Simulation of Magnetic Flow Meter Sensor With Hydraulic Disturbances

Jan Sedlacek, Richard Matas
University of West Bohemia, Pilsen
sedlacek@kee.zcu.cz, mata@ntc.zcu.cz

Abstract

Magnetic flow meters have found wide range of application in industry and power engineering. Their users require high precision, reliability, low power consumption (battery operated) and certainly low cost. Research and optimization of the sensors is therefore ever important. To design and improve new sensors theoretical analyses are commonly used. Numerical simulations of electromagnetic fields, media flow fields and coupled tasks for computation of the induced electric potential are the main tools. The contribution deals with several computational methods [1], [2], [3], [4] of the induced electric potential based on the electromagnetic field and the flow field numerical simulation. Finite element method and finite volume method are used. To compare and verify the model, the flow field is solved considering different types of hydraulic disturbances within connected piping system. The disturbances strongly affect the velocity profile and numerical solution. The computed results are compared to experimental investigations.

References

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