



## Energy Transfer Machine Workshop

The Workshop Powerpoint can be accessed here:

<https://energyresearch.ucf.edu/education/resources/>

### Building Materials Ideas

*Note: You may want to divide some desirable items (like dominoes) into several separate plastic bags so that one team cannot claim all of them!*

balls and round objects of all kinds (tennis, golf, marbles, ping pong, oranges, etc.)  
dominoes  
blocks  
popsicle sticks, tongue depressors  
balloons  
small vehicles (matchbox, hot wheels, etc.)  
paper cups, bowls, plates, plastic spoons  
track from race car sets  
clothespins, binder clips, paper clips  
cardboard tubes (paper towels, gift wrap)  
magnets  
spools  
pipe cleaners, wire, twist-ties  
rubber bands  
wheels  
books  
cans  
modeling clay  
straws, coffee stirrs  
cardboard

funnels  
Lego bricks, tinker toys, K-nex, etc.  
clear tubing (large enough for a marble to roll through)  
pulleys  
rolls of tape  
gears  
plastic bottles (cut off tops can be used as funnels)  
aluminum foil  
slinky, yo-yo  
rulers  
wooden dowels, pencils, chopsticks  
twine, rope  
sand  
small heavy objects (coins, nuts, bolts, etc)  
chain  
springs, elastic  
mousetrap  
Alka Seltzer<sup>®</sup> tablets, baking soda

### “End Goal” Ideas

Ring a bell  
Staple a paper  
Crush a grape  
Raise a flag  
Pop a balloon  
Inflate a balloon  
Water a plant  
Roll a car into a cup  
Put a ball in a cup

Turn a page in a book  
Pull a tissue out of the box  
Crush a can  
Shut off an alarm clock  
Pour a bowl of cereal  
Pour a glass of water  
Put a party hat on a stuffed animal  
Plant seeds in a pot of soil  
Trap a small stuffed animal

### Some of our favorite internet sites

#### Introductory videos (professional)

<https://www.youtube.com/watch?v=qybUFnY7Y8w>

Video, *OK Go! - This Too Shall Pass*. High intensity, large two-story Rube Goldberg machine set to the band's music. Links are available to a behind the scenes look at creating the machine and an interactive map that details the components.

<https://www.youtube.com/watch?v=YWk9N92-wvg>

Honda commercial features a Rube Goldberg machine made exclusively out of Honda car parts.

**<https://www.youtube.com/watch?v=V4BuUnimp8s>**

GoldieBlox Rube Goldberg Princess Machine. Video commercial for GoldiBlox shows three girls and the Rube Goldberg machine they supposedly built.

### **Introductory videos (student created)**

**<https://www.youtube.com/watch?v=VdSSOAtIrYU>**

Fortune Telling Machine, Lily Hevesh, internet domino artist, builds a machine to open a fortune cookie. In a second video, **<https://youtu.be/VdSSOAtIrYU>**, Lily gives a behind the scenes look at how she constructed the machine and the problems that she encountered. This video includes good advice for builders.

**<https://www.youtube.com/watch?v=IMboI4cOAuQ>**

Audri's Monster Trap. Seven year old, Audri Clemmons, shares his Rube Goldberg machine to trap a monster. He explains how his machine should work, shares some failures and his final success in trapping his stuffed monster under a colander.

### **Introductory videos (overview and history)**

**<https://www.youtube.com/watch?v=40AO2RdEixs>**

CBS Sunday Morning video report on Rube Goldberg and the Rube Goldberg machine competition. This short video is good for introducing the concept to class.

**<https://www.pbs.org/video/rube-goldberg-a-lot-of-moving-pieces-1708-78hysj/>**

PBS Newsmakers video, *Rube Goldberg: A Lot of Moving Pieces*. This PBS video is a longer video that is good for older or more advanced (or art) students as an introduction of the art behind Rube Goldberg cartoons.

### **Videos to spark ideas**

**<https://www.youtube.com/watch?v=cv5WLLYo-fk>**

*75 Chain Reaction Ideas & Inventions* includes some great ideas including some big, showy ideas. Don't be fooled, however, the different parts were recorded separately and then pieced together. See if your students spot this!

**[https://www.youtube.com/watch?v=MrbDg\\_aO1LQ](https://www.youtube.com/watch?v=MrbDg_aO1LQ)**

Video, *Insanity Kontraption* where a physics class turns off their light, using the whole classroom in the process.

**<https://www.youtube.com/watch?v=TdTYXc9EYHo>**

Andrew's second grade Rube Goldberg machine to pop a balloon. It includes his explanation and discussion of his favorite parts, as well as 3 different camera views of the machine run.

**<https://www.youtube.com/watch?v=Wfw8IyRTWUw>**

Student made video of a Rube Goldberg machine to wake a younger brother.

**[https://www.youtube.com/watch?v=Spxq\\_3Ei6uM](https://www.youtube.com/watch?v=Spxq_3Ei6uM)**

Steve Price's Rube Goldberg machine that flattens a can. This video was made when Price (now professionally known as Sprice) was a student. He went on to become a professional Rube Goldberg machine designer. He has many other videos online that are full of fun ideas.

**<https://www.youtube.com/watch?v=PxIZPNhO-z0>**

National Geographic video. Two teams build Rube Goldberg machines using the same objects. The video shows how to work as a team and work backwards to reach the goal of trapping a stuffed mouse.

### **Other Websites**

**<http://www.fsec.ucf.edu/go/etm>**

Florida Solar Energy Center, Energy Transfer Video Machine competition.

### **For more information, contact us:**

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