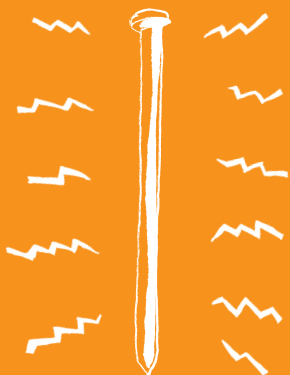


ATTRACTIVE NAILS



ATTRACTIVE NAILS

ENGINEERING CHALLENGE 22

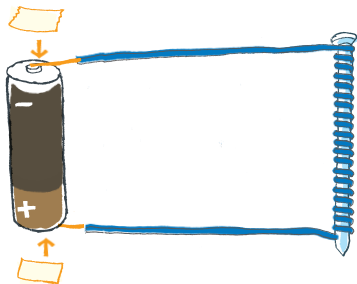
Designed by Latif,
Design engineer at Dyson

The brief

Make your own electromagnet.

The method

1. Wrap the insulated copper wire around the iron nail, leaving 20cm of loose wire at either end.
2. Remove 3cm of insulation from the ends of the copper wire and attach to either end of the battery with tape.
3. You now have an electromagnet. The nail should attract the iron filings and paper clips.



How does it work?

Most magnets cannot be turned off. When electric current runs through a wire it creates a magnetic field – and that's why electromagnets can be turned on and off.

Running current through a wire produces a weak magnetic field – usually too weak to give us visible results. By coiling the wire closely, you amplify the magnetic influence which gives visible results.

Materials

Insulated copper wire –
thin insulation is best

Tape

A battery

An iron nail

Iron filings
or paper clips

Did you know?

Many objects around you
contain electromagnets.



They are found in
electric motors and
loudspeakers. Very
large and powerful
electromagnets are
used as lifting magnets
in scrap yards to pick
up then drop old cars
and other scrap iron
and steel.