



SENIOR DESIGN ORGANIZATION SYNOPSIS – Fall 2013

MATERIAL SELECTION MECHANISM

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Vinyl Corp is currently in need of a system that has the capability to transport and classify material; the system needs to be able to sort two types of materials (Interior and Exterior) by size. The major goals within this project are: maximize facility's walking space by being able to design a system that will transport and sort the material above head level, reduce material contamination by preventing the contact of the material with ground impurities, and finally reduce physical labor performed by the operators by eliminating material removal, sorting, and relocation by hand.

The above described system consists of three stages: Stage one consists of the collection and removal of material from the mill. Stage two consists of the conveyance of the material by a vacuum along with a blow action executed by an air conveyance system. In stage three, the material is transported and filtered by a rotating filter mechanism, which allows for mesh adjustment.

In the process of completing the previous mentioned stages, vacuum is implemented for performing the task described in stage one and two, while the unique rotating and adjustable filter mechanism is being well thought-out for stage three.

Industries such as food and recycling can be positively impacted by this design, which aids in the sorting process of materials. Depending on the application, variable sizing options are available for the filtering system, making this design unique in its kind. Based on simulation study, the filtering design, particle conveyance mechanism, and structure is safe and operational.