Abstract

Report on the preliminary design actions of the home drying system for the drying of organics.

In the framework of Action.1 preliminary experiments and design calculations were conducted in order for the design process of the prototype household organic waste dryer to take place. Many different experiments took place during the implementation of this action in order to determine the characteristics of the substrate and the final dry product. The experiments were conducted in different temperatures, humidities, drying air speeds, etc. The samples used were representative Greek household kitchen waste.

The preliminary household waste dryer energy considerations were calculated in theory. The resistance used, the drying time, the final product's humidity, etc. were taken into consideration in order to calculate the system's preliminary energy consumption.

The following diagram shows the substrate's moisture content for a drying temperature of 60^{o}C in two different cases: When drying the waste sample in a forced air oven and when drying the sample in a still air oven. The ovens used are operational at the "Unit of Environmental Science and Technology" of the NTUA.

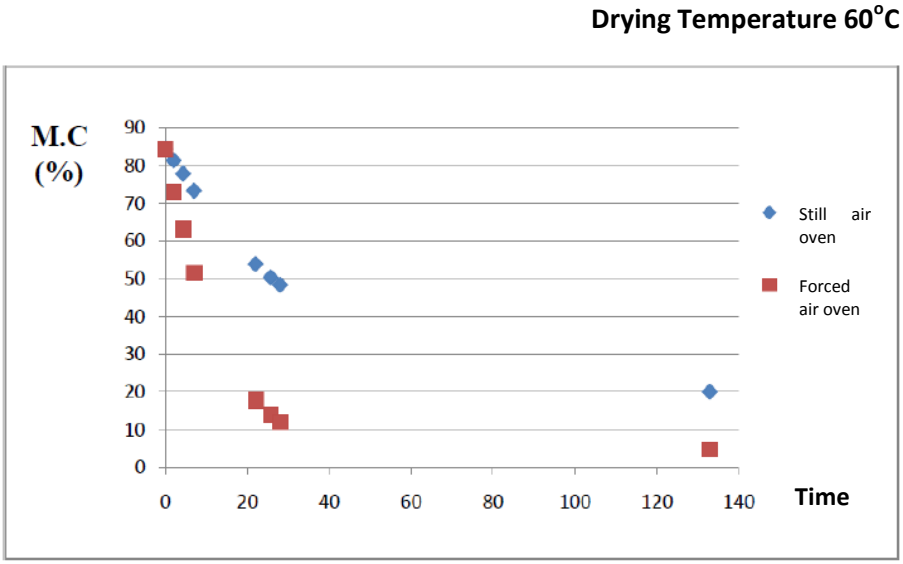

Diagram.1: Drying diagram of representative kitchen waste sample for still and forced air oven

At the following picture we can see the volume reduction of the substrate at the end of the drying process

Picture.1: Potato sample before drying (left) and after drying (right)

At the following picture the volume reduction of the representative waste sample is also shown

Picture.2: Representative sample before drying (left) and after drying (right)