Gulf Coast Center of Excellence

AI for Energy Engineering:

Station 2: AI-Driven Data Analytics

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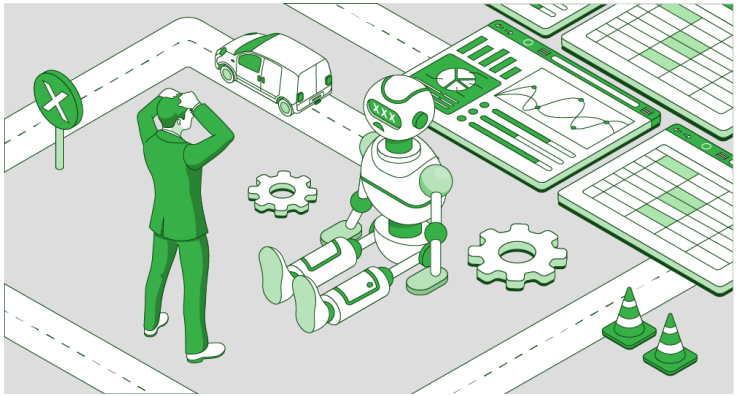
Data Analysis

- Relevant across virtually every **modern role and industry**
- In the age of big data, the ability to interpret and act on data is a **competitive advantage**
- A must have skill set that amplifies your impact
- A cornerstone of **Industry 4.0** and the push toward smart manufacturing

Image Credit: Codeup.co, agilitypr.com, i-scoop.eu

Current Limitations

- Spreadsheets remain the go-to for **basic, small-scale analysis**



However,

- They struggle to handle **large or complex datasets**
- **Limited interactivity** and analytical depth make deeper exploration difficult

Image Credit: adexin.com

How can AI help?

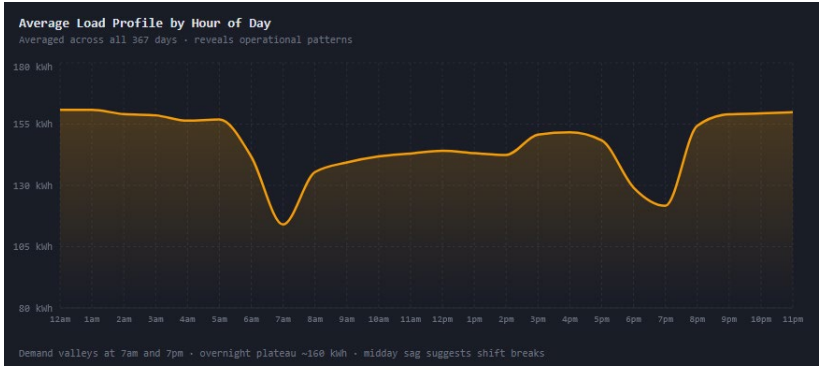
- Generates and runs code from plain natural language requests
- No prior expertise required
- Fast and effective for exploratory analysis

AI is a powerful tool, but not a perfect one. Always have someone with domain knowledge verify the results.

Image Credit: innovationbusiness.com, geeksforgeeks.org

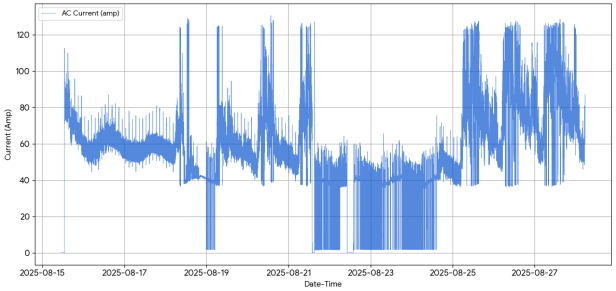
How can AI help?

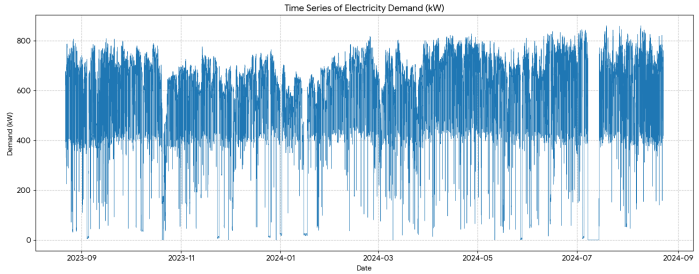
- Handles datasets with **1M+ rows**, far beyond what traditional spreadsheets can manage
- Generates a wide array of plots by quickly restructuring and transforming your data
- Does so quickly, code executes automatically in the background and renders results directly in your conversation



Today’s Activity

- Google Gemini
- Large time series datasets
  - AC current measurement data from industrial compressor
  - 15-minute electrical demand data





Note: To manage within the daily AI model limits which is typically referred to as “tokens”, it is recommended pair up with your neighbor and each work on a different dataset

Acknowledgements and Disclaimer

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Questions?