

Design of a Customized Freshly-Made Fruit Salad and Juices Vending Machine

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Abstract : The increasing number of vending machines makes it easy for people to find them more frequently in stores, universities, workplaces, and even hospitals. These machines usually offer products with high contents of sugar and fat, which, if consumed regularly, can result in serious health threats, as overweight and obesity. Additionally, the energy consumption of these machines tends to be high, which has an impact on the environment as well. In order to promote the consumption of healthy food, a vending machine was designed to give the customer the opportunity to choose between a customized fruit salad and a customized fruit juice, both of them prepared instantly with the ingredients selected by the customer. The main parameters considered to design the machine were: the storage of the preferred fruits in a salad and/or in a juice according to a survey, the size of the machine, the use of ecologic recipients, and the overall energy consumption. The methodology used for the design was the one proposed by the German Association of Engineers for mechatronics systems, which breaks the design process in several stages, from the elaboration of a list of requirements through the establishment of the working principles and the design concepts to the final design of the machine, which was done in a 3D modelling software. Finally, with the design of this machine, the aim is to contribute to the development and implementation of healthier vending machines that offer freshly-made products, which is not being widely attended at present.

Keywords : design, design methodology, mechatronics systems, vending machines

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