

ABSTRACT

Coconut production has a total production of more than Two million tons since 2016 (BPS 2021). Coconut shells can be used as a higher value commodity into charcoal briquettes. One of the manufacturing processes is by grinding the surface of the charcoal shell into small particles so that it can be printed. Telkom University has a Hammer Mill machine which is the result of the development of the Hammer Mill machine from CV's Hammer Mill machine. XYZ. However, there are still weaknesses from using the existing Hammer Mill machine, namely the small capacity so that it can be fully charged every 5 hours of production and there is dust scattered around the machine which can potentially be inhaled directly by workers, so this is needed for the design of a Dust Collector. Dust left over from milling can still be reused as raw material for briquettes. In addition, there are also problems that can pose a risk of musculoskeletal disorders. This can occur when the operator carries out the process of unpacking and removing the remaining grinding dust to be transferred to another container. This condition was then analyzed using the REBA method to assess the condition of the operator's posture when unloading and moving material to other containers. The REBA method was chosen because the Hammer Mill operator uses most of his body (neck, hands, feet, back) when releasing Dust Collector bag for the transfer of contents from the bag, the REBA value is 11, with this value the operator requires improvements to the workings and improvements to the process of removing the rest of the mill dust. The REBA assessment was carried out on one of the operators in the Dust Collector section of the previous Hammer Mill machine

After making improvements with the proposed new design, the REBA rating on the Filter Bag disassembly activity with a value of 5. This means that improvements to the proposed Dust Collector design are able to improve the operator's posture to minimize the risk of injury that can be exposed. Then a Dust Collector simulation was also carried out on the proposed design using the Altair EDEM application which was carried out for 6.8 seconds, from the simulation results it was found that the proposed design was able to get 0.8% of the total material flowing in the Body Hammer Mill. Tests were also carried out on the

proposed Dust Collector and obtained a percentage of 1.1% of the total milling carried out.

Keywords: *Hammer Mill, Reverse Engineering, Ergonomics, REBA, Dust, Dust Collector, Briquette*