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Humanitarian Outreach B

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Humanitarian Outreach B

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Abstract

The issue of people without footwear in developing countries is a significant issue in today's society, and it affects over 300 million people. One in seven people suffer from soil transmitted parasites. This system will produce inexpensive flip-flop type shoes made from recyclable plastic waste found in these countries.



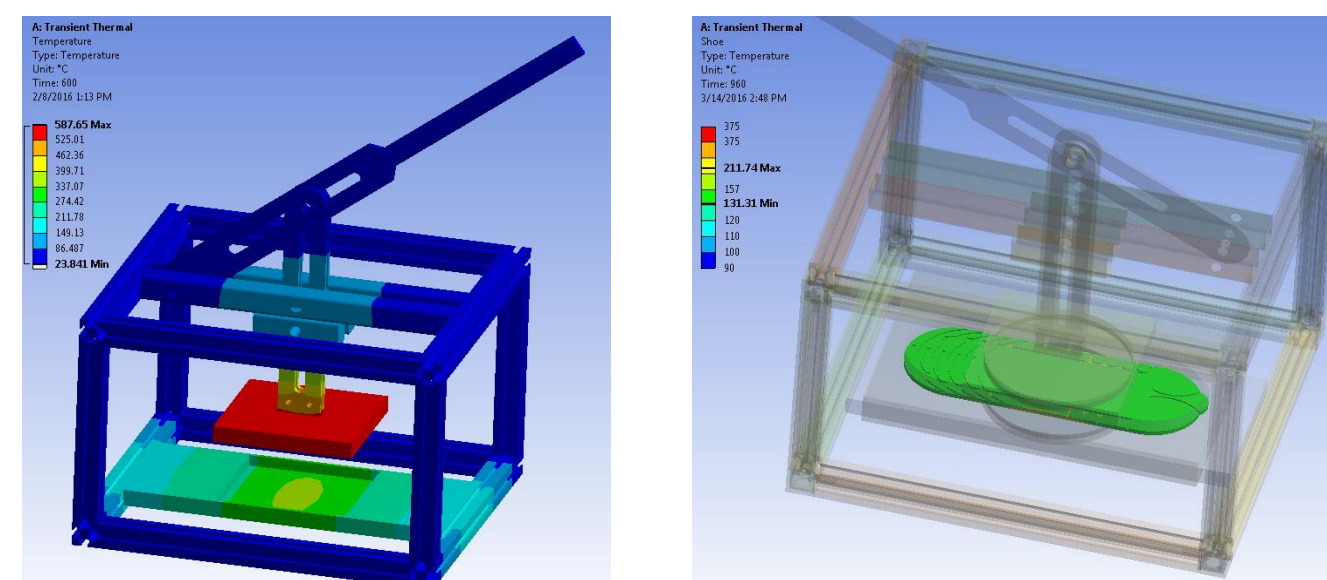
Reach

Shoe size range will cover at least 70% of the total number of people without proper footwear. Charity organizations and/or private persons can use the system to produce shoes.



Analysis and Testing

Thermal and mechanical analyses were carried out using ANSYS. Analysis of the molding process determined the process to take about 8 minutes per shoe formation. The thermal results also show that the majority of the outer parts of the assembly do not exceed 25°C (77°F) after a usage of 10 minutes, and the mold will survive 10⁸ life cycles of quenching (5 million pairs of shoes).



Objective

The objective of this humanitarian outreach project was to design an affordable system that would improve the lives of those living in developing countries.

Design Requirements

- ❖ Universal Language Controls
- ❖ Large Range of Shoe Sizes Available
- ❖ Use a 1 shoe mold to make shoes for both feet
- ❖ Keeping a total cost low for the entire system
- ❖ The ability of the system to run on local power supplies in developing countries
- ❖ The minimum temperature of the center of the mold will be 120°C (250°F)

The Mold



- ❖ Men size 13 - 3 (5 Women's)
- ❖ One mold for both feet
- ❖ Weight 20 lbs
- ❖ 3:1 Compression Ratio



NORTHROP GRUMMAN



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