



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® 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

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

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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