

# Preface

This guidebook on low-energy cooling and thermal comfort supports HVAC planners in reducing the cooling-energy demand, improving the indoor environment, and designing more cost-effective building concepts.

High-performance buildings have shown that it is possible to go clearly beyond the energy requirements of existing legislation and obtaining good thermal comfort—both in summer and winter. However, there is still a strong uncertainty in day-to-day practice due to the lack of legislative regulations for mixed-mode buildings under summer conditions—buildings which are neither only naturally ventilated nor fully air-conditioned, but use a mix of different low-energy cooling techniques.

Most of the new nonresidential buildings are mechanically cooled with low-energy techniques using a mix of ambient heat-sinks such as ground, night, or evaporative cooling. Moreover, more and more retrofit projects have also been using mixed-mode low-energy cooling in recent years.

Based on the findings from monitoring campaigns (long-term measurements in combination with field studies on thermal comfort), simulation studies, and a comprehensive review on existing standards and guidelines, this guidebook gives a pathway toward a successful implementation of passive and low-energy cooling techniques in energy-efficient nonresidential buildings.

Thermal Comfort and Energy-Efficient Cooling of  
Nonresidential Buildings

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2014, XIV, 128 p. 104 illus., Softcover

ISBN: 978-3-319-04581-8