



BUSINESS MEETING WP25 ATMOSPHERIC CORROSION

Tomas Prosek – 21/09/2021

Agenda

- General info about WP25
- Exposure site catalogue
- Online version of the Catalogue
- Future activities in field testing
- EFC Hub invitation
- EUROCORR 2021 Special Issue
- Subject for the WP25 session 2022
- Joint session 2022
- Any other business

General info about WP25

- Established in September 2020 after 3 years as Task Force
- Session at EUROCORR since 2017
- Regular info by e-mails, registration at <https://efcweb.org/WP25.html>

CO-CHAIR:

Prof. Johan TIDBLAD



RISE Research Institutes of Sweden

Department Corrosion
Isafjordgatan 28A
164 40 Kista, Sweden
Tel: +46 10 228 4878
Contact

CHAIR:

Dr. Tomáš PROSEK



University of Chemistry and
Technology Prague
Technopark Kralupy
Department of Metallic
Construction Materials
Žižkova 7
278 01 Kralupy nad Vltavou
Czech Republic
Tel: +420 220 446 104
Contact

Objectives

- Improvement of the **understanding into corrosion processes in thin electrolytes** formed under atmospheric conditions
- Development of **better predictive models**, both statistical and mechanistic
- **Best testing practices**, both field and laboratory
- Development of **corrosion monitoring techniques** applicable in atmosphere
- **Corrosion in new environments**, e.g. severe marine industrial atmospheres and micro climates
- **Protection of novel materials** including weathering, stainless and coated carbon steels and aluminium and magnesium alloys
- **Practical experience** in corrosion protection of structures and objects exposed to outdoor and indoor atmospheres
- **Standardization** activities

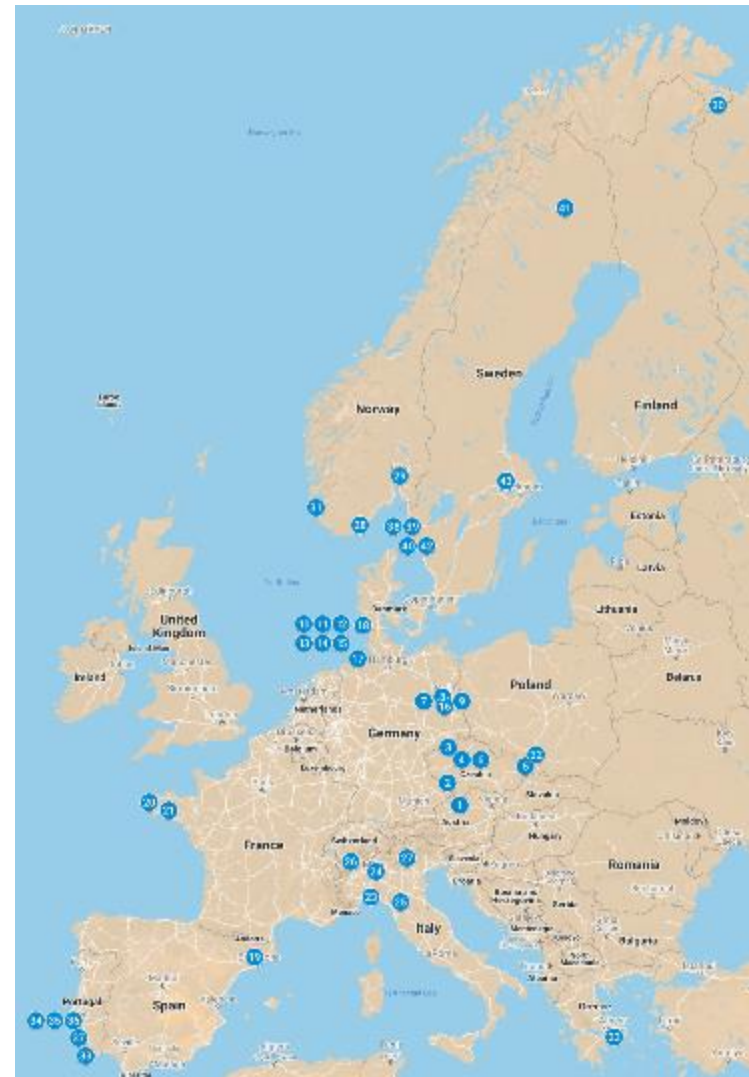
Exposure site catalogue

- Field corrosion testing important for material selection and development
- Information on site availability and characteristics difficult to obtain
- WP25 Atmospheric corrosion collected **Catalogue of atmospheric corrosion field exposure sites in Europe**



Exposure site catalogue

- 43 sites all over Europe
- All types of environments (rural, urban, industrial, marine)
- Different climatic zones, levels of industrial pollution and chloride deposition
- Corrosivity from C1 to CX according to ISO 9223



Exposure site catalogue

- Geographical location
- Nature
- Length of operation
- Corrosivity
- Environmental parameters
- Type of exposure racks and available space
- Contact details

Available free of charge at

<https://efcweb.org/WP25.html>



CZ, Kopisty					
Site name	Kopisty u Mostu				
Country, region	Czech Republic, Northern Bohemia				
Atmosphere	Industrial				
Location (GPS)	50.5442339N, 13.6231767E				
Altitude	240 m				
Address	Meteorologická observatoř Kopisty, ÚFA AV ČR v.v.i., 434 01 Most, Czech Republic				
Description	Green field located near an industrial plant (ca 3 km, Champark, UNIPETROL) and town Most				
Photographs					
Operational since	1969				
Corrosivity (ISO 9223)		Steel	Zinc	Copper	Aluminium
	Corrosion rate [g/m ² year]	131	4.9	11.9	0.2
	Corrosivity category	C2	C2	C3	C2
	Measurement period	2017-2018			
Environmental parameters	Parameter	Value	Measurement period		
	Rainfall [mm/year]	469	2014-2019		
	Temperature [°C]	10.4	2014-2019		
	SO ₂ [µg/m ³]	11.7	2014-2019		
	NO _x [µg/m ³]	22.3	2014-2019		
	Chloride deposition [mg/m ² day]	2.3	2016-2019		
	pH of rain	5.1	2014-2019		
Relative humidity [%]	73	2014-2019			
Exposure racks	RR 5° RR 35° RR 40° RR Possible to install customized racks Other: Exposure under shelter				
Available space	250 m ²				
Additional information	Atmospheric test site is included in the UNECE ICP Materials programme since 1986. All environmental parameters are measured on site. The chloride deposition is measured using the wet candle method.				
Managing organization	SVÚJOM Ltd., U Mestanského pivovaru 93M/4, 170 00 Prague, Czech Republic				
Contact person	Kateřina Křiváková ✉ křivalova@svujom.cz ☎ +420 775 159 552				

Online version of the Catalogue

- Pdf version difficult to keep updated
- On line version planned
- Searchable, undated automatically by site managers
- To be open for non-European sites too
- Support of the EFC will be sought

OVERVIEW OF EXPOSURE SITES WITH SELECTED PARAMETERS

No.	Site name	Atmosphere	Corrosion rate [g/m ² year]				Temp. [°C]	Rainfall [mm/year]	Environmental parameters			
			Steel	Zinc	Copper	Aluminium			Relative humidity [%]	Time of wetness [h]	SO ₂ [µg/m ³]	Chloride deposition [mg/m ² /day]
1	AT, Linz	Urban, Industrial	106	11.4	8.2	0.3	12	735	70	41	7	3
2	CZ, Kasperke Hory	Rural	53	4.5	8.7	0.01	8	699	74		8	
3	CZ, Kopsisty	Industrial	131	4.9	11.9	0.2	10	489	73		12	2
4	CZ, Krakovy	Urban	41	2.0	5.0	0.1	11	581	73	42	5	<1
5	CZ, Ostrava	Industrial	164	10.0			11	488	73		17	
6	CZ, Prague	Urban	56	3.1	8.1	0.1	11	473	70		5	3
7	DE, Berlin A103	Urban	159	4.9	14.0	1.1	11	460	73	35	2	94
8	DE, Berlin B1	Urban	38	4.3	15.9	0.2	10	725	79	46	2	12
9	DE, Berlin BAM	Urban	56	5.3	9.1	0.2	10	505	79	45	2	12
10	DE, Helgoland IFAM	Marine	2390				11	874	80			
11	DE, Helgoland Seawater	Marine	2376	60.0	62.5	1.9	9	718	75	52		
12	DE, Helgoland Südhafen	Marine	251	24.5	22.3	0.5	11	648	81	54		
13	DE, Helgoland Uplands	Marine		8.5			9	719	75	52		431
14	DE, Helgoland Seawater IFAM	Marine	2084	21.0	89.0	3.3	10	874	80			
15	DE, Helgoland Westkaje	Marine	296	10.5	13.5	0.6	9	719	75	52		431
16	DE, Horstwalde	Rural	44	4.0	19.7	0.1	10	636	79	45		
17	DE, Leuchtturm alte Weser IFAM	Marine					11		82			
18	DE, Sylt Seawater IFAM	Marine				87.0	10	797	79			
19	ES, Barcelona	Rural, Urban	53	6.5			15	600	66	51	3	13
20	FR, Brest	Marine	750	11.0	20.0	0.6	13	1100	83	60	<1	1300
21	FR, Le Crotoy	Rural	140	9.0	7.0	0.2	12	1000	84	67		<5
22	GR, Athens	Urban	77	6.4	8.0	0.1	20	448	58		9	
23	IT, Genoa	Marine, Urban	130	11.0	14.0	1.1	18	1254	64	9		57
24	IT, Milano	Urban				4.5	15	825	61		5	
25	IT, Monte Cimone	High UV					2		79		<1	
26	IT, Plateau Rosa	High UV										
27	IT, Trento	Urban					13	1306	27	30	3	
28	NO, Birkenes	Rural	58	8.1	7.6	0.4	6	1507	79		<1	7
29	NO, Oslo	Urban	19	5.8	3.5		7	716	78			2
30	NO, Svamvik	Rural, Industrial	59	7.9	7.9	0.7	1	411	78			7
31	NO, Tananger	Marine	600				9	1552			3	211
32	PL, Katowice	Urban	18	2.5	0.5	0.1	10	726	74			8
33	PT, Alfanzina	Marine	214	9.8	24.0	1.0	17	417	77	42	14	80
34	PT, Guincho	Marine			81.0		16	451	76	48		798
35	PT, Lisbon	Urban		9.5	8.3	0.7	16	723	71	38	32	9
36	PT, Lumiar	Urban	147	7.0	12.0	0.2	17	72	41	72	22	18
37	PT, Sines	Marine/Industrial	928	45.0	87.0	2.0	17		81	59	132	140
38	SE, Bohus-Malmön Katesand	Marine	237	6.9	12.0	0.5	9	967	81	57	<1	75
39	SE, Bohus-Malmön Kvarnvik	Marine	751	11.0	26.0	2.3	9	967	81	57	<1	577
40	SE, Bohus-Malmön Kvarnvik 3	Marine	269	8.5	14.0	0.8	9	967	81	57	<1	125
41	SE, Gällivare	Rural	38	4.4	5.7	0.3	0		77	20		
42	SE, Kristineberg	Marine	378	5.3	18.9		10	1017	81	59		
43	SE, Rydå	Rural	28	2.9	3.9	0.1						

Colour code (for explanation, see ISO 9223)

C1	C1	C1	C1
C2	C2	C2	C2
C3	C3	C3	C3
C4	C4	C4	C4
C5	C5	C5	C5
CX	CX	CX	CX

t ₁	P ₁	S ₁
t ₂	P ₂	S ₂
t ₃	P ₃	S ₃

Future activities in field testing

- Proposal from Gerald Luckeneder; only first idea, would need to be developed
- Problem: Site calibration not necessarily correct (corrosivity and climatic parameters)
- Solution: “Accreditation” of sites by the EFC
 - Regular round-robin exposure tests on member sites
 - Common publications
 - EFC Approved seal



- New initiative of the EFC: Social network for corrosionionists
- How to join: see <https://efcweb.org/>

EUROCORR Special Issue



EUROCORR 2021



**KOM – Corrosion and
Materials Protection Journal**



Eurocorr Special Issue

Papers of Oral and Poster presentations

Open Access (*publication fee covered by AKI*)

Deadline: 31.12.2021

follow the standard submission procedure on website

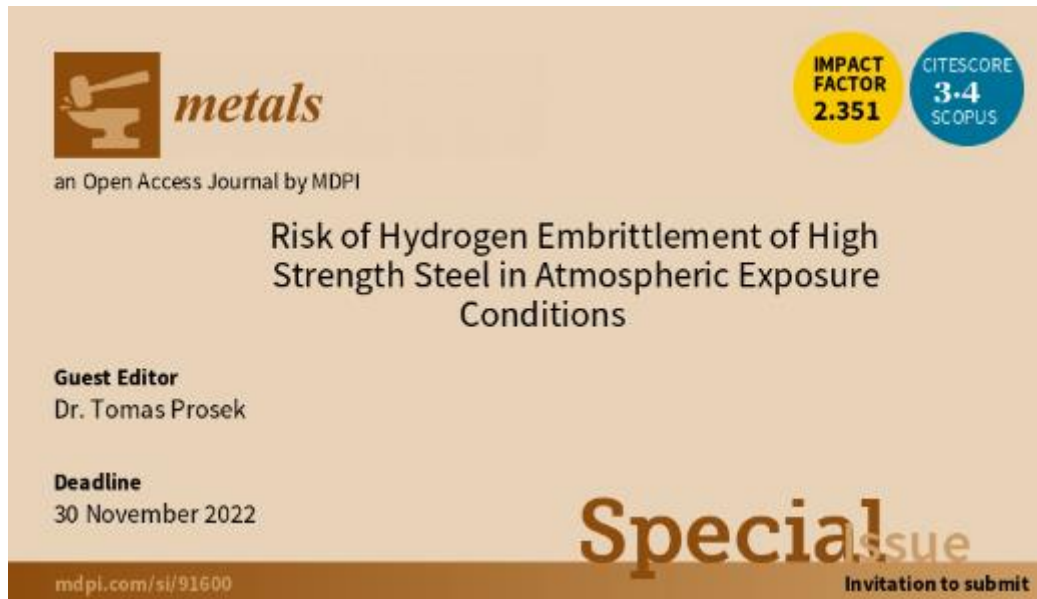
<https://www.sciendo.com/journal/KOM>


EUROCORR 2022

- Subject for the WP25 session next year – ideas

EUROCORR 2022

- Joint sessions 2022
 - ▣ **Hydrogen embrittlement in atmospheric exposure conditions with WP5**
 - ▣ **Atmospheric corrosion of cultural heritage artefacts and monuments with WP21**



 **metals**
an Open Access Journal by MDPI

IMPACT FACTOR 2.351 **CITESCORE 3.4 SCOPUS**

Risk of Hydrogen Embrittlement of High Strength Steel in Atmospheric Exposure Conditions

Guest Editor
Dr. Tomas Prosek

Deadline
30 November 2022

Special Issue
Invitation to submit

mdpi.com/si/91600

Any other business
