

ABSTRACT

Inspection process conducted by the steel industry in Indonesia is still done manually. Manual inspection process does not guarantee in getting an adequate confidence level because the surface examined by the operator is only about 0.05% of the total area. Manual inspection proces can automated using image processing techniques. In order to get the parameters with good accuracy in image processing, it needs to optimized using a design of experiment and a full factorial design approach with 3 times of replication. In this research there are 3 factors, such as: light intensity factors (level 1000lx, 1500lx, 2000lx), camera distance factors (level 10 cm, 12 cm, 14 cm) and threshold factors (level 0,03, 0,05, 0,07). The research object used are 3 pieces of dural and given a different feed rate of 100 mm/min, 200 mm/min, and 300 mm/min. The results of this research is the significant influence of threshold factors to the percentage of error in the research objects. The smallest error value, on the 100 mm/min feed rate objects, with a value of 55.2% was obtained from the experiment with 1500lx light intensity, 14 cm distance camera, and 0,07 threshold. While on the 200 mm/min feed rate with a value of 0.89% was obtained from the experiment with 1500lx light intensity, 10 cm camera distance, and 0.07 threshold. And on the 300 mm/min feed rate object with a value of 0.23% was obtained from the experiment with 1500lx light intensity, 10 cm camera distance, and 0.07 threshold.

Key Word: *Design of Experiment, Full Factorial Design, Image Processing, Steel Surface Roughness*