ABSTRACT

Based on the information from Balai Pengawasan dan Sertifikasi Benih (BPSP), *Pangalengan is known as the best producer of potato seeds in Indonesia. This can be seen by the establishment of* Balai Benih Induk (BBI) *in Pangalengan, where* BBI *is the largest potato seed producer in Indonesia. One of the most important stages of potato seeding is the process of sorting the potato seeds based on their sizes. The sorting process is done manually by human labor. This manual process will certainly require more labor, more time, and a higher possibility of size categorization errors. As for the stage that cannot be separated from the sorting process is the packaging process. Therefore, this Final Project will be designing a prototype of a potato seeds sorter based on sizes and potato seeds packer using Arduino Uno as the microcontroller. The purpose of this machine design is to separate potato seeds based on their size, calculate the number of potato seeds sorted using the limit switch, and packing potato seeds using the Conveyor system. The design of this machine is expected to reduce the need for Human Resources (HR), improve time efficiency, minimize the possibility of human-error, and ease the data collection of the available potato seeds. The results of this study are testing the duration needed in sorting and packing the potato seeds, the accuracy of calculating the number of potato seeds that have been sorted with different size capacities, and the suitability of the size categorization of the sorted potato seeds. Each test is carried out 30 times. Based on the test results, it is known that using this device, the time efficiency of sorting and packaging potato seeds will increase. This is known by the ability of the device to sort potato seeds 2x faster than manual work with a minimum percentage of errors. This device is also able to provide data on the number of potato seeds according to each size by considering the overall average percentage error from the calculation accuracy of the number of potato seeds detected and calculated by the limit switches which is around 19.72%. This is presumably due to the possibility of limited mechanical functions and some of the components available used in the sorting and packaging machines that have been designed. In addition, the accuracy of sorting the potato seeds based on sizes still has an error rate of 7.96%, but has a perfect level of accuracy for sorting objects with perfect round shapes.*

Keyword : potato seeds, sortation, packaging, Arduino Uno, limit switch, conveyor system.