Manufacturing Innovation Team

Finding ways to mechanize the peeling process of shoe components and their backing to reduce repetitive motion injuries and improve manufacturing efficiency within the US.

Context

All shoes are made up of many individual fabric components that are secured together. Most of these pieces are cut out from large sheets of material that have a backing.

Materials Exploration

We performed two tests to characterize the shoe materials:

- **T-Peel Force Testing**
  - Measuring the force necessary to separate the backing from the material

- **Chemical Composition Testing**
  - Determining the chemical makeup of the materials used

Process Characterization

We broke down the problem space of the peeling process into four main steps:

1. **Material Cutting**
2. **Preparation**
3. **Peel Completion**
4. **Pick & Place**

Explanations

**Scoring**

One of the ways we explored preparing our parts was by scoring the backing.

**Bend and Pull**

Pulling the parts over a sharp angle enabled us to start peeling the backing.

**AirBlade**

Once the peel is started, one of the ways we explored fully removing the backing is through directed air.

OUR TEAM

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