

Model-based flow diverter analysis for an improved uncertainty determination in liquid flow calibration facilities

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Abstract. In liquid flow calibration facilities run in the flying-start-and-finish operation mode, a diverter represents an essentially accuracy-determining functional unit, both with gravimetric and volumetric reference-based installations. Model-based approaches that describe a diverter's operation on the basis of realistic diverter flow conditions and kinematics of the diverting edge provide capabilities to take into account component-related and flow-related effects and processes for both a comprehensive diverter operation and an uncertainty analysis model. Based upon this dedicated knowledge of a special diverter design, this approach is applicable even if there is only minimum information on diverter characteristics available with worst-case assumptions being applied.

Keywords: flowmeter calibration, measurement uncertainty, flow diverter, liquid flow calibration facility

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