**Summary of 4th Workshop on Critical Flow Venturi Nozzles**

**Poitiers, France**

**September 2013**

In the concluding discussion of the 4th workshop on Critical Flow Venturi Nozzles, all participants were first asked to provide a copy of their presentation to E. von Lavante. The purpose was to establish a web page on his university website with all the presentations as well as this summary to be linked to related addresses.

The main topic of the subsequent discussion was the revision and extension of the ISO 9300 standard. There was a general consensus that the ISO 9300 is in urgent need of modernizing revision. However, as a detailed discussion of the proposed items to be revised, it was found that no clear definitions were available. Therefore, it was agreed that further research is required in order to identify, uniquely define and describe the proposed key points of the standard to be changed. This „homework“ was to be carried out by the interested participants and presented at the next workshop. The goals are recommendations to the corresponding national standardization bodies.

There are five key issues to be addressed by further research before their inclusion into the revised standard ISO 9300 can be considered:

1. the determination/computation of the real gas factor C\*

2. the boundary conditions (e.g. surface roughness, diffusor shape) influencing the maximal applicable back pressure ratio

3. the Reynolds-number effects on discharge coefficient *c*D including transition from laminar to turbulent flow, extension of the validity range to lower and higher Reynolds-numbers and further boundary conditions (e.g. surface roughness and temperature nozzle wall different to gas)

4. the determination of shape deviations from the defined geometry and their effect on discharge coefficient *c*D respectively calculation of the *c*D from a given (measured) shape.

Nonparticipating guest M. Reader-Harris kindly explained the procedure required to carry out a standard revision. He pointed out that the proposed key points have to be submitted to the national standardization body, which in turn will appoint an expert to participate in the Technical Committee sessions.

Finally, a strong recommendation was made by the participants to reactivate the ISO TC 30 for the above purpose.

The next workshop is planned in connection with the 9th ISFFM in April 2015, Washington. All active workshop members are invited to contribute to the next meeting strictly under the topics mentioned above. The meeting will be a platform to discuss research results available and to coordinate ongoing research work as well as proposals for future research.