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## **ENERGY EFFICIENT PIPE HEAT EXCHANGER FOR WASTE HEAT RECOVERY FROM EXHAUST FLUE GASES**

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### **Abstract**

This study presents an original method for waste heat recovery from exhaust flue gases using a heat pipe heat exchanger. For the proposed paper we analyzed using Autodesk Simulation CFD Software the operation of the originally designed heat pipe heat exchanger system in different hypothesis. For the complete analysis we realized a study case for a pizza restaurant building located in Iasi, Romania to prove the energy efficiency of the heat pipe heat exchanger unit. By applying our system, we achieved a percent of energy savings of 30.9% for the total heat requirement for heating and domestic hot water preparation. In the end we realized a financial study using the RETScreen 4 Software to demonstrate the feasibility of using the heat pipe heat exchanger for waste heat recovery from exhaust flue gasses.

*Key words:* CFD analysis, flue gases, heat pipe, heat pipe heat exchanger, waste heat

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