

DESIGN OF HEAT EXCHANGERS IN THE CLOUD

Nabladot, S.L. has developed a Cloud application that allows manufacturers, both SMEs and large companies, to design heat exchangers using CFD techniques. This tool, based on open source CFD software, has been implemented into a Cloud infrastructure and has a user-friendly interface. As it is shown in the image below, the user has to introduce just the geometry of the heat exchanger and some operational data (e.g. flue gas inlet temperature and mass flow); after the CFD computation in the Cloud, the user receives a report with the most relevant results.

This application enables SMEs to use this advanced computing techniques (CFD), since barriers such as high capital costs (commercial software licenses, large computing resources) and the high degree of expertise required to use these tools are avoided.

This Cloud application has been developed under the framework of the European project CloudFlow, in collaboration with Biocurve, S.L., a manufacturer of condensing biomass boilers, and the University of Zaragoza as provider of HPC resources (see the link http://www.eu-cloudflow.eu/experiments/second-wave/experiment_13.html).

During the development of the tool, the number of pipes of the current 25kW heat exchanger was reduced from ten to three, whereas the thermal performance was maintained. This represents a 30% reduction of the volume of the biomass boiler and a relevant saving of raw material, fabrication and transport costs. Moreover, now Biocurve, S.L. can study on their own the performance of a number of new designs and improvements, without requiring the building of physical prototypes.

