SIEMENS SUSTANABILITY PROJECT: MORE EFFICIENT WINDOWS

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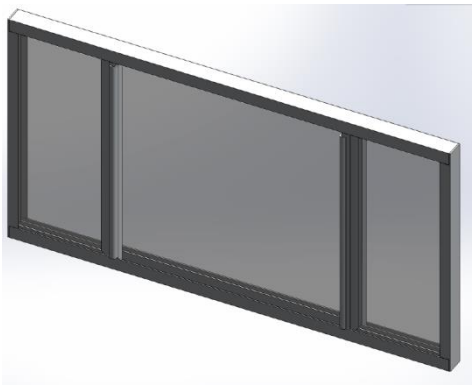
Abstract/Conclusion

This report will explain the detailed steps we undertook during the improvement of the windows in the Penn State dorms. The goal of this project was to increase the efficiency of the windows to help cut back on heating and cooling cost by apply a coating to the windows and improving the seal to help keep heat in the building. The current windows around the campus dorms work in the fact that they help keep the bugs out, but they do not do much for the keeping the warm air in. Through collective brainstorming, our team analyzed the problems associated with the old windows. We decided which aspects needed improvement, which ones needed to be redesigned, and which ones could be left alone. Our team conducted a survey of potential customers and examined the data through various PCC and AHP charts. From the results of the survey and our team's ideas, we felt the most important features that needed to be worked on were the sealing of the windows and the amount of energy and heat they can keep in. Each of these features needed to be redesigned in order to create a more effective and low cost design. We successfully accomplished our overall goal of creating a more efficient window by modifying key aspects of the window and frame. The following report outlines the research process and development that we undertook to improve the window in the dorms, and concludes with the finished model of our more efficient windows.

Our initial idea was to improve energy efficiency and make the dorms more sustainable by improving the windows. We initially thought of changing and replacing all the windows, but ultimately found that this would be much too expensive to be viable. Our customer needs and survey results showed that people would be unwilling to change their whole window, so we generated ideas and benchmarking to come up with different solutions. We came up with the concept to add an insulating film to the window and a seal around the window. This met the customer needs because it was very efficient and kept consumers with the windows they wanted. Also, it was an extremely cost effective solution. Our solution would cause the university to save over a million dollars in the film's 15 year life expectancy, in addition to being very sustainable and using less heat, therefore saving energy