Staf Roels

List of Publications by Year in Descending Order

104 papers	2,487 citations	29 h-index	47 g-index
110 ext. papers	2,779 ext. citations	4.3 avg, IF	5.52 L-index

#	Paper	IF	Citations
104	Time-dependent solar aperture estimation of a building: Comparing grey-box and white-box approaches. *Renewable and Sustainable Energy Reviews*, **2022**, 161, 112337	16.2	1
103	Estimating dynamic solar gains from on-site measured data: An ARX modelling approach. *Applied Energy*, **2022**, 321, 119278	10.7	0
102	What affects the performance of POD for the simulation of heat transfer through building component?. *Journal of Physics: Conference Series*, **2021**, 2069, 012215	0.3	
101	Comparing statistical modeling techniques for heat loss coefficient estimation using in-situ data. *Journal of Physics: Conference Series*, **2021**, 2069, 012101	0.3	3
100	Hygrothermal assessment of timber frame walls using a convolutional neural network. *Building and Environment*, **2021**, 193, 107652	6.5	4
99	The impact of a reduced training subspace on the prediction accuracy of neural networks for hygrothermal predictions. *Journal of Building Performance Simulation*, **2021**, 14, 20-37	2.8	1
98	Does kaolin clay really create a perfect hydraulic interface contact between materials?. *Construction and Building Materials*, **2020**, 262, 120700	6.7	0
97	Modelling moisture conditions behind brick veneer cladding: Verification of common approaches by field measurements. *Journal of Building Physics*, **2020**, 44, 95-120	2.6	7
96	Assessment of data analysis methods to identify the heat loss coefficient from on-board monitoring data. *Energy and Buildings*, **2020**, 209, 109706	7	9
95	Is the Time-Domain Reflectometry (TDR) Technique Suitable for Moisture Content Measurement in Low-Porosity Building Materials?. *Sustainability*, **2020**, 12, 7855	3.6	6
94	Analysis of the influence of the definition of the interior dwelling temperature on the characterization of the heat loss coefficient via on-board monitoring. *Energy and Buildings*, **2020**, 215, 109860	7	6
93	Model order reduction for efficient deterministic and probabilistic assessment of building envelope thermal performance. *Energy and Buildings*, **2020**, 226, 110366	7	3
92	Using convolutional neural networks for hygrothermal predictions to extrapolate to other external climates. *E3S Web of Conferences*, **2020**, 172, 04001	0.5	1
91	Time Domain Reflectometry (TDR) technique □A solution to monitor moisture content in construction materials. *E3S Web of Conferences*, **2020**, 172, 17001	0.5	1
90	Performance of wood and wood-based materials regarding fungal decay. *E3S Web of Conferences*, **2020**, 172, 20010	0.5	
89	Hygrothermal performance of timber frame walls with brick veneer cladding: a parameter analysis. *E3S Web of Conferences*, **2020**, 172, 07002	0.5	1
88	How effective is kaolin clay for the creation of a perfect hydraulic interface contact between materials?. *E3S Web of Conferences*, **2020**, 172, 14002	0.5	1

87	The use of PODDEIM model order reduction for the simulation of nonlinear hygrothermal problems. *E3S Web of Conferences*, **2020**, 172, 04002	0.5	2
86	PODDEIM model order reduction for nonlinear heat and moisture transfer in building materials. *Journal of Building Performance Simulation*, **2020**, 13, 645-661	2.8	4
85	Sensitivity of Characterizing the Heat Loss Coefficient through On-Board Monitoring: A Case Study Analysis. *Energies*, **2019**, 12, 3322	3.1	9
84	Towards a more representative assessment of frost damage to porous building materials. *Building and Environment*, **2019**, 164, 106343	6.5	18
83	Towards the characterization of the heat loss coefficient via on-board monitoring: Physical interpretation of ARX model coefficients. *Energy and Buildings*, **2019**, 195, 180-194	7	9
82	Neural networks for metamodelling the hygrothermal behaviour of building components. *Building and Environment*, **2019**, 162, 106282	6.5	17
81	Quasi-Monte Carlo based uncertainty analysis: Sampling efficiency and error estimation in engineering applications. *Reliability Engineering and System Safety*, **2019**, 191, 106549	6.3	27
80	Impact of frost temperature and moisture content on frost damage to ceramic bricks. *MATEC Web of Conferences*, **2019**, 282, 02013	0.3	
79	Centrifuge experiments for the determination of the moisture storage and transport properties in the overhygroscopic range. *MATEC Web of Conferences*, **2019**, 282, 02035	0.3	
78	The use of proper orthogonal decomposition for the simulation of highly nonlinear hygrothermal performance. *MATEC Web of Conferences*, **2019**, 282, 02018	0.3	
77	Predicting the hygrothermal behaviour of building components using neural networks. *MATEC Web of Conferences*, **2019**, 282, 02036	0.3	
76	A novel and flexible test setup to measure the vapour diffusion resistance of building materials and wall components. *MATEC Web of Conferences*, **2019**, 282, 02057	0.3	
75	Optimising Convolutional Neural Networks to Predict the Hygrothermal Performance of Building Components. *Energies*, **2019**, 12, 3966	3.1	7
74	Wooden beam ends in combination with interior insulation: An experimental study on the impact of convective moisture transport. *Building and Environment*, **2019**, 148, 524-534	6.5	20
73	Inverse hygric property determination based on dynamic measurements and swarm-intelligence optimisers. *Building and Environment*, **2018**, 131, 184-196	6.5	7
72	A determination methodology for the spatial profile of the convective heat transfer coefficient on building components. *Indoor and Built Environment*, **2018**, 27, 512-527	1.8	1
71	Applications of CT for Non-destructive Testing and Materials Characterization **2018**, 267-331		2
70	A comparison of model order reduction methods for the simulation of wall heat transfer **2018**,		2

69	Designing uncertain optimization schemes for the economic assessment of stock energy-efficiency measures. *Journal of Building Performance Simulation*, **2017**, 10, 3-16	2.8	5
68	The as-built thermal quality of building components: characterising non-stationary phenomena through inverse modelling. *Energy Procedia*, **2017**, 132, 351-356	2.3	6
67	Durability of self-adhesive tapes for exterior air barrier applications: a laboratory investigation. *International Journal of Ventilation*, **2017**, 16, 30-41	1.1	6
66	On the drying potential of cavity ventilation behind brick veneer cladding: A detailed field study. *Building and Environment*, **2017**, 123, 133-145	6.5	9
65	On site characterisation of the overall heat loss coefficient: Comparison of different assessment methods by a blind validation exercise on a round robin test box. *Energy and Buildings*, **2017**, 153, 179-189	7	21
64	Is stochastic grey-box modelling suited for physical properties estimation of building components from on-site measurements?. *Journal of Building Physics*, **2017**, 40, 444-471	2.6	19
63	Hygric property determination based on dynamic measurement techniques and metaheuristic strategies. *Energy Procedia*, **2017**, 132, 279-284	2.3	
62	On site thermal performance characterization of building envelopes: How important are heat exchanges with neighbouring zones. *Energy Procedia*, **2017**, 132, 339-344	2.3	2
61	Wooden beam ends in combination with interior insulation: the importance of an airtight sealing. *Energy Procedia*, **2017**, 132, 664-669	2.3	5
60	Quasi-Monte-Carlo-based probabilistic assessment of wall heat loss. *Energy Procedia*, **2017**, 132, 705-710	2.3	5
59	A simplified dynamic zone model for a probabilistic assessment of hygrothermal risks in building components. *Energy Procedia*, **2017**, 132, 717-722	2.3	2
58	The impact of workmanship on the thermal performance of cavity walls with rigid insulation boards: where are we today?. *Energy Procedia*, **2017**, 132, 255-260	2.3	1
57	Hygrothermal behaviour of timber frame walls finished with a brick veneer cladding. *Energy Procedia*, **2017**, 132, 363-368	2.3	5
56	Comparison of characterisation methods determining the thermal resistance of building components from onsite measurements. *Energy and Buildings*, **2016**, 130, 309-320	7	63
55	Capillary Active Interior Insulation Systems for Wall Retrofitting: A More Nuanced Story. *International Journal of Architectural Heritage*, **2016**, 10, 558-569	2.1	16
54	Field study on the air change rate behind residential rainscreen cladding systems: A parameter analysis. *Building and Environment*, **2016**, 95, 1-12	6.5	13
53	Highly insulated pitched roofs resilient to air flow patterns: Guidelines based on a literature review. *Energy and Buildings*, **2016**, 120, 10-18	7	16
52	Experimental analysis of cavity ventilation behind rainscreen cladding systems: A comparison of four measuring techniques. *Building and Environment*, **2015**, 87, 177-192	6.5	25

51	Towards a more thoughtful use of mould prediction models: A critical view on experimental mould growth research. *Journal of Building Physics*, **2015**, 39, 102-123	2.6	26
50	Capillary active interior insulation: do the advantages really offset potential disadvantages?. *Materials and Structures/Materiaux Et Constructions*, **2015**, 48, 3009-3021	3.4	46
49	A Preliminary Evaluation of Mould Prediction Models Based on Laboratory Experiments. *Energy Procedia*, **2015**, 78, 1407-1412	2.3	12
48	Experimental Analysis of Cavity Ventilation Behind Residential Rainscreen Cladding Systems. *Energy Procedia*, **2015**, 78, 1750-1755	2.3	1
47	Characterising the Actual Thermal Performance of Buildings: Current Results of Common Exercises Performed in the Framework of the IEA EBC Annex 58-Project. *Energy Procedia*, **2015**, 78, 3282-3287	2.3	7
46	Modelling Cavity Ventilation Behind Brick Veneer Cladding: How Reliable are the Common Assumptions?. *Energy Procedia*, **2015**, 78, 1467-1477	2.3	2
45	A Maximum Likelihood Estimation of the Thermal Resistance of a Cavity Wall from On-site Measurements. *Energy Procedia*, **2015**, 78, 3276-3281	2.3	7
44	Analysis of Coupling Strategies for Building Simulation Programs. *Energy Procedia*, **2015**, 78, 2554-2559	2.3	2
43	What are the hygrothermal consequences of applying exterior air barriers in timber frame construction in Europe?. *Journal of Building Performance Simulation*, **2015**, 8, 191-204	2.8	7
42	Interior insulation for wall retrofitting □A probabilistic analysis of energy savings and hygrothermal risks. *Energy and Buildings*, **2015**, 89, 231-244	7	79
41	Comparative study of metamodelling techniques in building energy simulation: Guidelines for practitioners. *Simulation Modelling Practice and Theory*, **2014**, 49, 245-257	3.9	61
40	Co-heating test: A state-of-the-art. *Energy and Buildings*, **2014**, 82, 163-172	7	72
39	A comparison of the hygric performance of interior insulation systems: A hot box□old box experiment. *Energy and Buildings*, **2014**, 80, 37-44	7	54
38	Probabilistic design and analysis of building performances: Methodology and application example. *Energy and Buildings*, **2014**, 79, 202-211	7	53
37	Hygric performance of a massive masonry wall: How do the mortar joints influence the moisture flux?. *Construction and Building Materials*, **2013**, 41, 697-707	6.7	36
36	Rain water runoff from porous building facades: Implementation and application of a first-order runoff model coupled to a HAM model. *Building and Environment*, **2013**, 64, 177-186	6.5	19
35	Numerical and experimental investigation of the hygrothermal response of timber frame walls with an exterior air barrier. *Journal of Building Physics*, **2013**, 36, 375-397	2.6	8
34	Assessment of the physical part of the temperature takeback for residential retrofits. *Energy and Buildings*, **2012**, 52, 112-121	7	21

33	A quasi-steady state implementation of air convection in a transient heat and moisture building component model. *Building and Environment*, **2012**, 58, 208-218	6.5	27
32	Review of mould prediction models and their influence on mould risk evaluation. *Building and Environment*, **2012**, 51, 296-310	6.5	129
31	Hygrothermal risks of using exterior air barrier systems for highly insulated light weight walls: A laboratory investigation. *Building and Environment*, **2012**, 56, 192-202	6.5	43
30	Water Transport Between Mortar and Brick: The Influence of Material Parameters **2012**, 329-341		4
29	Experimental data set for validation of heat, air and moisture transport models of building envelopes. *Building and Environment*, **2011**, 46, 1038-1046	6.5	51
28	The influence of structural floors on the airtightness of wood-frame houses. *Energy and Buildings*, **2011**, 43, 639-652	7	17
27	In situ determination of the moisture buffer potential of room enclosures. *Journal of Building Physics*, **2011**, 34, 223-246	2.6	20
26	Numerical and experimental data set for benchmarking hygroscopic buffering models. *International Journal of Heat and Mass Transfer*, **2010**, 53, 3638-3654	4.9	45
25	Reliability of material data measurements for hygroscopic buffering. *International Journal of Heat and Mass Transfer*, **2010**, 53, 5355-5363	4.9	41
24	Potential of wind barriers to assure airtightness of wood-frame low energy constructions. *Energy and Buildings*, **2010**, 42, 2376-2385	7	21
23	Impact, absorption and evaporation of raindrops on building facades. *Building and Environment*, **2009**, 44, 113-124	6.5	55
22	Qualitative and quantitative assessment of interior moisture buffering by enclosures. *Energy and Buildings*, **2009**, 41, 382-394	7	66
21	Comparison of Positron Emission Tomography and X-ray radiography for studies of physical processes in sandstone. *Engineering Geology*, **2009**, 103, 134-138	6	15
20	Impact of wind-driven rain on historic brick wall buildings in a moderately cold and humid climate: Numerical analyses of mould growth risk, indoor climate and energy consumption. *Energy and Buildings*, **2009**, 41, 101-110	7	76
19	On the validity of numerical wind-driven rain simulation on a rectangular low-rise building under various oblique winds. *Building and Environment*, **2009**, 44, 621-632	6.5	47
18	Strategies to improve the energy performance of multiple-skin facades. *Building and Environment*, **2008**, 43, 638-650	6.5	67
17	Wind-driven rain as a boundary condition for HAM simulations: Analysis of simplified modelling approaches. *Building and Environment*, **2007**, 42, 1555-1567	6.5	34
16	A combined CFD–HAM approach for wind-driven rain on building facades. *Journal of Wind Engineering and Industrial Aerodynamics*, **2007**, 95, 585-607	3.7	46

15	Analysis of moisture flow in porous materials using microfocus X-ray radiography. *International Journal of Heat and Mass Transfer*, **2006**, 49, 4762-4772	4.9	130
14	A Comparison of the Nordtest and Japanese Test Methods for the Moisture Buffering Performance of Building Materials. *Journal of Building Physics*, **2006**, 30, 137-161	2.6	38
13	A coupled discrete-continuum approach to simulate moisture effects on damage processes in porous materials. *Computer Methods in Applied Mechanics and Engineering*, **2006**, 195, 7139-7153	5.7	20
12	Numerical modeling of the flow conditions in a closed-circuit low-speed wind tunnel. *Journal of Wind Engineering and Industrial Aerodynamics*, **2006**, 94, 699-723	3.7	35
11	WD2 Rain and Snow. *Wind Engineers JAWE*, **2006**, 2006, 933-952	0	
10	Modification of pedestrian wind comfort in the Silvertop Tower passages by an automatic control system. *Journal of Wind Engineering and Industrial Aerodynamics*, **2004**, 92, 849-873	3.7	53
9	The inlet temperature as a boundary condition for multiple-skin facade modelling. *Energy and Buildings*, **2004**, 36, 825-835	7	42
8	Modelling Unsaturated Moisture Transport in Heterogeneous Limestone. *Transport in Porous Media* , **2003**, 52, 351-369	3.1	4
7	Modelling Unsaturated Moisture Transport in Heterogeneous Limestone. *Transport in Porous Media* , **2003**, 52, 333-350	3.1	22
6	Determination of the Moisture Capacity of Porous Building Materials. *Journal of Thermal Envelope and Building Science*, **2002**, 25, 209-237		17
5	Determination of the Moisture Capacity of Porous Building Materials. *Journal of Thermal Envelope and Building Science*, **2002**, 25, 209-237		10
4	Determination of the Isothermal Moisture Transport Properties of Porous Building Materials. *Journal of Thermal Envelope and Building Science*, **2001**, 24, 183-210		32
3	Microscopic analysis of imbibition processes in oolitic limestone. *Geophysical Research Letters*, **2000** , 27, 3533-3536	4.9	12
2	Simulating Non-Isothermal Water Vapour Transfer: An Experimental Validation on Multi-Layered Building Components. *Journal of Thermal Envelope and Building Science*, **1999**, 23, 17-40		2
1	Mesh adaptive finite element formulation for moisture transfer in materials with a critical moisture content. *International Journal for Numerical Methods in Engineering*, **1999**, 46, 1001-1016	2.4	7