

Contents

1	Introduction	1
1.1	Motivation	1
1.2	General Characteristics and Main Advantages of ETICS	2
1.3	Common Pathologies on ETICS	3
	References	6
2	Experimental Studies on Hygrothermal Behaviour of ETICS	9
2.1	Setting up the Test	9
2.1.1	Preliminary Tests	9
2.1.2	One-Year in Situ Tests	12
2.2	Results	12
2.2.1	Surface Temperature	12
2.2.2	Exterior Surface Condensation	17
2.2.3	Wind-Driven Rain	18
2.2.4	Surface Moisture	19
2.3	Discussion of the Results	20
	References	20
3	Assessment of ETICS' Surface Humidification	23
3.1	Validation of the HAM Numerical Model	23
3.1.1	The Hygrothermal Model	23
3.1.2	Comparison Between Simulated and Measured Values	25
3.2	Humidification Model BIO.MOD	28
3.2.1	General Comments	28
3.2.2	Assessing the Exterior Surface Condensation	29
3.2.3	Assessing the Wind-Driven Rain	29
3.2.4	Assessing the Drying Process	30
3.2.5	Assessing Surface Humidification–BIO.MOD Indices	30
3.2.6	Validation of BIO.MOD Indices	31
	References	32

4	BIO.MOD Indices Application Examples	35
4.1	Risk Map of ETICS Surface	
	Humidification—The Portuguese Case	35
4.2	Critical Parameters Involved in ETICS Surface Humidification . . .	36
	References	44
5	Experimental and Numerical Study on the Effect of Nearby Obstacles in Surface Condensations on ETICS	47
5.1	Experimental Study	47
5.1.1	Setting up the Test	47
5.1.2	Results	49
5.1.3	Discussion of the Results	57
5.2	Numerical Model to Simulate the Influence of Nearby Obstacles. . .	58
5.2.1	Numerical Model MOD.O	58
5.2.2	Vertical Obstacles	58
5.2.3	Horizontal Obstacles	59
5.3	Validation of the Model	60
5.3.1	Parameters for the Simulation	60
5.3.2	Vertical Obstacles	60
5.3.3	Horizontal Obstacles	63
5.3.4	Discussion of the Results	64
5.4	Practical Application of the Model.	65
	References	67
6	Conclusions and Recommendations	69

External Thermal Insulation Composite Systems (ETICS)

An Evaluation of Hygrothermal Behaviour

Barreira, E.; de Freitas, V.P.

2016, X, 71 p. 66 illus., 65 illus. in color., Softcover

ISBN: 978-3-319-20381-2