College Life's

(Team 5)

Presentation

Engineering / Management Collaborative Project

Marketing team: R. Red, B. Blue, G. Green

Engineering team: O. Orange, Y. Yellow, P. Purple

Part one:

Overview

1| Task

Goals:

- Determine a perceivable hole in the college-age consumer market
- Find a marketable product that would bridge that gap
- Research customer needs
- Adhere to strict safety statutes
- Make dorm life more productive and enjoyable.

Part two:

Introduction

3| Product Comparison

- **Concept one**: Jelly Mattress pad
  - Based off “egg crate” pads/water beds.
  - Dimensions of the mattress
  - 3-4 inches thick
  - filled with an jelly material that is both flame retardant and reforming
- **Concept two**: Fold up loft
  - Meant to conserve space
  - Loft folds up parallel to the wall when not in use
  - Reminiscent of fold up cots seen in old war movies
- **Concept three**: Laptop Desk
  - Universal trends: laptops and lofts
  - College kids are lazy and devoted to their beds
  - Screen to block light

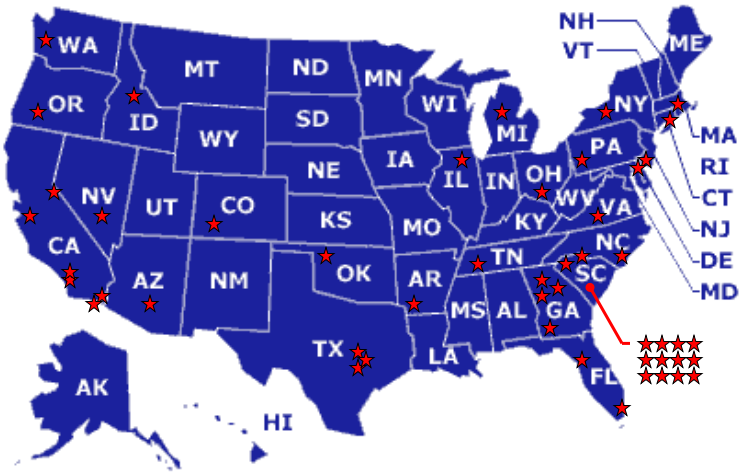
3| Product Analysis

- Laptop desk
  - Attributes (On a scale of 1-10)
  - Convenient- 7
  - Lightweight- 3
  - Multipurpose- 10
  - Comfort- 8

Overall Rank- 1

3| Focus group

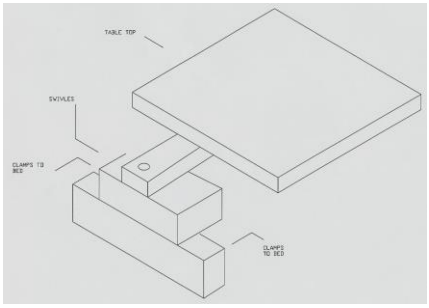
Our focus group was drawn from 18-25 year olds representing or living in all of the locations marked with a red star.



Part four:

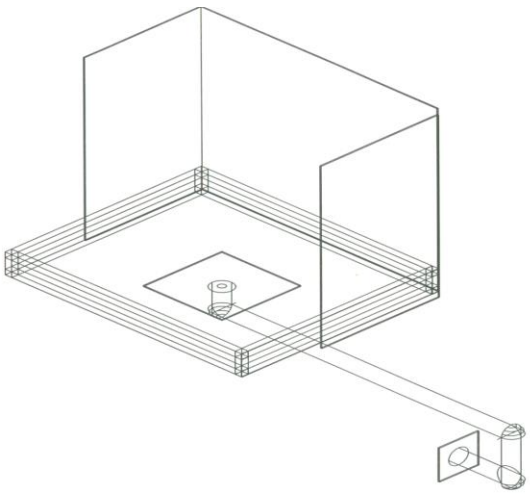
Concept Analysis

4| General Concept



- Concept has drastically evolved
- First prototype
- Weight issue
- Find better way to attach unit

4| Finalized Concept



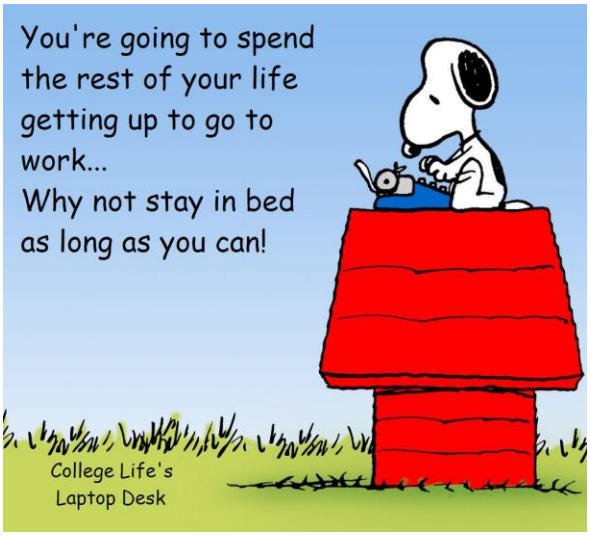
Part five:

Marketing Programs

5| Slogan/Product name

- “You’re going to spend the rest of your life getting up to go to work…Why not stay in bed as long as you can!”
- College Life’s Laptop Desk

5| Advertisement



5| Price

Selling Price= $\frac{\text{Total Fixed Costs + Annual Costs}}{\text{Units Produced}}$

Selling Price= $\frac{\$1,022,102 + \$5,241,984}{326,400}$

Selling Price= $19.20

5| Break even volume

- Break Even Volume-

Selling Price (x)= Total Fixed Costs+ Variable Cost/Unit (x)

- Break Even Volume-

$19.20x= $1,022,102 + $16.06x

$3.14x= $1,022,102

Break Even Volume= 325,511.00 units

5| Year's production

- We believe that a reasonable estimate of laptop desks that could be produced in 1 hour is 160.

(160 units an hour) x (8 hours a day) x (5 days a week) x (51 weeks per year)=

326,400 Units Produced Per Year

5| Cost structure

- **Fixed Costs**

Building Lease	$270,000
Equipment Lease	$200,000
Overhead	$12,000
Team Member's Salary	$280,000
Insurance	$60,000
Health Insurance	$70,200
Start up/ Licensing Taxes	$500
Wage Tax	$36,402
Office Staff Salary	$25,000
Managers Salary	$50,000
Office Equipment	$18,000

- **Variable Costs**

Labor Costs	$571,200
Materials	$3,427,200
Transportation	$1,243,584

Part six:

Production processes

6| Injection Molding

- Most widely used polymeric fabrication process
- Evolved from metal die casting
- Unlike molten metals polymer melts have high viscosity
- Can not simply be poured into mold
- Large force used to inject polymer into hollow mold cavity
- More melt must be packed into mold during solidification to avoid shrinkage in mold

6| Injection Molding

Injection molding machines consist of two parts: the injection unit and the clamping unit.

- Reciprocation screw injection molding machine
  - most common injection unit used
  - Screw rotates and axially reciprocates
  - Rotation produced by hydraulic motor
  - Acts to melt, mix, and pump polymer
  - Hydraulic system controls axial reciprocation of screw
  - Moves melt forward for injection
  - Valve prevents back flow of melt from mold cavity
- Clamping unit holds mold together
- Opens and closes mold automatically
- Ejects the finished part
- Mechanism may be of several designs
  - Mechanical
  - Hydraulic
  - Hydro-mechanical.

6| Why we chose Injection Molding

- **Advantages**

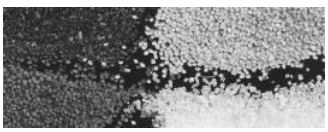
  High production rates
  Design flexibility
  Repeatability within tolerances
  Can process a wide range of materials
  Relatively low labor
  Little to no finishing of parts
  Minimum scrap losses

- **Disadvantages**

  High initial equipment investment
  High startup and running costs possible
  Part must be designed for effective molding

6| Resin Prices

- ***Injection Medium Impact ABS***
  - Used to make desk
  - Thermoplastic material
  - Comes in resin pellets
  - Cost: 72 - 75 US cents per pound
  - Appropriate for use in injection molders



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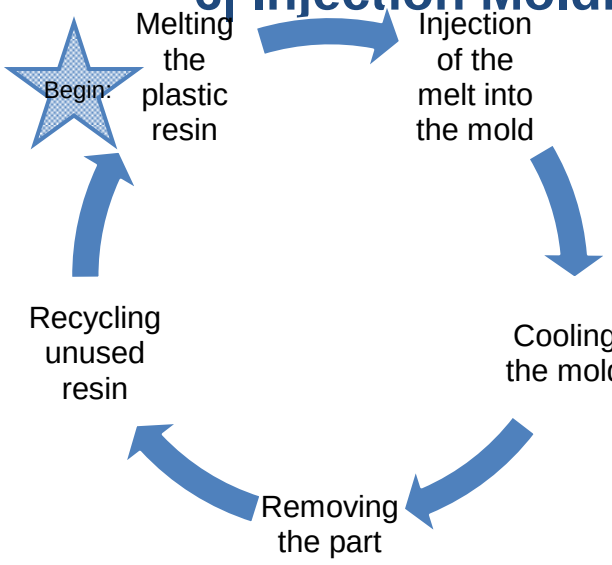

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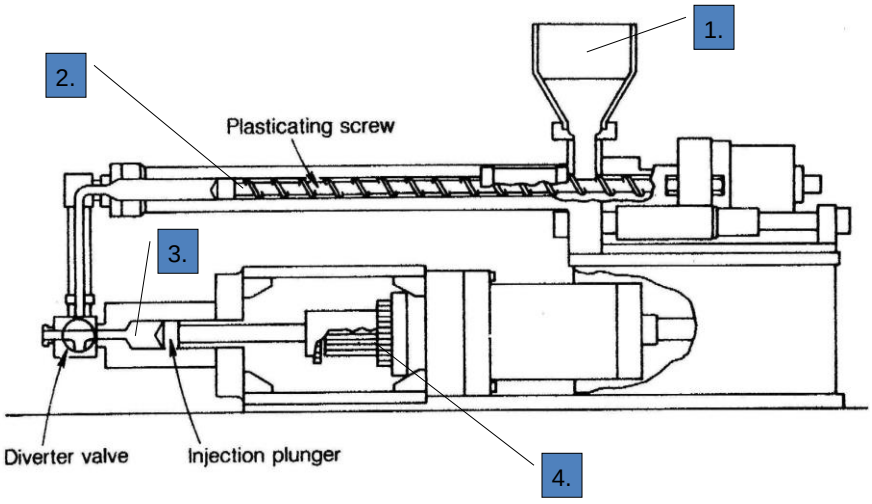
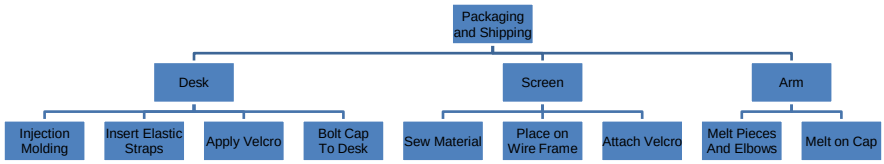
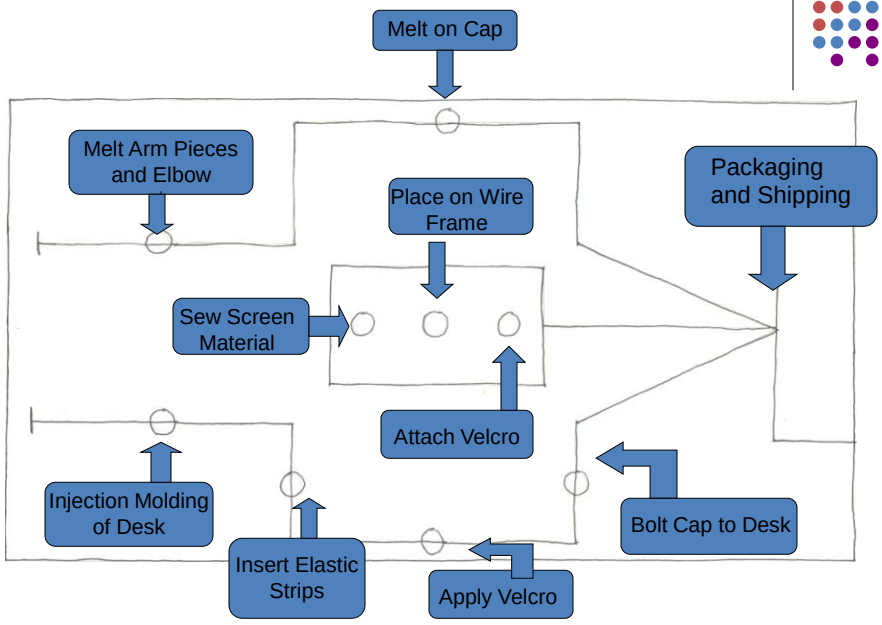


Work Flow Diagram





Part seven:

Conclusion