Hot Rods

Rollers with Enclosed Heating Elements

Human Powered Crank

Rollers fuse bags → Versatile Plastic Sheeting
Hot Rods

Critical Modules

Heating Element

• Video
Hot Rods

Critical Modules

Roller Mechanism
**Technical Requirements**

- Wattmeter: ~400W
  - Presently, this is too Much Power!

- Energy Needed: 6kJ/ft²
- Speed: 2 ft/min
  → Power Needed: ~200W
Optimization

• Temperature Control:
  • Exactly how much power?
  • How long will rollers stay hot?

• Alternate Sources of Energy
  • Charcoal
  • Electricity
  • Human Power
Target Customer

Lome, Togo

• Population: 850,000
• Specifically: urban slum Forever

“...major source of pollution in virtually every country in Africa...”
Customer Needs

- Significant Reduction in Pollution

“…the main issue is getting the plastic bags off the street…”

--Meghan, IIJD Bag Recycling Client
Customer Needs

- Produce a product people could find a use for immediately

“...people use them almost as suitcases…”

“...if you make cheap rope, people will find a use for it…”
Customer Needs

- Promotes employment and improved economic conditions

“…finding people to [make] the products shouldn’t be an issue at all…”

- Additional Needs: Local Energy
Current Technology:

Plastic Sheeting

Engineers Without Borders:
Ghana, adjacent to Togo

Figures: Ramanathan, 2007
Plastic Bag Recycling

*Conclusion*

- Clean up the streets of Lome
- Provide useful consumer goods
- Promote Economic Activity

Rope Weaver  Hot Rods
References


Human Power
Feasibility

- Fit humans can sustain 200W for up to 1 hour
- http://www.youtube.com/watch?v=mgRFPpZGx8Y