

# **EXPERIMENTAL VALIDATION OF A DOMESTIC STRATIFIED HOT WATER TANK MODEL IN MODELICA FOR ANNUAL PERFORMANCE ASSESSMENT**

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## **ABSTRACT**

The use of stratified hot water tanks in solar energy systems - including ORC systems- as well as heat pump systems is paramount for a better performance of these systems. However, the availability of effective and reliable models to predict the annual performance of stratified hot water tanks coupled with energy system solutions is limited. In this poster, a discretized model of a stratified tank developed in Modelica is presented. The physical phenomena to be considered are the thermal transfers by conduction and convection – stratification, heat loss to ambient, charging and discharging with direct inlet and outlet and immersed heat exchangers. Results of experimental and numerical investigations in a residential hot water tank with two immersed heat exchangers, one inlet and one outlet are presented and the performance of the model is assessed.