National Five Assignment

**Aim:** to investigate the uses electromagnets

Application: electromagnets are used in car scrap yards to pick up and move old cars. They benefit society as they reduce the workload of scrap yard metal workers.

Research: For my first source of data I used Wikipedia as it is a reliable website.

My second source of data came from hyperphysics as it explained the physics behind electromagnets which ties in with my aim.

Source1:

Raw data:

Results table from an experiment I did in class. This is reliable because I did it myself.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| **Number of coils** | **1st time** | **2nd time** | **3rd time** | **Average number**  **of paperclips** | |
| 10 | 1 | 2 | 2 | 2 |  |
| 20 | 3 | 3 | 3 | 3 |  |
| 30 | 4 | 3 | 2 | 3 |  |
| 40 | 6 | 4 | 4 | 5 |  |
| 50 | 4 | 3 | 2 | 3 |  |
| 60 | 5 | 5 | 5 | 5 |  |
| 70 | 5 | 6 | 2 | 4 |  |
| 80 | 5 | 4 | 5 | 5 |  |
| 90 | 6 | 5 | 4 | 6 |  |
| 100 | 7 | 5 | 3 | 6 |  |

Processed Data:

Source 2

Raw data:

From the Sunday times’ website:

<http://www.sundaytimes.lk/110619/FunDay/fut_02.html>

Processed Data:

This website should the different uses that electro magnets have. It started off by showing us how to construct an electromagnet using an iron nail and some pvc covered copper wire. You have to wrap the wire around the nail counting how many turns the wire should have. You then attach each end of the wire to a battery. Try to pick up some paper clips and note the number. Wrap the wire around more and see how many paper clips can be picked up now.

The website then went onto explain what a horseshoe magnet is. How it is used in industry to pick up heavy objects such as scrap metal. They are also used in metallurgy to separate iron from non-magnetic materials. In medicine electromagnets doctors use them to iron from sensitive areas such as eyes.

Comparison

Source 1 and source 2 both explain the uses of electromagnetics.

Conclusion

Electromagnets work when an electric current is passed through a coil of wire. The more coils that a wire has the, more powerful the electromagnet is.

Underlying Physics

Permanent magnets attract certain metals such as iron. Electromagnets also do this but the advantage they have over permanent magnets is that they can be switched on and off.

References

<http://www.sundaytimes.lk/110619/FunDay/fut_02.html>

http://jamiesessaycw.blogspot.co.uk/2012/08/experiment-results-strength-of.html