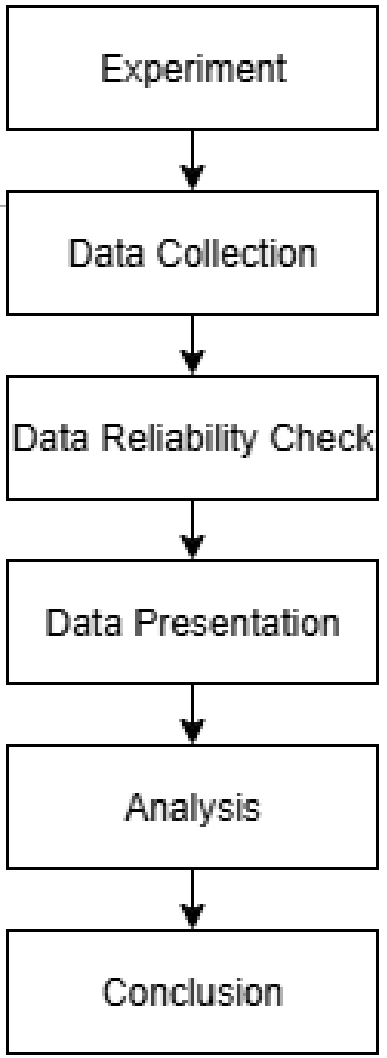
Presenting Results

Why Present Results?

- **Communicate findings clearly:**
  - Presenting results allows others (engineers, managers, clients, or assessors) to quickly understand what your investigation has shown.
- **Identify patterns and trends:**
  - Organised data presentation helps reveal relationships between variables — for example, how speed affects torque or how voltage affects current.
- **Support analysis and decision-making:**
  - Clear results make it easier to justify conclusions and guide engineering decisions based on evidence rather than guesswork.
- **Allow replication and verification:**
  - Other engineers can repeat your test or check your methods if your results are presented transparently and consistently.
- **Maintain professionalism:**
  - Well-presented results reflect accuracy, integrity, and attention to detail — key traits of a competent engineer.

From Experiment to Presentation

- **Engineering investigations follow a logical process:**
  - Each stage builds on the last - poor presentation can undermine even accurate experiments.
- **Presentation links data to meaning:**
  - Turning reliable measurements into tables, graphs, or visuals allows others to interpret your findings clearly.
- **Bridge between experiment and analysis:**
  - Without organised presentation, analysis becomes guesswork and conclusions lose credibility.



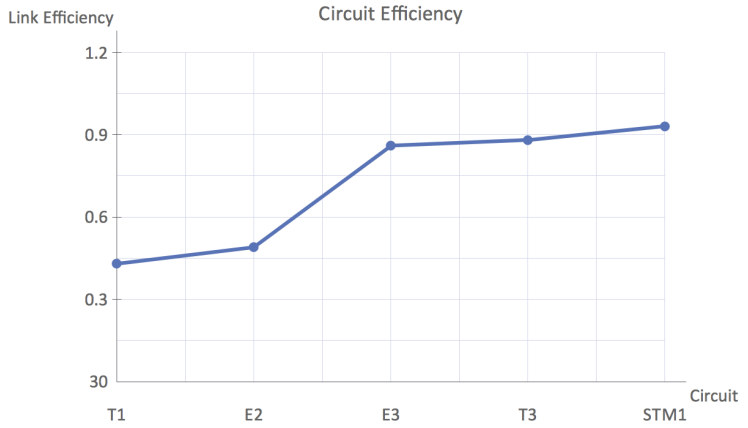
Types of Data

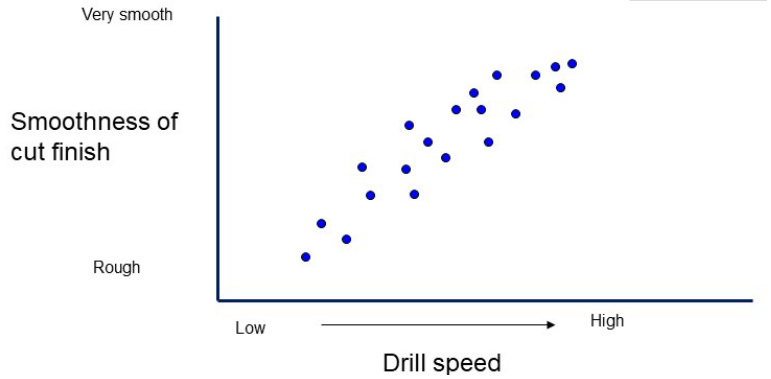
- Engineers collect two main kinds of data, understanding the difference helps choose the right presentation method:

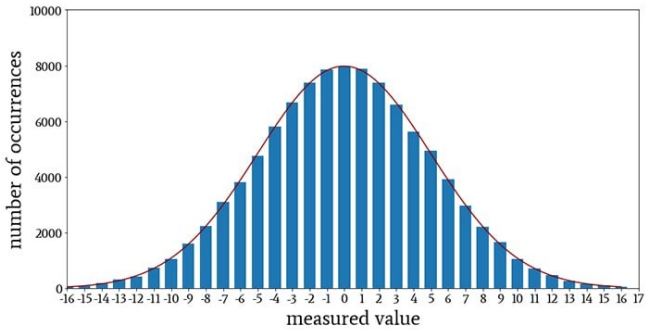
Type of Data	Description	Examples	Best way to Present
Quantitative	Numerical data that can be measured or calculated	Voltage, current, force, temperature	Tables, line graphs, bar charts, scatter plots
Qualitative	Descriptive or observational data	Colour change, sound, surface texture, visual fault	Photos, notes, annotated diagrams, summary charts

Presenting Quantitative Data

- **Quantitative data = numbers and measurements.**
  - It needs to be presented in a structured, visual format to make trends clear.
- **Common presentation methods:**
  - Tables: For precise values and comparisons.
  - Graphs: For showing relationships and trends (e.g. voltage vs current).
  - Histograms: For frequency distributions or ranges of values.
- **Good practice when presenting data:**
  - Include titles, units, and labels for all axes and columns.
  - Use a consistent scale and avoid distortion.
  - Highlight key points or anomalies — but do not hide them.





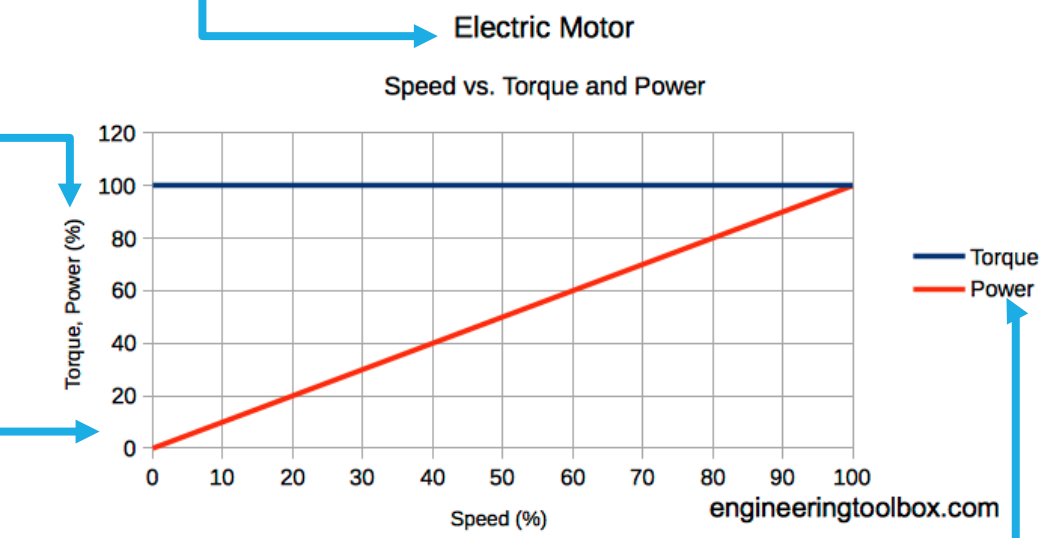


Common Graph Types

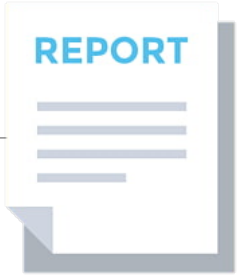
Graph Type	When to Use It	Example Application
Line Graph	To show a **continuous relationship** or **change** between two variables	Voltage vs current, torque vs speed, temperature vs time
Bar Chart	To compare **discrete categories** or individual measurements	Material strength for different alloys
Scatter Plot	To identify **correlations or patterns** in experimental data	Load vs deflection measurements
Histogram	To show **frequency distribution** within ranges or tolerances	Frequency of measured shaft diameters

Labelling and Units

- **Title:** Describe what the data shows (e.g. “Current vs Voltage for a DC Motor”).
- **Axes:** Label both axes with the variable name and its unit, e.g. Voltage (V), Current (A), Time (s)
- **Scales:** Use consistent, evenly spaced scales — avoid compressing or stretching axes.
- **Units:** Always use SI units unless there’s a specific reason not to.
- **Legends:** Include a legend if more than one data set or line is shown.



Presenting Qualitative Data



- **Qualitative data = descriptive observations.**
  - It helps explain what happened and why, giving meaning to the numerical results.

- **Common presentation methods:**
  - Photographs or images: Show visual evidence (e.g. material deformation, colour change, wear).
  - Annotated diagrams: Highlight key features or differences observed.
  - Observation tables: Summarise conditions and visual outcomes clearly.
  - Written notes or summaries: Record behaviours, sounds, or visual effects noticed during testing.

- **Good practice when presenting data:**
  - Keep descriptions factual and objective — avoid personal opinions.
  - Include test conditions (e.g. time, load, temperature).
  - Ensure all images and diagrams are labelled and clear.

Common Qualitative Data Methods

Method	When to Use It	Example Application
Photographs / Images	To capture visual changes or results	Surface wear after friction test; colour change in material
Annotated Diagrams	To highlight features or effects seen during testing	Crack propagation in stress test; flame shape in burner setup
Observation Tables	To summarise multiple descriptive findings	Comparing noise, vibration, or texture under different loads
Written Notes / Logs	To record subjective or behavioural details	Recording smell, sound, or operational issues during testing
Videos / Time-Lapse	To show behaviour or sequence over time	Movement of a linkage or mechanical failure process

Accuracy and Honesty in Presentation

- **Data presentation must reflect the truth.**
  - Engineers have an ethical and professional duty to report results honestly — even if they are unexpected.

- **Common issues to avoid:**
  - Altering or omitting data to make results “look better.”
  - Smoothing curves or adjusting scales to hide variation.
  - Ignoring outliers without justification.
  - Using misleading visuals (distorted axes, missing units, etc.).

- **Good practice when presenting data:**
  - Show all relevant results, including outliers and errors.
  - Explain anomalies — don’t remove them.
  - Keep graphs and tables accurate, labelled, and proportional.
  - Use presentation as evidence, not persuasion.