GENERAL RULES FOR ORGANISATION OF WORKSHOPS AT CMFF'22

1. The Workshop Leader

The Workshop Leader is the Chairperson of the Workshop. The success of the Workshop is guaranteed by him/her, by inviting experts, maintaining continuous discussion, and making a sound conclusion; in general, by assembling a programme attracting the Audience.

The Workshop Leader is responsible for organisation of the Workshop, with involvement of the Secretariat for assistance if necessary.

The Workshop Leader must invite experts (Invited Experts) for the Workshop, with optional assistance by the Secretariat. The Workshop Leader is assisted by the Workshop Co-Organizer in organization of the workshop. The Invited Experts must confirm to the Workshop Leader that they would attend.

Senior experts acting as potential Workshop Leaders are welcomed to initiate and to organize Workshops at CMFF'22. They are encouraged to contact the Secretariat at cmff@gpk.bme.hu by 20 February 2022 with regard to the concept of the proposed Workshop. After appropriate preparation of the workshop, enabling a reasonably high attraction of participants to the Workshop, the Organizers are in the capacity of including the Workshop in the timeframe of the Conference.

2. Duration

Each Workshop has a duration of 100 minutes, equivalent to the duration of a regular session comprising 5 presentations (i.e. 15 min presentation, 5 min discussion each).

3. Structure

The Workshop Leader is authorised to decide upon the structure of the workshop. Some ideas regarding the structure:

- The workshop can be a discussion among the Workshop Leader and the Invited Experts without any presentations, on questions provoked by the Workshop Leader, with involvement of the Audience.
- The workshop can be introduced by a presentation either by the Workshop Leader or by an Invited Expert, provoking questions to be discussed. This presentation is followed by a discussion among the Workshop Leader, the Invited Experts, with / without the involvement of the Audience.
- The Workshop may include more presentations by Invited Experts. These presentations may reflect upon each other, being followed by a discussion.
- The Workshop may include laboratory or other displays (PowerPoint presentations, videos, etc.).
- The Workshop may be organized around a specific benchmark test case.

At the end of the Workshop, the Workshop Leader will make a summary and concludes on the output of the Workshop.

An actual example for the structure and content of a CMFF'22 Workshop is included at the end of this document.

4. Review of materials

The Workshop Leader preserves the right to review the content of presentations, displays, etc., presented within the framework of the Workshop. However, he/she may ask for assistance by the Secretariat in the review process. On the other hand, he/she is solely responsible for the quality of the written material to be included in the Proceedings (due to the lack of any external review).

5. Synopsis

In order to attract the Audience to the Workshop, a Synopsis of the Workshop will be included in the final programme. The Synopsis must include

- Title of the Workshop
- Name of the Workshop Leader
- List of Invited Experts
- Outline in 100 to 200 words, including
    - Main topics and aspects of discussion
    - Titles of presentations, together with the names of the lecturers, if applicable
    - Conclusions

The Secretariat must receive the synopsis from the Workshop Leader in written form no later than June 20, 2022.

6. Written contribution

Written material related to the Workshop can be included in the Conference Proceedings. Such materials can be any of the following, as appropriate:

- full-length (8-page) papers presented at the Workshop,
- 2-page outline by the Workshop Leader, containing the objectives, literature survey, set of problems to be discussed at the workshop,
- description of a benchmark test case which is to be investigated within the framework of the workshop,
- data files related to the benchmark test case which is to be investigated within the framework of the workshop.

These materials must be revised by the Workshop Leader, with optional assistance from the Secretariat. The written contributions are treated as full-length papers and technical notes from the viewpoint of publication in the Proceedings. Therefore, they must be received by the Secretariat no later than June 20, 2022.

7. Fee of Participation

Each participant of the workshop is subject to the regular CMFF'22 registration fee.

8. Timetable

February 20, 2022	Deadline for submission of concepts for proposed Workshops
June 20, 2022	Deadline for submission of synopsis by the Workshop Leader
June 20, 2022	Deadline for submission of camera-ready, revised written materials by the Workshop Leader

Budapest, on 12 November 2021

János VAD, Dr.Sc., Full professor

Chairman, Local Organising Committee, CMFF'22

Conference on Modelling Fluid Flow
18th International Conference on Fluid Flow Technologies, August 30 to September 2, 2022, Budapest, HUNGARY
Department of Fluid Mechanics, Budapest University of Technology and Economics (BME)
H-1111 Budapest, Bertalan L. u. 4-6. HUNGARY
CONFERENCE SECRETARIAT e-mail: cmff@gpk.bme.hu, web-site: www.cmff.hu

CMFF'22 Workshop

"Industry 4.0 in smart ventilation: questions and challenges"

Organizer: Prof. János Vad (author of present outline)

Department of Fluid Mechanics (DFM), Faculty of Mechanical Engineering, Budapest University of Technology and Economics

Co-Organizer(s): ***OPEN FOR YOUR CONTRIBUTION***

Outline (tentative) – last update: 12 November 2021

The recent view represented by Industry 4.0 enables substantially new features in industrial air technology as well as in industrial heating, ventilation, and air conditioning. Such new features expand the capabilities of traditional air technical systems – even if such traditional systems are highly controlled systems. Some examples for smart fans, and for smart ventilation systems incorporating them, meeting the Industry 4.0 concept, are as follows: multifunctional monitoring, control and rationalization of aerodynamics performance and power consumption; prediction of aerodynamics degradation due to blade abrasion or contamination; vibration self-diagnostics for forecasting bearing fatigue and rotor imbalance due to blade wear or deposit, serving as an aid to fan maintenance.

The 100-minute Workshop – being different from a paper session – is planned to follow the schedule below. **The Co-Organizer(s) are welcome to propose a re-organisation and extension of the planned schedule, in accordance with their planned contribution and ambitions.**

- A short introductory presentation by the Organizer, posing the questions arisen and challenges related to the Industry 4.0 aspects of smart fans and smart ventilation. (5 min)
- On-site display and introduction of a representative axial fan, being a potential candidate for smart fans. Manufacturer and vending company: Hungaro-Ventilátor Kft. (Hungaro-Ventilator Ltd.), Hungary (represented at the Workshop). This commercially available fan, developed for the company by DFM, is integrated with a multifunctional metering device, also developed by DFM. The compact fan-and-measurement unit enables a potential for smart monitoring and control of the air technological properties as well as the fan efficiency, and provides a means for forecasting the aerodynamics degradation of the fan. (5 min)
- On-site display and introduction of a representative radial fan, being a potential candidate for smart fans. Manufacturer and vending company: Szellőző Művek Kft. (Ventilation Works Ltd.), Hungary (represented at the Workshop). The fan, developed for the company by DFM, is especially suited for smart ventilation of gases contaminated with solid particles. The blade design enables an increased resistance against abrasion and cake formation – „self-cleaning" geometry –, whereas exhibits a reasonably high efficiency. The layout gives a potential for smart monitoring of vibration and for forecasting rotor imbalance caused by blade wear or deposit (e.g. cake formation) due to the contaminants transported in the air. (5 min)
- Industrial example for demands on smart ventilation. Presentation of the concept of the Industry 4.0 Sm@rt Dairy, incorporating smart air technical solutions. Industrial partner: Agrometal-Food-Tech Kft., Hungary (represented at the Workshop). (5 min)
- Discussion on the following questions in active collaboration with the audience, provoked by the previous items, utilizing on-site presentation features such as sketches on a whiteboard: What fan is a smart fan? To be a smart fan, what are the problem-specific needs and boundaries for improvement of fan hardware, instrumentation, and control? What possibilities are offered by cost-effective, "do-it-yourself" sensors in smart ventilation? In what applications is it worthwhile

to change the traditional fans and ventilation to smart fans and smart ventilation? What smart functions can be integrated in a compact fan unit, and what smart functions necessitate actions being distinct from the fan unit? Discussion on further questions stimulated by the above questions and originated from the audience. (70 min)

- Summary and conclusions, being prepared in written format in co-authorship by the active contributors to the Workshop, and forming a basis of a technical paper. (10 min)