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Design of an Automatic Saw Cutting Machine for Wood and Aluminum

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Abstract : The uses of wood in furniture, building, bridges and aluminum in transportation and construction, make aluminum and forest economy a prominent matter in North America. Machines available to date to cut the aforementioned materials are mostly industry oriented with complex structure and operations which require special training and skill. Furthermore, requirements such as pneumatics, 3-phase supply are associated with cost, maintenance, and safety hazards. Power saws are very useful tools used to cut and shape materials; however, they can cause serious hand injuries. Operator's hands in table saw are vulnerable as they are used to guide pieces into the saw. Apart from hands, saw operator is also prone to material being kicked back out of the saw or sustain eye or respiratory injuries due to rapidly flying sawdust and other debris. In this paper, design of an automatic saw cutting machine has been proposed to ensure safety, portability, usage at domestic level and capability to cut both aluminum and wood. This paper demonstrates detailed Mechanical design in SOLIDWORKS and Control Systems using Programmable Logic Controller (PLC), based on the aforementioned design objectives.

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