

Charlie Plumley

Operational Data Analysis & Digital Tools Consultant

Analysing complex operational data, diagnosing performance and building practical dashboards and applications

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Profile

Chartered Engineer and hands-on independent consultant with 15+ years solving operational and analytical problems in complex engineering environments. I work with time-series and operational data to diagnose performance, identify root causes and turn findings into practical improvements. I also build automated analysis, web-based dashboards and lightweight applications that make results usable by operators and decision-makers. My background in renewable-energy assets, control systems, software and infrastructure investment is directly applicable to other data-rich physical systems.

Capabilities: Time-series analysis • Performance diagnostics & optimisation • Control-system analysis • Automated analysis • Web dashboards & lightweight applications

Core toolkit: Python • SQL • TypeScript/JavaScript • Power BI • APIs • AWS/Azure/OCI • SCADA & operational data

Selected Impact

- Identified a **c. 10% performance gap** through analysis of a recently operational **437 MW PV portfolio**; the findings informed a revised acquisition bid and a post-acquisition improvement plan.
- Built a governed source-of-truth database spanning operational, asset, financial, H&S and ESG data, giving teams organisation-wide access to trusted data through shared dashboards and executive reporting while eliminating **several days of monthly manual collation**.
- Led data strategy and digitalisation for a multi-country asset portfolio spanning **4.5 GW** across 10 countries and representing **c. EUR 3.25bn** of commitments.
- Developed a Python/SCADA diagnostic process that identified operational losses and optimisation opportunities worth up to **2.5% of annual energy production**, and applied it across assets from **500 kW to 500 MW**.

Professional Experience

Independent Consulting <i>Operational Data & Digital Tools Consultant</i>	2026–present <i>Glasgow</i>
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- Providing hands-on analysis of operational and engineering data, from data quality and exploratory analysis through performance diagnostics, automated workflows and clear recommendations; building web-based dashboards and lightweight tools where they make the analysis more useful and repeatable.

Glennmont Nuveen Infrastructure Clean Energy <i>Principal Digitalisation & Performance Engineer, 2024–2026</i> <i>Senior Performance Engineer, 2023–2024</i>	2023–2026 <i>London</i>
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- Evolved the portfolio reporting platform in Azure into a global source-of-truth platform on AWS, with automated ingestion, Lambda and Glue, bronze/silver/gold SQL layers, Terraform-managed dev/UAT/prod environments, and a shared star-schema Power BI semantic model.
- Developed performance analytics that separated budget-to-actual variance into resource and lost-energy effects, exposing underperformance in recently acquired projects before it became clearly visible in financial results.
- Led practical adoption of AI and other digital tools, including colleague training, external technical collaboration and investor presentations. Enabled new AI-assisted workflows, including rapid development of standardised fund-level financial-model templates.

- Updated the post-investment appraisal process to incorporate detailed SCADA analysis and uncertainty assessment, identifying underperforming assets and likely causes. Actionable issues were addressed operationally, while recurring lessons on availability and curtailment were fed into future acquisition assumptions.
- Created a monthly portfolio-level view of long-term operational performance, enabling emerging changes to be identified earlier and budgets to be updated sooner where required, improving inputs to asset valuations.
- Designed and optimised the initial turbine layout for a **500 MW** wind farm in Australia, balancing complex noise, forestry, environmental, land-ownership and wind-resource constraints; the project is now operational.

SgurrControl | Wood PLC

Control Algorithm Engineer, 2017–2018

Control Engineer, 2015–2017

2015–2018

Glasgow

- Developed and deployed a semi-automated Python/SCADA diagnostic process for identifying operational losses and optimisation opportunities. Applied it across assets from **500 kW to 500 MW**, while managing multidisciplinary delivery, training colleagues and presenting recommendations to clients.
- Designed and programmed an adaptive derating control strategy to protect wind-turbine gearboxes, implemented across an operational wind farm in Mexico; managed the project and acted as lead client contact.
- Adapted the controller of a 2.5 MW wind turbine onsite in the US to integrate individual-blade-control hardware, and project-managed instrumentation of a 7 MW nearshore turbine for high-resolution R&D measurements; also introduced version-control practices subsequently adopted across the team.

Selected Projects & Public-Interest Work

Community operational-data platform

Built a security-conscious data platform for a community wind project, connecting directly to site systems over VPN to ingest 1-second and SCADA data. Designed a separated architecture with dedicated ingestion/ETL into PostgreSQL and a second environment providing read-only data access, APIs and a live dashboard for schools, delivered within a zero-infrastructure-budget constraint using Oracle Cloud Infrastructure Free Tier.

Open operational datasets

Released operational SCADA data from the **Kelmarsh** and **Penmanshiel** wind farms under an open-data licence, making real-world asset data available for external research and demonstrating a practical route for sharing operational datasets.

WeDoWind — Open Data Exploration Lead

2022–present

Led open-data challenges on energy yield, yaw misalignment and power prediction. A 17-team prediction challenge halved the baseline error; the winning solution was released under an open licence. Presented results at wind-energy conferences and seminars.

Web Applications & Open-Source Work

Design and deploy data tools, visualisations, APIs and interactive web applications, using AI-assisted development where useful to accelerate prototyping and iteration. Created and deployed **Ant Tea Games**, a public platform combining interactive games, publishing and community features. I also maintain a **public project portfolio** spanning Python analysis, data visualisation, mapping, engineering tools and web projects, and have created AI-avatar formats for panel discussions. Contributor to **OpenOA**, the open-source operational-analysis library.

Credentials

2019–present Chartered Engineer (CEng)

2014–present Member, Institution of Engineering and Technology (IET)

2010–2015 PhD, Wind Energy Systems, University of Strathclyde — *The Smart Rotor Wind Turbine*

2005–2009 MPhys (Hons), Physics, First Class, University of Manchester

Languages: English (native) | Russian (conversational; TORFL-1, Moscow State University) | Spanish (basic conversational)**Professional service & recognition:** CEng mentor | 2025 NICE Spotlight Award | 2021 Cubico Diversity Award | Cranfield CLEM Industrial Advisory Board member | WeDoWind Advisory Board member