Science and Technology Facilities Council

Hartree Centre

Real-time remote data analysis for industrial machinery

Voltvision worked with the STFC Hartree® Centre to explore the potential of real-time cloud processing and data analysis to reduce power wastage and cut CO2 emissions with their remote viewing technology.

Challenge

High voltage machines like industrial mining pumps, can cause significant power wastage and fatal accidents if operators cannot get highly accurate data readings in real-time. Many high voltage machines operate on diesel engines and increasing their efficiency can help businesses meet climate change targets across high voltage industries and receive tax breaks. However, for businesses using high voltage electric networks, it can be difficult to manage voltage output and synchronise equipment. Voltvision, an SME which wanted to find a way to analyse the data they captured from high voltage machines in real-time. They attach devices to giant motors, generators and other pieces of high voltage industrial machinery to collect readings of the electrical signals generated. Voltvision were looking to optimise the analysis of their data to boost efficiency.

Approach

Hartree Centre's Research Software Engineering team built a tool capable of analysing operational data in real-time. The team used cloud technology and data analytics to collate the data remotely and identify voltage patterns, highlighting potential errors. The aim was for this information to be relayed back to machine operators who could optimise machine output. This project was awarded funding from the Department of Business, Energy and Industrial Strategy (BEIS) as it helps businesses reach cross-industrial climate change targets by optimising machines and reducing power wastage. The Hartree Centre team developed this work further to build a data pipeline facilitating cloud processing and data analysis.

Benefits

Remote real-time analysis optimises the use of high voltage machines which reduces fatal accidents and increases energy efficiency. Many high voltage industries, like commercial mining, have announced climate change targets, this pipeline will allow companies to track and calculate how much they have reduced carbon production, which can lead to regulatory tax breaks. By developing a cloud processing and data analysis pipeline, the Hartree Centre team helped to expand the service Voltvision could provide, increasing its customer base leading them to hire more employees, creating over six new jobs for the company.

> **The Hartree Centre gave us the foundations of something that is actually useful to us in our analysis. With that, we can then go out into the market and start selling a specific product around condition monitoring.**
>
> **Manoli Yannaghas**
> Voltvision


Credit: Adobe Stock

> The Hartree Centre helped us build a critical part of our infrastructure which we would have struggled to have built on our own.

Manoli Yannaghas
Voltvision

At a glance

- Supporting job creation for Oxford based SME Voltvision
- Reducing fuel wastage in high voltage industries to reach climate change targets and receive regulatory tax breaks
- Using cloud processing and data analytics for real-time insights
- Optimising data analysis to give accurate machine readings and reduce potential fatal accidents

Who we are

- 70+ computational scientists and technologists
- World-leading supercomputing and AI infrastructure
- Bespoke small teams built around your project
- Tailored business development support
- Access to our network of industry, academic and technology partners

What we do

- Boost productivity and enhance innovation for industry
- Big data analytics and artificial intelligence (AI)
- High performance computing and quantum simulation
- Training and skills development
- Insights into future technologies


Credit: STFC Hartree Centre

Our impact on UK industry and society

The Hartree Centre was created by UK Government to help businesses and public sector organisations accelerate the adoption of high performance computing (HPC), big data analytics and artificial intelligence (AI) technologies. We play a key role in realising UK Government's Industrial Strategy by stimulating applied digital research and innovation, creating value for the organisations we work with and generating economic and societal impact for the UK.

The Science and Technology Facilities Council (STFC) Hartree Centre is part of UK Research and Innovation.

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