

Paper Thickness Investigation

Factories use robots or automation to replace people. There are many reasons why machines can work better than people.

But machines need sensors to "see" the world they are working in...a bit like people need to have smell, touch, hearing, taste and vision.

In a paper factory, some machines must check the paper is the correct thickness. If it is too thick, the machine has made card! Some machines must stack a certain number of pages on top of each other for packaging.



Your challenge...

- How could a machine detect the correct number of pages without being able to count?
- Could this idea work to detect how thick a single piece of paper is?

Extra info...

A **light dependant resistor** (LDR) absorbs light. The meter gives you are 'darkness' reading.

- A high number means lots of darkness (little light).
- A low reading means a little darkness (a lot of light).
- LDR's do not have a right or wrong way to be plugged into the meter.

1. **Build** a paper thickness sensor.
2. **Test** your sensor. Measure the resistance reading using the 200k setting on the meter. Measure the light reading with one piece of paper covering the sensor.
3. **Use** your sensor. Draw a table to record results. Take readings with one, two, three and four layers of paper.
4. Draw a graph of light reading (*y* axis) compared to the number of layers of paper (*x* axis).
5. Use your graph to predict the light reading if five or six layers of paper were put in front of the sensor.
6. Write a conclusion...answer the questions in the challenge!

