

# Investigating battery pack balancing strategies



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## Project description

Battery packs for automotive applications are built from hundreds and thousands of individual battery cells, connected thermally and electrically. A critical part in the operation of battery packs is the strategy used to control the flow of current between cells. This is called the balancing strategy. For maximum longevity, the balancing strategy should positively affect the performance of the pack not just at the beginning of its life, but as it ages and degrades. Despite this topic being researched by both industry and academia, important questions remain over what the best balancing is, with some suggesting even that balancing may not be necessary.

In this project, you will carry out an experimental study to assess the effect of different balancing techniques on different battery packs. You will use the data gathered to make informed recommendations for the optimum use of balancing, and to help validate battery models using realistic scenarios.

This project will be supported by [IONETIC](#), who will provide the battery packs to test.

**Supervisor:** Monica Marinescu, James Eaton

**University:** Imperial College London

**Location:** In Person – Imperial College London, South Kensington Campus

**Start date:** The internship is a full-time role for 8 weeks; within June – September 2022

## Eligibility

- Be registered full-time undergraduate student from a UK university.
- Undertake the internship within the years of their undergraduate study (i.e., not in final year or during a subsequent Masters' programme).
- Not have been a FUSE intern in a previous year
- Experience of any kind with batteries would be ideal, either experimentally, theoretically, or otherwise
- You should be familiar with a data analysis language, such as MATLAB or Python

## Funding

A salary of £11.05/hour will be provided. This will be determined by the working address of the appointee, not the university's location. The internship is a full-time role for a period of 8 weeks between June and September. The funding is provided by the Faraday Institution.

## Additional activities

During the FUSE internship you will be able to attend Faraday Masterclasses and cohort events which will focus on a variety of topics to further develop your understanding of career opportunities in battery sector. At the end of the programme, you will be invited to share a poster about your work and prizes will be awarded.

## Application

In order to apply for a Faraday Undergraduate Summer Experience (FUSE) 2022 internship, please send a one-paragraph cover letter and CV to [monica.marinescu@imperial.ac.uk](mailto:monica.marinescu@imperial.ac.uk) or [james@ionetic.uk](mailto:james@ionetic.uk) by May 6th 2022 with 'FUSE Application' in the subject field.

## Diversity

The Faraday Institution is committed to creating a dynamic and diverse pool of talent for the fields of battery technology and energy storage. We at Imperial College are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We therefore encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender identity, sex, or sexual orientation. We are an Athena SWAN Silver Award winner, a Disability Confident Leader and a Stonewall Diversity Champion.

## Terms and Conditions

By applying to this position, you agree that Imperial College London, IONETIC, and the Faraday Institution can share information about you, such as your name, contact details, and personal information, with each other for the purpose of carrying out the Faraday Institution Summer Experience 2022.