

## **ABSTRACT**

*Households are one of the largest producers of organic waste in Indonesia with an average production of 1.6 kg of organic waste per day, per household and only 49.2% of households that recycle their waste into something useful. One of the uses of organic waste is by composting. In its development, the process of making compost has used technology to make it easier. In a study conducted by Nugraha et al (2017) an electric composter was made that uses drums as a garbage container and two types of agitators as waste crushers and stirrers. However, in this study the recycling process did not run quickly and the dimensions of the product made were still for processing for one RT/RW scale. Therefore, in this research, a blade for household scale electric composter will be made using Pahl and Beitz product design methods. There are 4 main factors that became the initial basis in the design of this blade, they are geometry, kinematics, force, and material. After that, a literature review and product benchmarking are conducted to obtain alternative product concepts. The product concept will be visualized using Solidworks software. Furthermore, material selection is carried out by conducting a static structural simulation using ANSYS workbench 19.0 with a load of 500 N, 1000 N, 1500 N, 2000 N, and 2500 N. Of the 3 alternative materials, JIS SUP9A was selected. After that, the blade with JIS SUP9A material will be simulated using explicit dynamics to determine whether the blade cut or not. This test is carried out using fish gelatin to exchange organic waste material. Thus, processing blade is safe because the equivalent (von - mises) stress value is less than 0,022344 MPa and the preprocessing blade equivalent (von - mises) stress value is less than 49,513 MPa.*

**Keywords: Blade for Electric Composter, Pahl and Beitz, Product Benchmarking.**