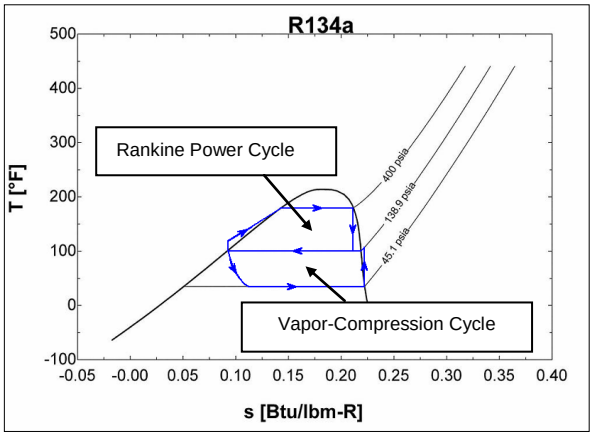
IPRO 357: Heat Driven Refrigeration for Developing Countries

Project Objectives:

- Develop Business Plan
  - Determine Market Size, Marketing Strategy, Customers, Competition, Financials
- Complete and test prototype



Description of Technology

- Refrigeration system based on unique combination of two thermodynamic cycles
- Dual piston pressure exchanger replaces electricity-hungry compressor found in conventional refrigerators
- Designed for use in remote applications where electricity is unavailable

Key Accomplishments:

- Developed Business Plan:
  - Found licensee companies
    - Amana, Frigidaire, Whirlpool, Kenmore
  - Identified competition: Minimal electricity consumption refrigerators made for recreational use
    - Absorption refrigerators which use propane, kerosene or the like as fuel
- Prototype is complete and it is in the testing phase

Critical Barriers:

- Difficulty contacting potential buyers, specifically relief organizations and government agencies
- Difficult to know its actual capabilities until testing is complete

Obstacles:

- Lack of personnel with Business background

Key Findings:

- Strong competition exists in recreational markets
- After further analysis, refrigeration system is not theoretically as effective as expected
- Technology is unique: Open to design patent

Conclusions:

- Market research suggests that this product likely would have difficulty penetrating the recreational market
  - It is not clear that it will outperform the competition
  - Product already exists that satisfies need: Absorption refrigerator

Recommendations:

- Continue market research after finishing prototype and determining its capabilities
- Detailed Cost analysis

Next Steps:

- Optimize existing prototype and determine maximum capabilities using electricity
- Build a prototype using higher quality components that runs on propane rather than electricity

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