

Finalisation of the European approach to assess the fire performance of facades

An introduction to the project financed by EC/DG Grow

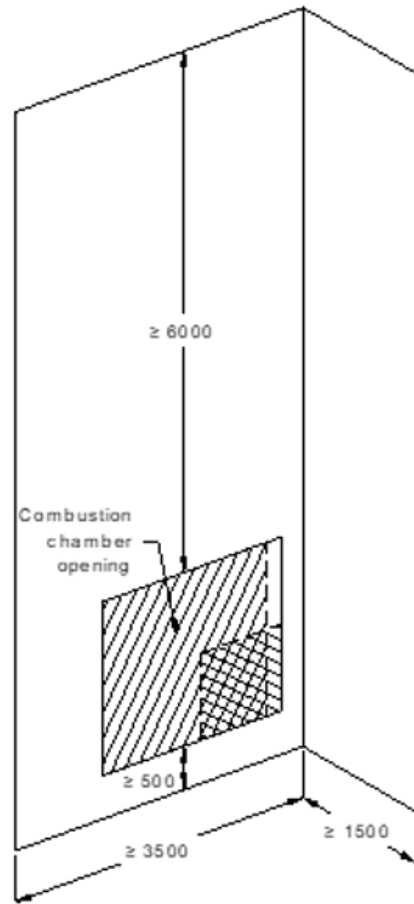
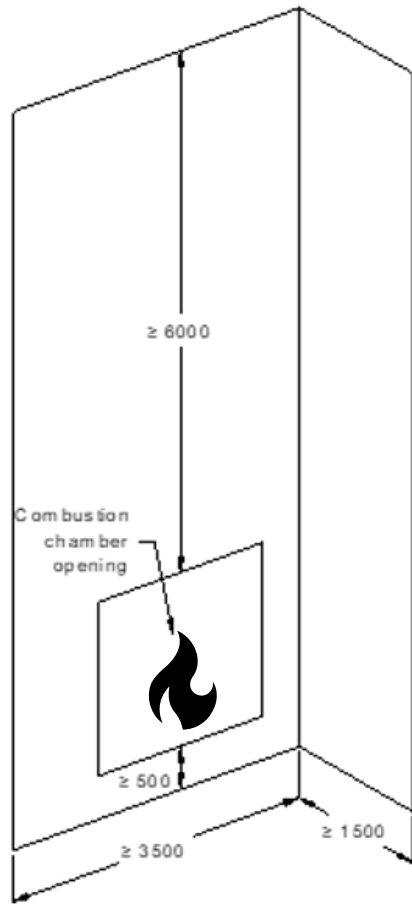
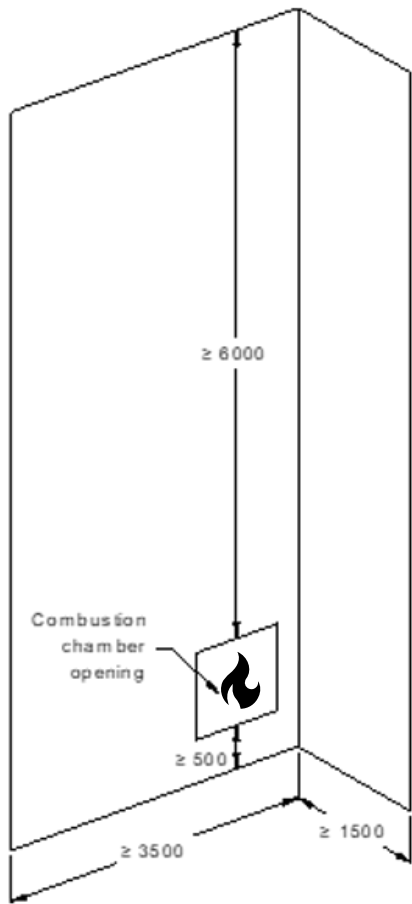
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Questions and comments can be sent to the following after the webinar:

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Aim and outcome of the project

- To finalize and fine-tune the assessment method developed at the previous stage as the “alternative method”
- A European approach to assess the fire performance of facades



Consortium

Project partners

- RISE, Sweden – project leader
- BAM, Germany
- Efectis, France
- EMI, Hungary
- University of Liege, Belgium

Subcontractors

- BRE, UK
- RISE Fire Research, Norway
- EGOLF

General content of the project

- Theoretical round robin
- Initial testing activities
- Experimental round robin
- Analysis and fine-tuning of the assessment method

Theoretical round robin

Objective: to carry out a theoretical round robin on the proposed assessment procedure in order to evaluate whether the descriptions on how to perform a test and the following classification given in the method needs to be further clarified.

- Led by University of Liege
- Invite all EGOLF members to participate – accredited laboratories
- Time schedule: March – October, 2020

Theoretical round robin

- Define the content of the round robin
- Invite EGOLF members and perform the exercise
- Analyse the response
- Rewrite the assessment method
- Report the results

Initial testing activities

Objective: to determine the sensitivity of the test method to variations of its main parameters and, consequently, define the specifications to be imposed on these parameters in order to ensure a robust method

- Led by BAM
- Time schedule: March, 2020 – January, 2021

Initial testing activities

- Literature survey
- Definition of the test program
- Design of a simple test rig
- Perform the tests
- Analyse the test results
- Update the assessment method

Initial testing activities - fuel

- Parametric tests on wood cribs
 - Wood species
 - Density
 - Geometrical tolerances
 - Moisture content
- Measurements
 - Mass loss rate
 - Heat release rate
 - Flame behaviour
 - Heat flux and temperature at different positions

Initial testing activities - average

The reference crib configurations selected in first phase will be installed in the combustion chamber of the test rig with an inert façade

- Medium heat exposure
 - Air flow rate: 400 m³/h
 - Wind speed: 0.5 m/s
 - Uplift: 0.5 m
 - Secondary opening: Eccentrically and at 1500 mm above the combustion chamber
- Large heat exposure
 - Air flow rate: Natural
 - Wind speed: 0.5 m/s
 - Uplift: 0.5 m
 - Secondary opening: Eccentrically and at 1500 mm above the combustion chamber

Initial testing activities - other

- Medium heat exposure
 - Air flow rate
 - 360 m³/h
 - 440 m³/h
 - Uplift of rig
 - 1.0 m
 - 2.0 m
- Large heat exposure
 - Wind speed
 - 1 m/s
 - 3 m/s
 - Uplift of rig
 - 1.0 m
 - 2.0 m

Initial testing activities - other

- Secondary opening
 - With eccentrically located opening/without opening on an inert façade
 - With symmetrically located opening/without opening on a laminate façade
- Falling parts
 - Examine different scanning techniques, i.e. image analysis techniques
 - Weight measurements

Step	Test group	Type of test	Number	Location	Remark
1	A	Crib parametric tests	8 large exposure	Efectis	Indoor
1	B	Crib parametric tests	3 medium exposure	Efectis	Indoor
2	C	Average test – large exposure	3	RISE	Indoor
2	D	Average test – medium exposure	3	BRE	Indoor
3	E	Parametric test air flow - medium exposure	2	BRE	Indoor
3	F	Parametric test uplift - medium exposure	2, 1 or 0	BRE	Indoor
3	G	Parametric test uplift - large exposure	2, 1 or 0	RISE	Indoor
3	H	Parametric test with 1 m/s - large exposure	1	RISE	Indoor
3	I	Parametric test with higher speed velocity - large exposure	1	Efectis	Outdoor
3	J	Secondary opening parametric test – large exposure	3	RISE	Indoor
3	K	Secondary opening parametric test – medium exposure	3	BRE	Indoor
3	L	Non fire test for measuring falling parts and burning debris	1	BAM	-

Experimental round robin

Objective: to quantify the within-lab and between-labs variability of the test results, i.e. the repeatability and the reproducibility of the proposed method

- Led by EMI
- Time schedule: October, 2020 – July, 2021

Experimental round robin

- Define the facade systems to be used
- Design of a suitable test rig
- Procure and deliver facade systems to the participants
- Perform the tests
- Analysis of the results

Experimental round robin

- Rainscreen and render
- ETICS
- Solid wood with ventilation gap
- Inert facade

Experimental round robin

Number	Exposure	Location	Remark	*Cross with
4	Large	BRE	Indoor	C-J
4	Medium	RISE	Indoor	D-K
4	Large	RISE FRN	Indoor	C-J
4	Medium	RISE FRN	Indoor	D-K
4	Large	EMI	Outdoor	I
4	Medium	Efectis	Outdoor	-

* Some of these tests may be compared with tests performed in Task 2, i.e. the inert facade and the combustible facade used for the study of eccentricity of secondary opening. Therefore, the dispatching of the test will consider to use other labs than the ones who performed the Task 2 test in order to "maximize" the Round Robin effect.

Analysis

Objective: analyse results from the experimental program and the round robin, to provide a finetuned assessment method and classification scheme.

- Led by Efectis
- Time schedule: October, 2020 – January, 2022

Deliverables to EC

- Inception report March 2020
- Progress report 1 August 2020
- Progress report 2 January 2021
- Progress report 3 October 2021
- Draft final report December 2021
 - Validation workshop January 2022
- Final report February 2022

Communication plan to stakeholders and liaisons

- Information on theoretical round robin October, 2020
- Information on initial testing November, 2020
- Information on experimental round robin June, 2021
- Information on analysis September, 2021
- Information on final assessment method November, 2021

Further work that may be needed

- Applicability of the method to facade systems not included in the project
- Direct and Extended Field of application
- Comparison with current national methods
- Measurements needed for Fire Safety Engineering

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