



NOVEL
STRUCTURAL
SKINS

COSTACTION TU1303

WG2 SUSTAINABILITY AND LIFE CYCLE ANALYSIS OF STRUCTURAL SKINS

#BASIC LITERATURE AVAILABLE ON THE TOPIC

Eco-efficient design principles for membrane-based and foil-based skins

- Monticelli C. (2016), Lightweight Materials and Environmental Quality Requirements in: Zanelli A., Spinelli M.L., Monticelli C., Pedrali P., *Lightweight Landscape - Enhancing Design through Minimal Mass Structures*, Polimi SpringerBriefs, Cambridge, pp. 29-37 DOI: 10.1007/978-3-319-21665-2. <http://www.springer.com/la/book/9783319216645>
- Monticelli C., Zanelli A. (2016), Life Cycle Design and Efficiency Principles for Membrane Architecture: Towards a New Set of Eco-Design Strategies, in *Procedia Engineering* 155, p. 416-425, 2016. <https://doi.org/10.1016/j.proeng.2016.08.045>
- Monticelli C., Zanelli A., *Eco-efficiency and life cycle analysis of structural membranes in architecture*, in Falk A., Vegh P. e Chilton J. (eds.) (2015), *Proceedings of the IASS Working Groups 12+18 International Colloquium "Bio-based and Bio-inspired Environmentally Compatible Structures"*, 10 - 13 April, Tokyo Denki University, Japan.
- R.Rovers, M.Ritzen, J.Houben and V.Rovers (2017), *Closing Cycles: Circular Energy, the missing link*, Conference: Exergy, LCA & Sustainability, ELCAS-5, At Nisyros, Greece, July.
- Zanelli A., Spinelli M.L., Monticelli C., Pedrali P. (2016), *Lightweight Landscape - Enhancing Design through Minimal Mass Structures*, Polimi SpringerBriefs, Cambridge, DOI: 10.1007/978-3-319-21665-2. <http://www.springer.com/la/book/9783319216645>

Eco-Efficiency of structure skins: case studies

- Aliprandi S., Monticelli C., Zanelli A. (2015), *Technical Textiles and Thin Insulation Materials. New Scenarios for the Energetic Retrofitting*, in: *6th International Building Physics Conference, IBPC 2015, Turin, Italy, June 14-17, 2015 – Energy Procedia*, ISSN: 1876-6102, pp. 37-60.
- Barozzi M., Lienhard J., Zanelli A., Monticelli C. (2016), The Sustainability of Adaptive Envelopes: Developments of Kinetic Architecture, in *Procedia Engineering* 155, p. 275-284, 2016. <https://doi.org/10.1016/j.proeng.2016.08.029>
- Butera F., Aste N., Adhikari R.S., Del Pero C., Leonforte F., Zanelli A. (2017), *Wet Curtain Wall: A Novel Passive Radiant System for Hot and Dry Climates*, in: *Energy Procedia*, n. 105, 18766102.
- Jan Cremers, Hannes Marx (2017), *Improved Daylight Comfort by a New 3D-Foil That Allows to Trade off Solar Gains and Light Individually*, Conference: Structural Membranes 2017. VIII

- International Conference on Textile Composites and Inflatable Structures. IACM / ECCOMAS, At <http://congress.cimne.com/membranes2017/frontal/Doc/Ebook2017.pdf>
- Jan Cremers, Nansi Palla, Doris Buck, Andreas Beck Andreas Biesinger, Swen Brodkorb (2016), *Analysis of a Translucent Insulated Triple-layer Membrane Roof for a Sport Centre in Germany*, in *Procedia Engineering* 155:38-46 · Dec., DOI: [10.1016/j.proeng.2016.08.005](https://doi.org/10.1016/j.proeng.2016.08.005) ·
- Jan Cremers, Hannes Marx (2016), *Comparative Study of a New IR-absorbing Film to Improve Solar Shading and Thermal Comfort for ETFE Structures*, *Procedia Engineering* 155:113-120, · December, DOI: [10.1016/j.proeng.2016.08.012](https://doi.org/10.1016/j.proeng.2016.08.012)
- Hua S., Angelotti A., Zanelli A. (2015), *Thermal-physical behaviour and energy performance of air-supported membranes for sports halls: a comparison among traditional and advanced building envelopes*, in: *Energy and Buildings*, vol. 109, pp. 35-46.
- Hend Ibrahim, Ayman Wagdy, Paolo Beccarelli, Robert Carpenter, John Chilton (2016), *Applicability of Flexible Photovoltaic Modules onto Membrane Structures Using Grasshopper Integrative Model*, in *Procedia Engineering* 155, p. 379-387.
- Jakica N., Zanelli A., Frontini F. (2015), *Experimental Validation of Optical Simulation for Complex Building Integrated Photovoltaic System*, Proceedings of the 31st European Photovoltaic Solar Energy Conference and Exhibition, Hamburg, Germany.
- Jakica N., Zanelli A. (2014), *Dynamic Visualization of Optical and Energy Yield Co-Simulation of New Generation BIPV Envelope in Early Design Phase Using Custom Ray Tracing Algorithm in Python*, in: Proceedings of Advanced Building Skins Conference, Bressanone, Italy, October 28-29, 2014, ISBN 978-3-98120537-4.
- Stefania Lombardi, Roberto Canobbio (2016), *Textile Structures for Climate Control*, in: *Procedia Engineering* 155, p. 163-172. <https://doi.org/10.1016/j.proeng.2016.08.017>
- Carl Maywald, Florence Riesser (2016), *Sustainability – The Art of Modern Architecture*, in *Procedia Engineering* 155, p. 238 – 248. <https://doi.org/10.1016/j.proeng.2016.08.025>
- Masera, G., Wakili, K.G., Stahl, T. Monticelli C., Aliprandi S., Zanelli, A. and Elesawy, A. (2017), *Development of a Super-insulating, Aerogel-based Textile Wallpaper for the Indoor Energy Retrofit of Existing Residential Buildings*, *Procedia Engineering*, val. 180, 2017, pp. 1139-1149 <https://doi.org/10.1016/j.proeng.2017.04.274>
- Monticelli C., Zanelli A., Aliprandi S., Pracchi V. N., Rosina E., (2016), *The energy efficiency improvement of listed buildings through textile-based innovative system*, in: *Advanced Building Skins*, Berna, Switzerland, October 10-11 2016, ISBN 978-3-98120539-8, pp. 192-202.
- M.J. Ritzen, Z.A.E.P. Vroon, R.F.M. Rovers, A. Lupíšek, C.P.W. Geurts (2017) *Environmental impact comparison of a ventilated and a non-ventilated building-integrated photovoltaic rooftop design in the Netherlands: Electricity output, energy payback time, and land claim*, in: *Solar Energy*, Vol. 155(2017), p. 304-313, DOI: [10.1016/j.solener.2017.06.041](https://doi.org/10.1016/j.solener.2017.06.041)
- Luis São João, Raquel Carvalho, Raul Fangueiro (2016), *A Study on the Durability Properties of Textile Membranes for Architectural Purposes*, in: *Procedia Engineering* 155, p. 230 – 237. <https://doi.org/10.1016/j.proeng.2016.08.024>
- Zanelli A., (2015), *Architectural fabric structures in refurbishment of archaeological and cultural heritage areas*, in: Llorens Duran, J.I., *Fabric structures in architecture*, Woodhead Publishing Limited, Cambridge, 2015, pp. 481-527, doi:[10.1016/B978-1-78242-233-4.00015-2](https://doi.org/10.1016/B978-1-78242-233-4.00015-2).