Enhancement of the building simulation software TRNSYS by coupling to the VEPZO model programmed in Modelica

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In this study, the possibility to interface a commercial building simulation tool with Modelica models is investigated. In this application, the zonal model VEPZO – modeled in Modelica – is coupled to the software TRNSYS – mainly programmed in Fortran – to be able to perform a dynamic co-simulation. The objective of this coupling is to obtain refined airflow and air temperature prediction, while retaining computation effort low enough to allow for transient computation. In a first attempt, a coupling using FMI was tested without success due to a lack of adequate solvers for FMI export. Therefore, a script coupling was implemented. Further steps include a validation and evaluation of the programmed interface and the results of the coupled system in respect to computation time, quality of results, usability and further development.