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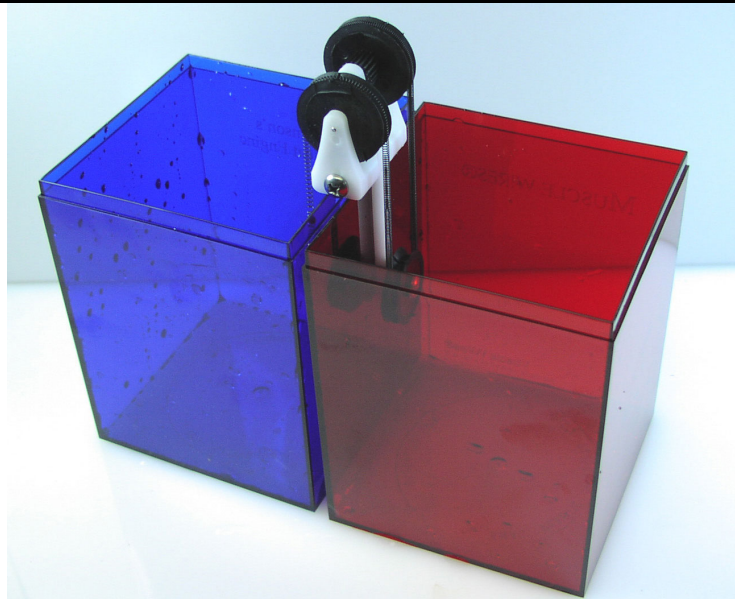
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Nitinol Heat Engine



The Heat Engine is

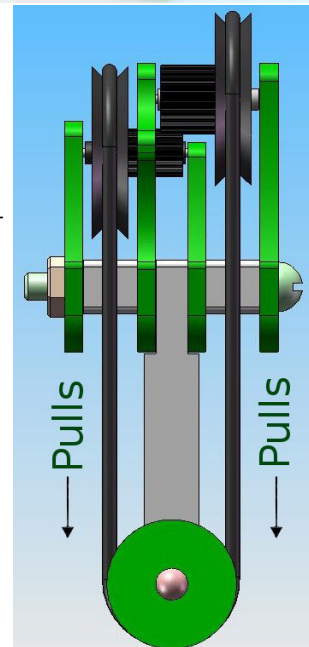
- An exciting demonstration of basic physics
- Interesting and fun
- A demonstration of MuscleWire® Shape Memory Alloy
- Relevant- it's a way to extract clean energy from low-grade heat
- Simple and easy to use

All you need to operate it is some hot water and some cold water!

How does it work?

1) The coiled spring is made from Muscle Wire®. When cold it is soft and flexible. When heated it becomes shorter, stiffer, and stronger.

2) In this heat engine part of the Muscle Wire is put in hot and part in cold. In the hot water it shrinks, pulling on the two



upper pulleys evenly. (The lower pulley ensures that the left and right side forces are equal.)

3) Because the lower (left in this picture) pulley has a mechanical advantage, it overcomes the upper pulley and turns toward the hot side.

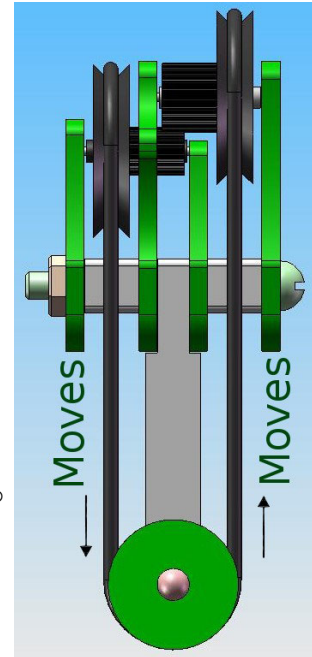
4) This movement of the pulleys pulls more wire over the lower pulley into the hot water, repeating the process.

5) On the cold side the wire stretches out longer, allowing the lower pulley to make more revolutions as required by the gear differences.

How fast does it run?

When it's going well, with hot water, the spring moves so fast it throws water through the air. Here's a link to a movie on our website:

<http://www.imagescompany.com/video/he2.wmv>



Why is the heat engine important?

First, it's interesting and informative. If you understand how this works, you understand something about gears, and pulleys, and shape memory alloys, and bearings and friction. Second, it's fun to watch. You can show it to their friends and impress them with your understanding. It demonstrates a technology that's not quite here today, but will be here tomorrow. Imagine thousands of these, bigger, out in the desert or floating in the ocean, or even on your roof at home pumping out clean cheap electricity. We can't do it today. But we and many others are working on it! You see it today, and you may well depend on it tomorrow.

The Heat Engine Includes:

- Nitinol powered motor (x 1)
- Cold Water Bucket (x 1)
- Hot Water Bucket (x 1)

Be the first to see a really practical clean safe energy source!



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