Dynamic simulation of a fluidized bed incinerator

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Abstract
In this study, we present SIMAPI (SIMulateur Aquitain de Procédés d’Incinération) a tool that has been constructed in order to raise the training level of operators working on incineration process. This tool is based on a mathematical model, which is able to predict the behaviour of a fluidised bed incineration process in real time conditions. This model has been encapsulated in a graphical interface similar to the one used for the driving of a real fluidised bed unit. (figure 1).
The present paper describes the key steps that have been necessary for such a construction. From the modelling of municipal waste to the dynamic simulation of the whole process (including the electricity production from steam process), many assumptions and mathematical formulation have been required. Moreover, the integration this model into a friendly environment has been very challenging too.
As an example of how this tool can be used, we present results that can be obtained when the start-up of the unit is under investigation.

Keywords: Fluidized bed, Incineration, Simulation, Dynamic.

Figure 1: first part of the graphical interface of the simulator.