ABSTRACT

One of the manufacturing groups that has driven the growth of the national industry over the past 25 years is the industry of ceramics. But, many national products are be rejected by the export market because they do not meet the standards and or technical regulatory requirements set by the trade destination countries. Some parameters are exempted by considering the SNI quality requirement cannot be fulfilled by some domestic ceramic producers. Therefore, preparing product quality is an important issue in the industry of ceramics. The visual inspection process on the quality of ceramic tiles in the ceramics industry in Indonesia is still done manually, where the process still uses human vision. This process certainly takes a long time, requiring the cost of the worker and the results obtained are not fully accurate. In this research, classification of ceramic tiles will be done by categorizing ceramic tiles into five categories; normal, chip offs, cracks, dry spots, and scratches using an automated inspection quality. These five categories are the most common types found on the surface of ceramic tiles. Image processing is used for the inspection and classification process automatically and the classification method used is Support Vector Machine (SVM) algorithm. Based on the research that has been done about the multiclass classification optimization of the surface defect quality using Histogram of Oriented Gradient and Support Vector Machine method, the accuracy result can be obtained using multi-class and binary SVM resulted offline system accuracy of 86.11%, and for real time system with 11.66 seconds processing time.

Keywords: Ceramic Industry, Automated Visual Inspection, Image Processing, Histogram of Oriented Gradient, Support Vector Machine