

ESICC 2023 - Energy Efficiency, Structural Integrity in Historical and Modern Buildings Facing Climate Change and Circularity

Procedia Structural Integrity Volume 55

Lisbon, Portugal
3 – 4 July 2023

ISBN: 978-1-7138-9503-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) The Authors. Published by Elsevier Ltd.
Creative Commons Attribution 4.0 International License.
License details: <http://creativecommons.org/licenses/by/4.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination, and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact the publisher:

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Building Energy Modelling for Historical Buildings: Current Distribution of Literature Case Studies in View of Climate Change..... <i>Elena Verticchio, Filippo Calcerano, Letizia Martinelli, Elena Gigliarelli</i>	1
Climate Change Monitoring with Art-Risk 5: New Approach for Environmental Hazard Assessment in Seville and Almería Historic Centres (Spain)..... <i>Mónica Moreno, Rafael Barea, Luis Castro, Daniel Cagigas, Pilar Ortiz</i>	9
Tailored Training for Building Resilience in Changing Climate: BeWare Project's Approach <i>M. P. Mendes, I. Flores-Colen, S. Kasovska Georgieva, R. Mankaa, D. Papakonstantinou</i>	18
Intervention in Portuguese Historic Villages Facing Desertification and Climate Change <i>Ana Velosa, Hugo Rodrigues, Paulo Silva</i>	24
Energy Demand for Indoor Climate Control in Museums: Challenges and Perspectives in Time of a Changing Climate..... <i>Francesca Frasca, Anna Maria Siani, Chiara Bertolin</i>	32
Development of a Hybrid Timber and Aluminum Based Unitized Façade System Resilient to the Future Weather Conditions in Europe Via Monitoring Campaigns and Computational Models <i>Guilherme B. A. Coelho, Katarzyna Ostapska, Dimitrios Kraniotis, Johannes Brozovsky, Arian Loli</i>	39
Harvesting Solar Energy for Sustainable and Resilient Historical Areas. a Norwegian Case Study <i>Tahmineh Akbarinejad, Esther Machlein, Chiara Bertolin, Ozge Ogut, Alenka Temeljotov Salaj</i>	46
An Overview of the Efficiency of Anti-Graffiti Products in the Context of Climate Change <i>Jéssica D. Bersch, Inês Flores-Colen, Angela B. Masuero, Denise Dal Molin</i>	57
Evaluating the Freeze-Thaw Vulnerability of Soapstone Monuments and Geoheritage Sites in the Parco Del Paradiso (Chiavenna, Italy)..... <i>J. Melada, C. Bertolin, T. Apuani, A. Conforta, M. Giudici</i>	64
NETOBRA: Boosting Urban Resilience Through a Digital Platform for the Construction Ecosystem..... <i>Seyed Mhs Rezvani, Maria Joao Falcao Silva, Nuno Marques De Almeida</i>	72
Waste-Based Materials in Residential House Construction..... <i>Rebeca Sánchez-Vázquez, Alicia Fernández Rodríguez, Daniel Burgos</i>	80
Life Cycle Assessment and Maintenance Planning of an Innovative Flat Roof Solution..... <i>Giovanna Bartels, Inês Flores-Colen, José Dinis Silvestre, Luis Silva</i>	88
Oyster Shells' Incorporation into Mortar to Achieve Blue Circular Economy – LCA Case Study in Portugal <i>Poliana Bellei, Giovanna Schäfer, Fernanda Magalhães, Isabel Torres, Inês Flores-Colen</i>	96
Reuse of Wood Biomass Ash to Improve Thermal Behavior of Gypsum Plasters <i>M. Alejandro Pedreño-Rojas, Paola Villoria-Sáez, César Porras-Amores, M. Jesús Morales-Conde, Inês Flores-Colen</i>	103

Key Performance Indicators: Their Use in the Energy Efficiency Retrofit for Historic Buildings	110
<i>Beatrice Bartolucci, Francesca Frasca, Inês Flores-Colen, Chiara Bertolin, Anna Maria Siani</i>	
Questionnaire Survey on the Use of Thermal Insulation Solutions in Building Facades of Portugal, Italy and Norway	119
<i>J. L. Parracha, B. Bartolucci, O. Ogut, G. Boccacci, I. Flores-Colen</i>	
The TEnSE Approach to Assess the Nudge of Stakeholders in the Choice of Thermal Insulation Materials	127
<i>Francesca Frasca, Beatrice Bartolucci, João Luis Parracha, Ozge Ogut, Ines Flores-Colen</i>	
Perspectives on Integrated Retrofitting of Existing Reinforced Concrete Buildings.....	135
<i>Rafaela Almeida, Hugo Rodrigues, M. Glória Gomes, André Furtado</i>	
Improving Energy Efficiency in Portuguese Buildings: Retrofitting Façades with High Reflectance Finishing Coat	143
<i>Andréa R. Souza, Inês Flores-Colen, Nuno M. M. Ramos</i>	
Improvement in the Energy Efficiency Label Level – PBE Edifica: Case Study of the Community Library of the Federal University of São Carlos (UFSCar) – São Paulo - Brazil	151
<i>William Silva Duran Lopes, Douglas Barreto, Inês Flores-Colen</i>	
Diagnosis of Historic Reinforced Concrete Buildings: A Literature Review of Non-Destructive Testing (NDT) Techniques	160
<i>Giulia Boccacci, Francesca Frasca, Chiara Bertolin, Anna Maria Siani</i>	
Statistical Analysis of Principal Components (PCA) in the Study of the Vulnerability of Heritage Churches	168
<i>Isabel Turbay, Pilar Ortiz, Rocío Ortiz</i>	
Structural Integrity – Historical Developments Through Millennia	177
<i>Aleksandar Sedmak, Dorin Radu, Simon Sedmak, Mihajlo Arandjelovic</i>	
New Perspectives in Structural Health Monitoring of Restored Elements of Cultural Heritage Monuments	185
<i>Dimos Triantis, Ermioni D. Pasiou, Ilias Stavrakas, Stavros K. Kourkoulis</i>	
Application of a Retrofit System to Improve the Seismic and Energy Performances of RC Framed Buildings	193
<i>Gabriele Fichera, Veronica Guardo, Giuseppe Margani, Carola Tardo</i>	
Mechanical Behavior of Recyclable Polymeric Specimens Made by Additive Manufacturing	201
<i>America Califano, Alessandro Greco, Venzio Giannella, Salvatore Gerbino, Raffaele Sepe</i>	
Fine Sandy Concrete Reinforced with Polypropylene Fibre for Rural and Desert Housing	206
<i>Afif Rahma</i>	
Condition Assessment of Timber in the Old Built Heritage - A Case Study	214
<i>Dulce Franco Henriques, Miguel Clara, Inês Flores-Colen</i>	

Author Index