Tyco Retail – Next Generation Security Tag

Overview
Tyco Retail Solutions has given the task of designing, prototyping, and testing the reusable, adhesive security tag and detacher to an international design team consisting of four students from the Pennsylvania State University and three students from the Shanghai Jiao Tong University.

Objectives
The purpose of this project is to design a new type of security tag and detacher which will be used on a variety of retail merchandise. The designed security tag will be unique in that it will be removable, reusable, and affixed using an adhesive.

Approach
- Preliminary research was first done on security tags currently on the market and patents.
- Several meetings were held with the sponsor to gain more information on the problem.
- Each team member came up with concepts and everyone exchanged ideas and further refined the designs. More meetings were held with the sponsor to discuss the concepts and refine again etc.
- With the help of the sponsor one tag concept was selected along with 2 detacher concepts to develop.
- FEA analysis was done on interface parts to ensure they would not fail under expected loads.
- Testing was done on several adhesives to determine their effectiveness for this project.
- More detailed models were created, and these models were sent to the rapid prototype.
- Several iterations of prototyping and modelling were done to hone in on a final design.
- The final design was sent to a professional prototyper for increased dimensional and material control.
- The mechanics and interface of the final prototypes functioned properly, but quantitative test results were unable to be obtained because the final prototype was received so late.

Outcomes
- Two viable detachers and a tag were presented to Tyco.
- With the addition of electrical components, these could prove very lucrative for Tyco.
- The new tag is more effective at not impeding users from trying on merchandise than previous tags.