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Altri autori (Persone)	Köhl, Michael
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Nota di contenuto	-Introduction to the performance and durability assessment of optical materials for solar thermal systems -- -Materials performance and system performance -- -Environmental stress conditions -- -Durability assessment and service lifetime prediction -- -Methods for reducing environmental stress in solar collectors -- -Modeling of microclimates, ventilation rate testing procedures, and case studies on polymeric glazings PART 1: INTRODUCTION -- Introduction to the performance and durability assessment of optical materials for solar thermal systems / B. Carlsson ... [et al.] -- PART 2: MATERIALS PERFORMANCE AND SYSTEM PERFORMANCE -- Opticla properties and measurements / A. Roos -- Performance models of solar collectors and systems / U. Frei -- System performance and testing / U. Frei, H. Oversloot -- Performance requirements and criteria / M. Köhl -- Performance indicators / M. Köhl, G. Jorgensen -- PART 3: ENVIRONMENTAL STRESS CONDITIONS -- Environmental stress conditions / M. Heck, M. Kohl -- Measurements of environmental stress conditions and evaluation for service life prediction / S. Brunold ... [et al.] -- Evaluation of the stress conditions / M. Heck, M. Köhl -- Correlation between microclimate and

macroclimate / O. Holck ... [et al.] -- PART 4: DURABILITY ASSESSMENT AND SERVICE LIFETIME PREDICTION -- General methodology ; Initial risk analysis of potential failure modes ; Qualification testing / B. Carlsson -- Accelerated indoor testing / S. Brunold ... [et al.] -- Service life prediction from results of accelerated aging / B. Carlsson -- Nonmechanistic phenomenological treatment of glazings and reflectors / G. Jorgensen -- Outdoor exposure testing / G. Jorgensen -- Analytical techniques for studying solar materials degradation processes / K. Möller -- PART 5: METHODS FOR REDUCING ENVIRONMENTAL STRESS IN SOLAR COLLECTORS -- Rain tightness / O. Holck, S. Svendsen -- Optimization of the ventilation rate in flat-plate collectors / M. Heck ... [et al.] -- Guidelines for limiting environmental stress factors in glazed, ventilated solar collectors / O. Holck, S. Svendsen -- Modeling of microclimates / O. Holck, S. Svendsen -- Ventilation rate testing procedure / O. Holck -- PART 6: CASE STUDIES ON POLYMERIC GLAZING -- Screening tests of candidate polymeric glazings / G. Jorgensen -- Case study on polymeric glazings / G. Jorgensen ... [et al.]

Sommario/riassunto

* 2 real examples demonstrate how to obtain the service life of solar collector systems * Durable, providing fundamentals that will continue to be valuable over the next 5-10 years * Lighting a pathway to the commercialisation of solar products

Solar devices lose their performance over time. The rate of degradation controls the service life of these devices. The essential concepts used to assess durability and performance of two specific solar collector systems are described, enabling researchers to assess durability in other solar devices. The examples of modelling, testing and performance measurements give researchers a how-to approach to reach crucial service lifetime predictions.

Achieving successful and sustainable commercialisation of solar products relies on the fulfilment of 2 further criteria and these are also discussed.

The methodology of service lifetime predictions (SLP), which is explained in detail in the book, is crucially needed in other solar technologies and is generally applicable to a wide variety of materials, components and systems used in other solar, biomedical, aerospace, electronic and coatings technologies.

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