SOUPER COOLER

HEAT-PIPE SOUP COOLING

Team Blue A
The Problem

- Cooling 60 gallons of soup from 180F to 70F
- Put into containers (8 gal) to cool to 140F
  - Handling hot soup leads to many burns
- According to health codes have 2 hours to get to 70F
- Put in blast chiller
  - Uses forced air convection to cool; energy intensive
Our Solution: Heat-pipe cooling

- **Safe:**
  - Prevent handling of soup when hot

- **Easy to implement:**
  - Do the majority of the cooling while in pot
  - Pipes easy to remove and clean

- **Non-invasive**
  - The system minimizes direct contact with soup
Technical Feasibility

- Using a lumped-parameter model; assumed:
  - properties of soup equivalent to water
  - temperature of water to be 40F
  - heat transfer coefficient 340-450 W/m²K
  - low end area estimate
- Cooling time approximately 75-100 minutes
Potential Customers

- Community Servings in Boston
- Sister agencies in Denver and Minneapolis
- All 3 produce ~250 gallons/week