ABSTRACT

Telkom University has a hammer mill machine which is usually used as a means of producing animal feed, but this machine can also produce charcoal briquettes. Telkom University plans to market the charcoal briquette product, however, in the production process, quite common problems were found in the old production machines, where the hammer mill machine owned by Telkom University still uses manual methods, which to pursue industry 4.0 technology requires efficiency and flexibility. and connected, we cannot get this process if the machine still uses manual methods and is not connected to today's digital technology. Therefore, to solve this problem, an automation system process is needed on the machine that uses a Programmable Logic Controllers (PLC) control system combined with a virtual control screen, namely the Human Machine Interface (HMI) and also an Inverter. Based on the design that has been carried out, now the system can carry out a monitoring process on machine performance results, the operating process becomes easier because there is a feature in the form of a control screen on the machine panel, and operators can monitor production work both production time and how much electricity data is used in the machine. the production. In the production of briken charcoal using a Screw Conveyor and Filling machine, we get data on the power released by the screw conveyor machine of 257.74 watts at a frequency of 50, then in filling it is known that the maximum power consumption released is 416.64 watts in the first second at the frequency. 26.36, but will stabilize at 295.56 watts at frequency 50 until the end. Then we obtained the results of reducing the time when operating the hammer mill machine, especially the screw conveyor and filling, from the original 26 seconds to 15 seconds with an increase in production time of 48%. It is hoped that the implementation of the automation system design from this final project will be useful for Telkom University and also for further research..

*Keywords - **charcoal briquettes, hammer mill, screw conveyor, filling, programmable logic control, human machine interface.***