EMUG

The 13th Meeting of the
"European MELCOR and MACCS User Group"

organized by the Polish National Atomic Energy Agency together with the Warsaw University
of Technology, Institute of Heat Engineering, Poland as a virtual meeting
in support of the Cooperative Severe Accident Research Programme (CSARP)
will be held 27th –29th April 2022

	Polish National Atomic Energy Agency – PAA
	Warsaw University of Technology Institute of Heat Engineering

With special thanks to EMUG's permanent stake holders:

United States Nuclear Regulatory Commission (US NRC) Sandia National Laboratories (SNL)
Paul Scherrer Institute (PSI)

Announcement and Call for Presentations

Deadline for registration to the meeting (including indication of presentation(s) title(s) and duration)	**30th March 2022**
Presentation(s) in PowerPoint or in PDF format up to	**20th April 2022**

On-line information is available at
http://www.gov.pl/web/paa
or
http://www.psi.ch/emug/

1. ORGANIZATION AND HOST

The 13th Meeting of the European MELCOR and MACCS User Group will be held 27th to 29th April 2022. The individual invitation e-mails will be sent several days prior to the meeting.

- The meeting will start on Wednesday 27th April. The first day will be devoted to MACCS technical presentations.

- The next two days (28th-29th April) will be devoted to MELCOR technical (SNL and NRC) and user presentations.

Final details and a final draft agenda will be sent to registered participants shortly before the meeting.

2. BACKGROUND OF THE MEETING

The MELCOR and MACCS severe accident and consequence codes have been developed by Sandia National Laboratories (SNL) for the U.S. Nuclear Regulatory Commission (NRC) in the USA, and are provided to various European organizations through bilateral agreements under the 'Cooperative Severe Accident Research Program' "CSARP" between US-NRC and the European organizations. The codes have been used for many reactor safety applications by these organizations. Some of these organizations also continuously assessing the codes with data available from Severe Accident Research programs. A few organizations have also developed models for certain critical issues, which appear in local versions of MELCOR for testing and with the goal of implementation in future releases from SNL.

The main interests in establishing the user group are to foster experience and information exchange among European organizations through organized annual meetings and to establish common needs on further model and correctional development of MELCOR and MACCS. The first meeting of the EMUG hosted by PSI was held in December 2008. PSI is acting as coordinator of the group.

AIMS OF EUROPEAN MELCOR and MACCS USER GROUP

- o To provide a forum for the presentation and discussion of the experience gained by:
  - MELCOR assessment using integral and separate-effect tests leading to presentation of performance of models and related issues, including sensitivity to selected model parameters and model uncertainties.
  - Model development efforts.
  - Application of MELCOR for plant safety studies, including Level 2 PSA, which demonstrates strengths and weaknesses of MELCOR models in reproducing the individual severe accident phenomena, and interactions between them occurring in the nuclear part and balance of plant systems, and the effect of operator actions on the accident progression through user input as introduced in the code input models.
  - Application of MACCS for accident consequence calculations including Level 3 PSA
  - Use of codes with different compilers and operating systems.
- o Prioritization of user error correction and model development needs, to be transmitted to the code developers and the US NRC.
- o To minimize the efforts required to obtain an adequate knowledge of optimum use of MELCOR and MACCS, through sharing of experience.
- o To support the gaining of MELCOR and MACCS knowledge and experience, particularly concerning the younger and less experienced users.

3. SCOPE, CONTENT AND OUTLINE OF THE MEETING

The three days MELCOR / MACCS meeting is divided into two sections for MELCOR and MACCS:

1. **NRC and SNL Presentations**

   One day will be devoted to presentations from NRC and SNL / MELCOR developers and one day or slightly less will be devoted to presentations from NRC and SNL / MACCS developers. Each of the following four topics could be given by one presentation:
   - NRC MELCOR Activities
     - Code applications
     - Code perspectives, possibility of distribution to international partners, status and future areas of CSARP program
     - New considerations of code development
   - MELCOR input
     - New features of input conversion
     - New input capabilities in M2.1/2.2
   - Current MELCOR development thrust areas
     - Quality assurance
       - Code assessment work and regression testing
       - Code distribution and issue management
     - New MELCOR Models – discussion of new modelling and experience using new models
     - Current code development
   - Applications
     - MELCOR best practices
     - Guidance for plant applications

2. **User Presentations**

   One day or more depending on the amount of user presentations will be devoted to presentations from all of the European organizations each for MELCOR and for MACCS. For those who would like to present their experience in plant applications of MELCOR 1.8.6 and MELCOR 2.1/2.2, the organizers of the meeting express their wish to see presentations not only on specific aspects of the plant applications evaluating safety aspects of the plants in interest but also the experience in use of the MELCOR models, input parameters, nodalization aspects which have certain bearing on the performance of the code, as well as the quality of the code estimates.

   Presentations will be possibly grouped into the following 4 sessions for MELCOR:
   Group 1: User experience with nodalization regarding simulation of different issues with preference to focus on RCS, core and RN inventory and release modeling.
   Group 2: Modelling features (early and late phase core degradation, corium pool formation, lower head behavior, RN release, SFP, etc), new modelling efforts and nuclear fusion application.
   Group 3: Model development and assessment, integral assessment, sensitivity studies, code to code comparison (different MELCOR versions or comparison to other codes), plant applications (link to uncertainty analysis, PSA Level 2 and PSA Level 3, etc.).
   Group 4: Post-processing of results (including possibility of sharing of tools developed by users), run time performance
   Discussion of all participants
   - Feedback from the participants – user suggestions to further code development (it could be included in presentations)
   - Organizational aspects: next meeting(s)

3. Preliminary Agenda

Wed April 27th: *MACCS presentations*

14:00 – 14:15	Opening, introduction	15 min
14:15 - 16:15	MACCS Overview	120 min
16:15 - 16:30	Coffee break	15 min
16:30 – 19:00	MACCS Overview and technical presentations	150 min
19:00	Adjourn	

Thu April 28th: *MELCOR presentations*

14:00 – 16:15	MELCOR and SNAP topics	135 min
16:15 – 16:30	Coffee Break	15 min
16:30 – 18:30	MELCOR and SNAP topics	120 min
18:30	Adjourn	

Fri April 30th: MELCOR presentations

14:00 – 16:15	MELCOR topics	135 min
16:15 – 16:30	Coffee Break	15 min
16:30 – 18:00	MELCOR topics	90 min
18:00 -- 18:30	Discussion	30 min
18:30	Adjourn	

4. PRACTICAL ARRANGEMENTS

Participants:

Participation at the meeting is open to experts of the European organizations actively using the MELCOR or MACCS code in any of its versions. EMUG meeting is by invitation only open to European CSARP members. Also note that in order to attend either of the code user workshops you need to be an authorized user of that specific computer code. The success of the meeting is very much dependent on the active participation of those present, especially by presentations on their own experience with the code.

Registration:

All the participants should fill in the Meeting Registration Form that is attached to this document, including the title(s) of presentation(s), and send it before the 30th March, 2022 to:

E-mail: staron@paa.gov.pl
E-mail: mateusz.malicki@psi.ch

A registration fee will not be required.

General information:

Time zone: GMT + 1:00 hour

Language:

All presentations and discussions will be in English.

Meeting organization

Dr. Ernest Staron   PAA
Tel: +48 22 556 2852
Email: staron@paa.gov.pl   www.gov.pl/web/paa/

Dr. Mateusz Malicki   PSI
Paul Scherrer Institut
Email: mateusz.malicki@psi.ch   www.psi.ch