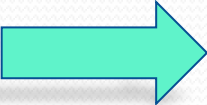







Water Desalination Plant

Obtaining reliable fresh water supplies
from challenging water sources



Engineering Design Loop Steps

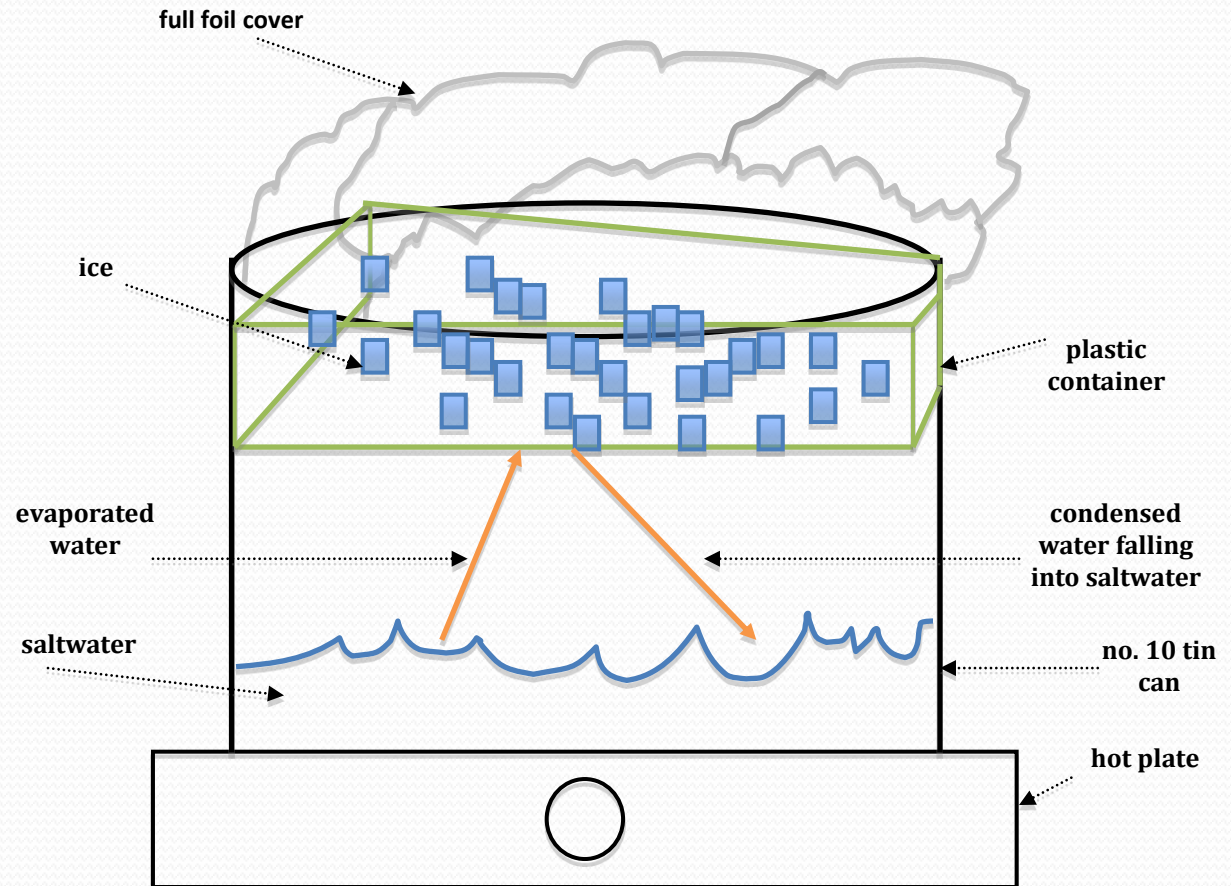
- Understand the need  Engineers look for opportunities in problems society faces
- Brainstorm designs  Generate ideas on how to address the identified need
- Select a design  Pick the most promising design or combination of designs
- Build a prototype  Build your design
- Test  Find out if the design meets the design specifications
- Improve the design  Make improvements to reach or exceed design goals

Water Cycle and Thermal Desalination Process

- Sun heats water in oceans, lakes, streams...
- Water evaporates
- Water condenses to form clouds
- Rain falls back to the Earth
- Hot plate heats water in desalination plant
- Water evaporates
- Ice forces vapor to condense
- Water is collected in plant

A Failed Desalination Plant Design

- Hot plate boils off water
- Vapor condenses on the bottom of the plastic container
- Condensate falls back into the saltwater mixture



This design fails because the clean water falls back into the saltwater.

Your Objective

- Design a desalination plant
- Use a saltwater circuit to test the efficiency of the plant
- Improve the design until the plant reaches the design specifications

Design specifications: Your plant should be able to significantly remove the salt content from a saltwater mixture. Test you plant using the saltwater circuit.

The end



References

- Thirsty? How 'bout a cool, refreshing cup of seawater?,USGS Water Science for Schools. Updated March 29, 2010. U. S. Geological Survey, U.S. Department of the Interior. Accessed May 1, 2010. <http://ga.water.usgs.gov/edu/drinkseawater.html>
- Wikipedia.org, Wikipedia Foundation Inc., Water Desalination. Accessed May 1, 2010. <http://wikipedia.org>

Image sources

- **Desalination plant sketch** by Juan Ramirez Jr., ITL Program, College of Engineering, University of Colorado at Boulder (2009)
- **Water drop photo** from Microsoft Clipart

