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

Information and update on the project
July 8, 2020

Please, turn off your microphone!

Agenda

• Standardization process
• Communication and information
• Time plan and milestones
• Theoretical round robin
• Test program
• Comments and questions

• If needed a coffee break will be held
Comments/questions during the webinar

- Please provide your questions or comments in the chat-function
- We will try to handle them during the webinar, if possible.
- Questions/comments can also be sent to the project team after the webinar

- All questions and comments received, during and after the webinar, will be available in the Comments Handling Document at the project web page.
Standardization process

• Revision on the CPR is currently in process. This may change the standardization process, and the following is based on the current CPR.

• After finalizing this project EC needs to initiate a standardization request (SR) for a horizontal "facade fire testing" standard, which takes 2-3 years

• When SR is clear and accepted by CEN, the horizontal standard shall be developed (based on the technical development performed in this project). Time estimate is 2-3 years.

• Thereafter the work on product standards can start (so around 2027-2028)

• Potentially speaking on 10-15 years from now.
Standardization process

• An important area that needs to be addressed is the field of application

• The direct field of application given in the test standard will probably be very limited

• There will most certainly be need for a series of extended field of application standards

• This will be an extensive work, and thus needs to be started as soon as possible.
Standardization process

• Questions and comments
Communication and information

• The Advisory Group Fire will get an invitation from EC to a video meeting, preliminary on September 15

• The webpage will be updated continuously - https://www.ri.se/en/what-we-do/projects/finalisation-european-approach-assess-fire-performance-facades

• We welcome individual web meetings with stakeholders, please contact us if you want separate meetings

• In order to be successful, we need a good and close cooperation with all of you
Communication and information

• All results and reports will be published on the web page.

• All experimental results will be published as soon as they have been quality controlled (usually published as Excel spreadsheet).

• Raw data may not be publishable on the web due to size, so if you would like to have raw data files, please contact us.

• Most reports will first be published as draft reports enabling you to comment before the final version is published.
Communication and information

• All comments/questions received during the project will be made public on the Comments Handling Document (CHD), available on the web page

• CHD will show how the project team handles the comments and answers on questions

• If you have a comment/question that shall be handled confidentially, you must inform us
Confidentiality

- Generally the project will be public and transparent
- Some information received from stakeholders may include confidential material, which will be kept confidential within the project team
- A Confidentiality Agreement will be signed between the project team and the stakeholder providing confidential information
Communication and information

• General information on the present project

  – The scope is defined in the Invitation To Tender and the contract between the project team and EC

  – Many details in the assessment method will be set after the complete testing program is finalized and are not yet set, i.e. position and type of measurements and failure criteria

  – The budget limitations does not allow any major changes in the test program, i.e. no additional tests can be performed and the field of application is excluded
Communication and information

- Questions and comments
Time plan

- Some delay, mainly due to the Corona pandemic and the close down of laboratories
- The delay mainly affects the initial testing program
- Theoretical and experimental round robins in accordance with the original time schedule
Time plan – 2020

• Theoretical round robin
  – Report published September, 2020
  – Assessment update September, 2020

• Wood crib tests (Efectis, France)
  – Tests finalized mid September, 2020
  – First set of data published end of September, 2020

• Initial tests – medium heat exposure (BRE, UK)
  – Tests finalized October, 2020
  – First set of data published mid November, 2020

• Initial tests – large heat exposure (RISE, Sweden)
  – Tests finalized November, 2020
  – First set of data published mid December, 2020

• Decisions on test specimens for experimental round robin
  – December, 2020
Milestones – 2020

- Report on theoretical round robin – September, 2020
- Update of the assessment method based on the theoretical round robin – October 2020
- Progress report 1 – September, 2020
- Report on wood crib tests – October, 2020
- Finalizing initial testing program (Task 2) – December, 2020
- Decision on test specimens for experimental round robin – December, 2020
Timeplan and milestones

• Questions and comments
Theoretical round robin

- Purpose: to assess the intelligibility of this new method
  
  *Intelligibility refers to whether the instructions contained in the method are sufficiently adequate, unambiguous and clear*

- 29 participants registered, all are EGOLF lab members

- 52 questions divided into 218 sub-questions

- The participants were given 6 weeks to do the exercises (deadline was June 26)
Theoretical round robin

• 2 fictitious tests specimen and test data were supplied
Theoretical round robin

- All the 29 participants submitted their answers in time
- The analyzes are currently being processed
  - What has been done:
    - Answers are compared to consensual agreed values ("correct answers")
    - Mean score of the global exercise: 73% in intelligibility
    - Scores of individual questions: ranges from 7% to 100%
Theoretical round robin

- The analyzes are currently being processed (continued...)
  - What will be done
    - Critical items to work on have been identified: the configuration of the test specimen at the edges of the openings (§ 7.3), the assessment of the façade-to-floor junction (§ 7.4), the positioning the thermocouples (§ 9.1) and the DIAP (§ 13)
    - Participants have submitted 12 pages of free comments
    - Rewrite the assessment method
Theoretical round robin

- Questions and comments
Test program

- Wood crib tests
- Fire exposure tests – calibration with DIN and BS methods
- Method for determining falling parts and uplift of test rig
- Environmental conditions (wind speed)
- Position of secondary opening
- Experimental round robin
Test program

• Many parameters to be studied

• The amount of tests are very limited, and therefore cannot everything be examined in depth

• Calibration tests and research studies made with the current national methods would be of great value

• Collaboration with others involved in relevant studies is welcome
Test program

- Questions and comments
Test program – wood crib tests

• Aim to define the wood crib characteristics to be used
  – Wood density, species, geometry, specific surface, calorific value, surface treatment (planned/sawn), moisture content

• Measurement of heat exposure
  – Fuel consumption, temperature measurements, heat flux measurements

• The wood to be used shall be easily accessible in most MS
# Test program – wood crib tests

<table>
<thead>
<tr>
<th>Test reference</th>
<th>Fire exposure</th>
<th>Wood species</th>
<th>Surface finish</th>
<th>Wood density [kg/m³]</th>
<th>Moisture content [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>Large</td>
<td>Spruce</td>
<td>Planed</td>
<td>Average</td>
<td>12.5</td>
</tr>
<tr>
<td>L2</td>
<td>Large</td>
<td>Spruce</td>
<td>Planed</td>
<td>Low</td>
<td>12.5</td>
</tr>
<tr>
<td>L3</td>
<td>Large</td>
<td>Spruce</td>
<td>Planed</td>
<td>High</td>
<td>12.5</td>
</tr>
<tr>
<td>L4</td>
<td>Large</td>
<td>Pine</td>
<td>Planed</td>
<td>Average</td>
<td>12.5</td>
</tr>
<tr>
<td>L5</td>
<td>Large</td>
<td>Spruce</td>
<td>Planed</td>
<td>Average</td>
<td>9.0</td>
</tr>
<tr>
<td>L6</td>
<td>Large</td>
<td>Spruce</td>
<td>Planed</td>
<td>Average</td>
<td>15.0</td>
</tr>
<tr>
<td>L7</td>
<td>Large</td>
<td>Spruce</td>
<td>Planed</td>
<td>Low</td>
<td>12.5</td>
</tr>
<tr>
<td>L8</td>
<td>Large</td>
<td>Spruce</td>
<td>Sawn</td>
<td>Average</td>
<td>12.5</td>
</tr>
<tr>
<td>M1</td>
<td>Medium</td>
<td>Spruce</td>
<td>Planed</td>
<td>High</td>
<td>12.5</td>
</tr>
<tr>
<td>M2</td>
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<td>Planed</td>
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<td>Sawn</td>
<td>Low</td>
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</tr>
</tbody>
</table>
Wood crib tests

• Wood has been delivered, and supported by Swedish Wood

• For each stick the weight will be measured, and a reasonable amount of samples will be taken to measure geometrical dimensions and moisture content

• Some samples will be used to determine the calorific value

• Conditioning to the target moisture content is in progress, thereafter it will be sealed and sent to France for the fire tests

• The tests will start on August 24 and be made during the following 3 weeks, a preliminary draft of results will be available in mid September as earliest.
Wood crib tests

• Questions and comments
Average tests

- No test specimen, only supporting construction
- Heat exposure comparison with DIN 4102-20 and BS 8414
- Repeatability (3 test with medium and 3 tests with large heat exposure)
- Extensive instrumentation
Additional proposed TC to measure gas phase temperature on the centreline of the rig.

Current measurement positions in BS 8414 LEVEL 1

Current measurement positions in BS 8414 LEVEL 2

Current measurement positions in DIN test standard

Plate thermocouples positions to measure the incident HF.
Average tests

- Uplift 0.5 m
- Low wind speed (indoor with normal ventilation used for smoke evacuation)
Other initial tests

<table>
<thead>
<tr>
<th>Medium heat exposure</th>
<th>Large heat exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varying uplift</td>
<td>Varying uplift</td>
</tr>
<tr>
<td>Forced ventilation</td>
<td>Wind speed</td>
</tr>
<tr>
<td>Position of secondary opening</td>
<td>Position of secondary opening</td>
</tr>
</tbody>
</table>

- Measurement techniques to determine weight and size of falling parts
Other initial tests

• Relevant test specimens are needed for examining the secondary opening

• We appreciate suggestions from you, as well as test samples and help with mounting

• Example: ventilated wood façade with ventilation openings at windows
Other initial tests – time schedule

- Average tests medium heat exposure – mid September, 2020
- Other initial tests medium heat exposure – October, 2020
- Average tests large heat exposure – November, 2020
- Other initial tests large heat exposure – November 2020
Initial tests

• Questions and comments
Experimental round robin – aim

• The aim is to validate the test methodology, i.e. to determine the repeatability and reproducibility of the method

• The aim is also to sample relevant data in order to calibrate the method so the failure criteria are similar to the current ones used for DIN 4102-20 and BS 8414 tests
Experimental round robin

- The test specimens used (except the inert façade) shall be aimed to reach the failure criteria around 20-30 minutes after ignition of the fuel.
- The choice of test specimens can thus be based on historical data from tests, preferable made with DIN 4102-20 and BS 8414 tests, where failure occurred around 20-30 minutes after ignition of the fuel.
Experimental round robin

- Many comments on the choice of test specimens
- The test specimens do not need to represent what is used in practice
  - The aim is the examine the test method, not the test specimen
  - The test results shall be of value for the examination of the test method
Experimental round robin

- Rain screen
  - Fire spread on surface and possibly in cavity
- ETICS
  - Fire spread on surface
- Ventilated wood façade
  - Fire spread on surface and in cavity
  - Effect of secondary opening
- Inert façade
  - Calibration and repeatability/reproducibility of heat exposure
Experimental round robin

• Questions and comments
Comments and questions

- Comments Handling Document will be updated regularly
- No information will be sent to stakeholders when updates have been made, so check the web regularly
- All comments and questions will be handled, and as quickly as possible
Comments and questions

• We have received more than 160 comments/question so far from stakeholders

• We have 12 pages with comments from the participants in the theoretical round robin

• Our response on comments/questions will be find in the CHD as soon as we have decided on how to respond
Final questions and comments
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