

Powering a Lab at a Music Festival

Neuro Optics Lab Conduct Studies at Green Man Festival



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Neuro Optics Lab

The Neuro Optics Lab, a collaborative group within the Engineering and Physics departments at Cambridge University, develops non-invasive optical methods to monitor brain function and metabolism. They focus on near-infrared spectroscopy (NIRS) to measure haemoglobin oxygenation, mitochondrial

function, and blood flow to explore the deepest mysteries of the human brain. To enhance study participation, the team of physicists, engineers, computer scientists, and neuroscientists brought their equipment to the Green Man Festival, powered by the Tracer BP2624-II.

The Challenge: Powering Brain Imaging Systems in a Field

The Neuro Optics Lab (NOL) team uses a non-invasive near-infrared spectroscopy system to monitor brain activity in participants. This versatile fNIRS equipment can operate on both mains and battery power, which is crucial for conducting studies in public settings such as the Green Man Festival. The team from Cambridge University required a battery that would reliably power all of their equipment throughout the four-day festival.

The Solution: Tracer BP2624-II 12V 24Ah LiFePO4 Power Packs

After discussions between the NOL and Tracer Power teams, the stable discharge characteristics of the LiFePO4 range were



Volunteers having their brains scanned at the Green Man Festival

chosen to power the sensitive equipment. The large-capacity 12V 24Ah model provided the team with enough energy to conduct 8 hours of continuous brain imaging recordings.

Green Man 2022 - Links Between Dementia, Memory & Music

The NOL team, headed by Emilia Butters and Sruthi Srinivasan conducted an experiment to monitor the brain activity of healthy volunteers while they listened to music. With sufficient data sets from numerous participants at Green Man, the team aimed to use machine learning to decode the link between music and memory pathways. Conducting the experiment at the festival increased participation from a few volunteers per month to 160 in just four days. The data has been analysed and is about to be submitted for peer review.

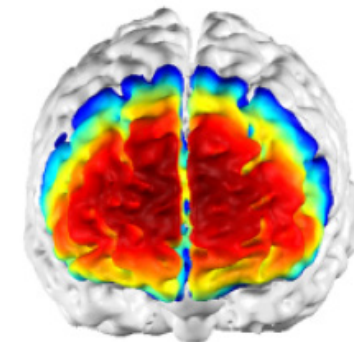
“ Conducting our study at the Green Man Festival without access to power outlets was challenging until we found a reliable battery, but it enabled us to gather unprecedented amounts of data ”

- Emilia Butters

PHD Researcher - Neuro Optics Lab

Green Man 2024 - Uncovering How Your Brain Solves Puzzles

Following the success of the 2022 study, Liam Collins-Jones and the NOL team are using the same equipment to explore the neuroscience of how the brain solves puzzles in collaboration with Maths World UK. The interactive demonstration allows participants to see which regions of the brain are active and work together to solve problems and puzzles. Images of their brain activity will be projected onto a screen, and the entire project will culminate in a large collaborative brain mural made up of aperiodic (non-repeating) mathematical tiles. After the festival, the work will continue to be toured and showcased at a number of other public events.



Non-invasive brain imaging - High-density array, healthy brain

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How music can affect
the brain and dementia

