

ABSTRACT

The waste transportation system in Indonesia still depends a lot on trash containers that were placed at several points and will be transported by a designed truck to a TPS or TPA. In this study the design of the trash container will be carried out will has a function to accommodate garbage and waste from the river. The design output to be achieved in this study are the design that has a volume capacity of 7 m³, and the design is robust and can withstand loads with the value that has adjusted to volume capacity without plastic deformation occurs. To perform an optimal design, optimization of design parameters that is shape, dimensions, and material will be carried out. The selected parameters are determined by adjusting to the system requirements or system's need and optimized using the multi-factor experimental design method. This method is suitable for use because it is one of the methods for design of experiments with the factors that will be examined are more than one. In this study the factor that was studied are body's form, dimension, and material of trash container. It will be performed finite element analysis using static structural analysis with the output of deformation value. After each design concept is simulated, the data will be tested using the Kruskal-Wallis test to see which parameters have the most significant influence on the desired design output. The result of design concept chosen is combination of factor body's form 1 (half-circle), dimension 3 (2.8 x 2.2 x 1.4 metre), and material 1 (stainless steel). And for the factor that has significant value to deformation is the factor of material.

Keywords : *trash container, multi-factor experimental design, finite element analysis, static structural simulation, Kruskal-Wallis.*