

Senior Design Project Description for FALL 2016

Project Title: e-Commerce Packaging TECH_ECOMM)

Supporter: Carrier Technimark

Supporter Technical Representative: ASSIGNED

Faculty Mentor: _____ ASSIGNED TBD (check one)

Single Team Dual Team _____ (check one)

Personnel (EN/ET): _____ E, _____ Cp, _____ Cv, 2 M, 3 SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

Description of Project:

e-Commerce continues to grow – outpacing the growth in traditional retail operations. More and more products normally not considered worth shopping for online are now readily available. In fact, consider Amazon’s Dash Button as an example of e-Commerce of common everyday products. The user simply presses a button on a fob near the point of usage and the product is automatically ordered and shipped to the customer

(https://www.amazon.com/s/ref=nb_sb_ss_i_5_6?url=search-alias%3Daps&fieldkeywords=dash+button&sprefix=button%2Caps%2C185) .

Many of the items currently listed on the Amazon site are manufactured and marketed by current customers of Technimark. These customers have requested that Technimark look into designing cost effective packaging to meet the constraints of e-Commerce while at the same time meet cost and appearance objectives.

Initial Project Requirements (e.g. weight, size, etc.):

The ISTA states a sequence of events/tests that the package needs to survive. Usually the package is placed in a carton with other items that may be purchased from an e-Commerce store like Amazon/Wal-Mart. Then the carton is tested using the following for an example.

1. Preconditioning of carton, hot – 38c.85c RH, Cold 18c/URCH.
2. Shock/Drop test. The carton is dropped 8+ times on different sides and corners
3. Parts are pulled for 24 hours and checked upside down and side-ways for leakers.
4. Carton is repacked and placed on vibration table for 24 hours,
5. Parts are pulled for 24 hours and checked upside down for leakers.
6. Carton is repacked and Drop tested again 8+ times.
7. Parts are pulled for 24 hours and checked upside down for leakers.
8. If no leakers it passes

Technimark would like to concentrate in the hair care line of packaging. More and more hair care products are marking their way into e-commerce shopping carts and represent a fast growing segment in the e-commerce shipping business.



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Phase One – Concept: Devise a concept(s) for several different hair care package caps to meet the ISTA requirements.

- o Test existing product caps in different sizes and configurations to learn mode of failure.
- o Devise FEA analysis to “imitate” failure mode in physical tests.
- o Devise new package cap designs to eliminate or mitigate those modes of failure learned above.
- o Cost out existing product caps
- o Cost out new package designs.

Phase Two – Detailed design:

- o Create FEA for new designs based on FEA analysis used in Phase One.
- o Present findings to Technimark team
- o Based on input from design team, complete detail design for injection molding.

Phase Three – Mold parts: Technimark will make molds and make parts for testing.

Phase Four – Test Design: Use molded parts to confirm design through physical testing.

Expected Deliverables/Results:

A completed prototype will be provided.

List here any specific skills or knowledge needed or suggested (If none please state none):

None