

Acausal and Causal Model Construction with FEM Approach Using Modelica

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Abstract : Modelica has many advantages and it is very useful in modeling and simulation especially for the multi-domain with a complex technical system. However, the big obstacle for a beginner is to understand the basic concept and to build a new system model for a real system. In order to understand how to solve the simple circuit model by hand translation and to get a better understanding of how modelica works, we provide a detailed explanation about solver ordering system in horizontal and vertical sorting and make some proposals for improvement. In this study, some difficulties in using modelica software with the original concept and the comparison with Finite Element Method (FEM) approach is discussed. We also present our textual modeling approach using FEM concept for acausal and causal model construction. Furthermore, simulation results are provided that demonstrate the comparison between using textual modeling with original coding in modelica and FEM concept.

Keywords : FEM, a causal model, modelica, horizontal and vertical sorting

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