CFD STUDY OF AIR NATURAL CONVECTION INJECTION EFFECT IN ROCKET STOVE PERFORMANCE

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Abstract. Rocket stoves are known for their reliability, easy of use, safety and scalability, making them ideal for use in small spaces, such as balconies. The common design consists of a main vertical tube that delivers the flame upwards, and an additional side tube that allows to replenish the fuel and regulates the entrance of air.

In the present work, we studied the impact of different design parameters that could affect the stove performance. The fuel zone was characterized as a porous media, where the Darcy and Forchheimer coefficients were measured experimentally. Moreover, special focus was made on the effect of air inlet ports, located in the upper part of the main chamber, on the exhaust gases. The open source CFD tool OpenFOAM® was used model a porous constant heat source in order to have an approximation of the response of the system to geometrical changes.