Acknowledgements

Preface
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Introduction
Engineering Competence in a Changing World, Klaus Daniels, Professor Emeritus, former Chair of Building Systems, Swiss Institute of Technology (ETH)

1 Framework Conditions
1.1 Germany: Leader in Sustainable, Low-Energy Technology Research and Applications
1.2 Political Framework: Ascendance of the Green Party’s “Die Grünen”
1.3 Legislation in Regards to Energy Consumption, Building Construction, and Ecology in Germany
1.4 Subsidies: Tax Incentives and Other Supportive Government Programs
1.5 Comparison with North America

2 Beginning Change
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2.2 Engineering Solutions by HL Technik as a Response to the Energy Crises I, in 1973, and II, in 1978
2.2.1 The Conventional Approach: Fully Sealed, Air-Conditioned, Large, Open-Plan Office Floors Example: DEVK Insurance Group, Cologne
2.2.3 The “Scientific “and Analytical Approach Example: Swiss Credit Institution, Zurich, Switzerland. Schweizerische Kreditanstalt Zürich

3 Re-Orientiation as a Result of Awareness of a World of Limited Resources
3.1.1 Dresdner Bank AG Düsseldorf, 1985, Architects: Kraemer, Sieverts Partner KSP
3.1.2 Tchibo Holding AG Administration Center CN2, Hamburg, 1988, Architects: Bürgin, Nissen, Wentzlaff

3.1.4 Galleria Office Complex Opfikon, Zurich, Switzerland, Architects: Gerber-Nauer, with Burckhardt Partners, Honegger + Klaus

3.1.5 Exhibition Hall 26, Hanover, International Hanover Trade Fair, Hanover, Architects: Thomas Herzog Partners

3.1.6 Central Train Station, Leipzig

3.1.7 High-Speed Train Terminal Fernbahnhof Deutsche Bahn AG, International Airport Frankfurt

3.1.8 Museum of Hamburg History, Hamburg, Architects: gmp Architekten von Gerkan, Marg und Partner

3.1.9 Exhibition Hall Leipzig, Architects: gmp Architekten von Gerkan, Marg und Partner

3.2 Medium-to-Heavy Thermal-Storage-Mass Concepts


3.2.2 AWK Koblenz, 1982, Architect: Struhk Partners

3.2.3 HL Technik AG, Corporate Offices, Administration Building, Munich, 1989, Architect: Ralph Hammann, REH, Munich, Germany

3.3 Double-Skin Façade Solutions (DSF): Thermal and Pressure Conditions in Tall-Building Envelopes

3.3.1 Commerzbank Frankfurt, 1994, Architect: Sir Norman Foster Partners, London UK

3.3.2 DLZ Stern, Essen 1995, Architect: Ingenhoven Overdieck, Düsseldorf, Germany

3.3.3 Landesbank Hessen und Thüringen (now: Main Tower), Frankfurt, 1996, Schweger Partners, Hamburg, Germany

3.3.4 EWHA Womens, University Seoul, 2007, Architect: Dominique Perrault DPA, Paris, France

3.3.5 Westhafen Tower Frankf./Main, 2000, Architects: Schneider Schumacher, Frankfurt, Germany

3.4 Natural Ventilation Concepts: Thermal Buoyancy


3.4.2 De Montfort University, Leicester, Architect: Peake Short Partners

3.4.3 BMW Pavillon am Lehnbachplatz, München, Architect: Sep Ruf

3.4.4 Uptown Munich (O₂ München), Architect: Ingenhoven, Overdiek & Partner, Düsseldorf, Germany

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3.5.1 Continuing Education Center "Mont Cenis", Herne, 1998, Architects: Jourda Perraudin, with HHS

3.5.2 State Chancellery Building of Bavaria, Munich, Bayerische Staatskanzlei München, Architects: Siegert, Munich

3.5.3 DVG Headquarters, Hanover, 1999, Architect: Hascher, Jehle with Heine, Wischer Partners

3.5.4 Church of the Sacred Heart of Jesus, Munich, Herz Jesu Kirche München, Architects: Allmann, Sattler
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