

“hello, (Modelica) world”: Automated documentation of complex simulation models exemplified by expansion valves

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Abstract

The constantly increasing computing power enables the implementation of complex simulation models. Therefore, it is possible to create more detailed models to predict system behavior more accurately. Modelica, for example, has proven great suitability in modelling complex systems, because of its high degree of reusability. However, understanding these models is quite difficult and many simulation models are poorly documented. Consequently, it is very time-consuming to retrace given model structures especially for novice. The Unified Modeling Language (UML) provides a user-friendly and graphical structure for documentation to simplify working with existing simulation models. Hence, an algorithm (ADoCSM) is developed to automatically present the structure of a Modelica simulation model in UML. This algorithm is exemplarily applied to a refrigerant circuit expansion valve model. Thereby, we contribute to an increase of simulation model quality as well as simplifying the entry in the world of Modelica. ADoCSM and the expansion valve model are freely available on GitHub:

<https://github.com/RWTH-EBC/ADoCSM>

https://github.com/RWTH-EBC/AixLib/tree/issue590_ExpansionValve