POWERING MACHINES

Technical Design
Participant Handout

A Technical Device must have a power source to make it operate. Often a challenge requires minimal manual involvement so you must find a way to power it without doing it by hand.

Brainstorm answers to the following:

How can you power a Technical Device?

The first answer is often "a motor" but a motor is actually part of the device. The power comes from something else.

Power Sources People-power

- Example: bikes (pedals), pushing, pulling, lifting, twisting

Kinetic energy - energy in movement

- An object that has motion
  Example: Pendulum or Wrecking ball (in motion), Rube Goldberg machines

Potential/Stored Energy (must change to kinetic or other source to use)

- An object stores energy as a result of its position
  Example: springs, rubber band, elastic; from gravity-a heavy book sitting on a high shelf, roller coaster

Hydraulic

- Water - example grist mill, water wheel, or hydro electric plant
- Steam - steam engine or steam boat - but not allowed in DI challenge solutions.
- Other liquids -hydraulics - uses liquids such as oil are used in log splitters

Chemical

- The power released during chemical reactions is-harnessed as a power source.
- Example: vinegar/baking soda or Diet coke and Mentos (creates pressure - example volcano)

• Other examples: Rocket fuel, propane (for stoves) and gasoline (for portable electric generators) Gas-powered internal combustion -- Not allowed in 01 challenge solutions, but it powers your car.

Pneumatic or Air-powered

• Examples: sails, pressure, fans, windmill

Solar - light energy

• Photovoltaic sensors, light-powered calculators

Magnetic

• Example: Electromagnet

Electrical

- Batteries (batteries get their power from a chemical reaction)
- AC (electrical outlets) or DC (using batteries)

Organic - lemon or potato "battery"