

Faraday Pickup

Objective:

Given a 6 volt DC power supply, design and build an electromagnet which will lift the greatest mass of paper clips and drop them.

Background:

Faraday Pickup is an activity designed to allow students to apply the electromagnetism laws they studied in their E & M class.

The Competition:

The rules are as follow:

- Team members must design and build an electromagnet (using their own materials) which will operate at 6 V and suspend paper clips.
- The power supply will be set for 6 V prior to connection to the electromagnet (any drop below 6 V due to internal resistance will not be corrected).
- The electromagnetic may not consist of any permanent magnets.
- The paper clips must either be suspended below a surface or be attached to a vertical surface. The paper clips may not rest above a surface.
- Surfaces used to attach paper clips may not use adhesives, hooks, or any other fasteners (i.e., only magnetic forces are permissible).
- The only source of power permitted is the provided 6 volt supply.
- Each team will have 2 trials (on the spot) and the opportunity to come back a third time after they discuss improvements and adjustments that can be made to their design. Only the greatest amount of paperclips lifted will count.
- The greatest amount of paperclips lifted will be the winner.

Materials supplied:

- 6 volt, 2 amp DC power supply
- paper clips