to its use in art and architecture and the effect of light on living systems and human health.

The facade is the building's interface with its environment. It is here that building physics parameters such as heat, humidity, sound and light interact with the building. All these influences need to be controlled by the building envelope in order to ensure the comfort of the user and the functional performance of the architecture. This introduction explains the most important phenomena and then relates them to design and building practice – which materials react in which way to these factors? How do facade systems deal with heat, humidity, sound and light?

This practice-oriented book, which is the result of cooperation between an architect and a structural engineer, describes the most important facade materials and constructions under the aspect of their building physics performance.

The book is addressed to architects and civil engineers. Design and research are areas connecting their activities. The contents of the book confirm the fact that the interface between architecture and engineering is multidimensional. The ways of finding points of contact between the two industries are highlighted. This is favored by the dynamically changing reality, supported by new design paradigms and new research techniques. The multithreaded subject matter of the articles is reduced to six sections: Research Scopes, Methods, Design Aspects, Context, Nature of Research, and Economy and Cost Calculation. Each of the articles in these six blocks has its weight. And so, in the Nature of Research section, the following areas have been underscored: laboratory tests, in situ research, field investigations, and street perception experiments. The section Design Aspects includes design-oriented thinking, geometrical forms, location of buildings, cost prediction, attractor and distractor elements, and shaping spatial structures. The new design and research tools are an inspiration and a keystone bonding architects and engineers.

A timely look at the ways in which glass is utilized in some of today's most beautiful and experimental building designs For centuries, glass has provoked fascination with its properties as a versatile material that permits light to enter buildings in spectacular ways. Much of modern architecture has been conceived by using glass to create increasingly minimal structures, to promote the notion of lightweight construction solutions, and to allow maximum daylight into buildings. New Glass Architecture showcases the changing ways that aesthetics and methods for using glass have been developing since the 1990s. The book begins with an introduction that traces the history of key moments in glass architecture--from the stained glass windows of Chartres Cathedral to the Crystal Palace of 1851, and early constructions by John Soane, Bruno Taut, Le Corbusier, and Mies van der Rohe. Author Brent Richards explains the importance of glass artists in the second half of the 20th century and describes developments in glass technology over the last twenty years. Beautifully illustrated with newly commissioned photographs by Dennis Gilbert, the book features twenty-five case studies of recent glass constructions from around the world by such leading architects as Foster and Partners, Frank Gehry, Herzog & de Meuron, Steven Holl, Toyo Ito & Associates, Jean Nouvel, Raphael

Viñoly, and Peter Zumthor. Each building is illustrated in full color and accompanied by detailed drawings. New Glass Architecture features these buildings and more: - Chapel of Ignatius, Seattle - Condé Nast Café, New York - DZ Bank, Berlin - Kimmel Center for the Performing Arts, Philadelphia - Kunsthaus, Graz, Austria - Laban Dance Centre, London - Torre Agbar, Barcelona

The external facades of a building are more than a protective mantle, or an intelligent skin regulating temperature and light, they also determine its very appearance. By unusual choices of materials and the use of complex technology, facades have become increasingly significant in recent years. External surfaces are being perceived as an integral part of the building and are therefore being designed as such. This volume focuses on the wide-ranging aspects of facade design, from the selection and use of materials to the advanced technical possibilities now open to the architect. A wide array of carefully selected international examples show the theory in the practice. All plans, details, and large scale sections of the facades have been researched with the high degree of competence typical of the editorial staff from the review Detail. Expert authors provide the essential information needed to plan and design facades and elucidate on the latest developments in technology and materials.

A fascinating guide to building with transparent plastics. Prominent international avant-garde architects such as Shigeru Ban and Herzog & de Meuron frequently use transparent plastic for their structures. Transparent plastic seems ephemeral and thus captures the spirit of the times.

Building Skins Concepts, Layers, Materials Birkhauser

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