ABSTRACT

Indonesia is one of the countries with the highest coconut production and productivity levels in the world. The use of coconut in Indonesia is often employed in the production of coconut milk, both in households, small industries, and large industries. To produce coconut milk, grated coconut is required. Grated coconut is obtained from coconuts that have been grated using a grating machine. The coconut grating machine functions to produce coconut in the form of small granules, which will later be extracted to obtain coconut milk. This study used a coconut grating machine available at Telkom University, which produces grated coconut with a significant reduction in coconut milk yield, namely 56.25% of the previous grated coconut weight. The study aims to reduce the reduction in coconut milk yield to achieve a more optimal result by using the *Reverse Engineering* method with the assistance of a *3D Scanner*. The *3D Scanner* results were then processed using *Solid Edge* software, which functions to display the 3D design that can be analyzed and modified according to the research objectives. Once the necessary modifications were identified, the next step was the *redesign* process. The *redesign* process was carried out using *Autodesk Fusion* to redesign the new or proposed grater. The modified design obtained from the *3D Scanner* was then manufactured into a product through a manufacturing process that resulted in changes to the grater teeth dimensions, namely 1.5 mm tooth height, 2.5 mm tooth width, and 3.5 mm tooth spacing. Subsequently, machine testing was conducted using 5 pieces of grated coconut without skin and 5 pieces of grated coconut with skin, with the addition of a total of 500 ml of water to facilitate the extraction of coconut milk from the coconut. A reduction of 28.33% was obtained, with a difference of 27.92% from the previous grater reduction. With a reduction of 27.92%, coconut milk production became more optimal compared to the previous results.

Keywords: ***Coconut, Tooth Grater, Reverse Engineering, 3D Scanner, Solid edge.***