Proposal for a lecture for the 22th EMATEM-Summer School Annual Conference 2026

Evaluation of the Flow Disturbance Test in EN 1434: Results and Perspectives

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The lecture reports on the completion of a joint WIPANO research project carried out by Wärmezähler-Service GmbH (WSG) and the Physikalisch-Technische Bundesanstalt (PTB) addressing flow disturbance effects in heat meter testing according to EN 1434. The project combined experimental investigations on fourteen commercial heat meters with extensive CFD analyses and optimization processes to evaluate the current flow disturbance test and to explore advanced disturbance generator concepts.

As a main outcome of the WIPANO project, the experimental investigations strongly indicate that the flow disturbance test may require extension beyond its current scope. Furthermore, the CFD-based optimization led to several improved disturbance generator designs, which were validated experimentally. While these concepts demonstrated enhanced capability to reproduce realistic bend-induced flow profiles, further refinement is required before they can be implemented in standardized testing.

In addition to presenting key findings from the experimental studies, the lecture demonstrates the methodological approach to optimize disturbance generators using CFD, summarizes the current state of development, and discusses future perspectives for the improvement of the flow disturbance test in EN 1434.