



Desalination

STEM Sims

Lesson 1: Operating a Desalination Plant

Do you think you have what it takes to operate a desalination plant? You'll need to know when to use vacuum pumps, water pumps, liquid pipes, and when to use gas pipes. Collect your virtual tools and start building your plant that converts ocean water into fresh drinking water.

Doing the Science

1. Start the Desalination Simulation.
2. Select Surface for Warm Water Intake Depth and 200m for Cold Water Intake Depth, and then select Continue.
3. Your tasks are listed on-screen between the Fresh Water and Cold Water Reservoirs as well as below in Table 1. Work on each task in order.

Table 1. Plant Assembly

| | Liquid Pipe | Gas Pipe | Water Pump | Vacuum Pump |
|---|-------------|----------|------------|-------------|
| Warm Water to Aerosolizer | | | | |
| Flash Chamber Drain to Warm Water Return | | | | |
| Flash Chamber to Condenser | | | | |
| Condenser Drain to Fresh Water | | | | |
| Condenser Gas Outlet (Off Screen) | | | | |
| Cold Water Intake to Condenser | | | | |
| Condenser to Cold Water Return | | | | |

4. In order to connect the Warm Water to the Aerosolizer, scroll over the icon of the appropriate element (pipe or pump). If you need the element to be vertical instead of horizontal, select the "R" for rotate.
5. Drag your element to the dots on the screen. No paths should overlap.
6. Experiment connecting pumps and pipes on a path from the bottom left-hand dot in Warm Water to the middle dot on the Aerosolizer. When you have the correct combination, the task will convert from the Red Incomplete to the Green Complete.
7. When you have the correct combination, record how many of each element you used in Table 1 above.

What Do You Understand?

1. Explain why you needed the water pumps where you put them.

2. Explain why you used gas pipes where you did.

3. Describe how the construction of a gas pipe might differ from a water pipe.

4. Both liquids and gases are considered fluids. Describe the characteristics of a fluid.

5. What is the function of an aerosolizer?

6. What is the function of a condenser?

7. What is the function of a flash chamber?
