



**CNH Industrial** is a global leader in the capital goods sector with established industrial experience, a wide range of products and a worldwide presence. Each of the CNH Industrial's brands is a major international player in its specific industry: Case IH, New Holland Agriculture and Steyr for tractors and agricultural machinery; Case and New Holland Construction for earth moving equipment; Iveco for commercial vehicles; Iveco Bus and Heliouz Bus for buses and coaches; Iveco Astra for quarry and construction vehicles; Magirus for firefighting vehicles; Iveco Defence Vehicles for defence and civil protection; and FPT Industrial for engines and transmissions. More information can be found on the corporate website: [www.cnhindustrial.com](http://www.cnhindustrial.com)

**FPT Motorenforschung AG** in Arbon has around 250 highly qualified employees working with commitment and acknowledged success. As the main innovation center for FPT Industrial, the site is involved in developing FPT Industrials' future powertrain solutions (not only in electrified powertrains, hybrids and fuel cells, but also novel engines concepts and alternative fuels) and is therefore at the forefront of a transition towards a future of alternative propulsion systems.

## Marie Curie Fellowship in Battery Modelling

As a member of the batteries team in FPT Industrial you will be part of a dynamic team of scientists and engineers driven for excellence. You will be supporting various research and development efforts to provide state-of-the art battery systems for the electrified powertrain portfolio. Our battery testing and research labs in Switzerland are integrated into a team which operates in the UK, as well as Italy which provides us a unique perspective on design, ingenuity, and practicality.

### Your tasks

- Development of cell level physics-based level electrochemical-thermal models
- Translate the physics-based understanding into models to be implemented in the battery management system
- Analyse test data to derive thermodynamic, physical, chemical processes to explain various ageing performance datasets.
- Use statistical tools to connect cell level models to pack level incorporating cell-to-cell variations
- Develop innovative techniques to improve accuracy of the models in extreme usage scenarios (e.g. high currents / low temperatures).
- Support development of battery life models to estimate capacity loss, resistance rise, pressure change etc.
- Guide experiments to develop optimal test procedures to improve the model calibration process and accuracy.
- Help drive the decision for cell selection (chemistry and design) and system design based on modelling and test results.
- Mentor test engineers
- Define pathways for further improvement of cell/pack design with enhanced performance and lifetime.
- Review academic literature to identify new ideas quickly and implement them into the experimental processes.
- Coordinating potential collaborations between other industrial and research partners.

### Your profile

- Holding a Ph.D. in the field of batteries by September 2021 (MSCA requirement)
- Having less than 8 years full-time equivalent experience in research after PhD, by September 2021 (MSCA requirement)
- European nationals or long-term residents within EU Member States or Horizon Europe Associated Countries of at least five consecutive years (MSCA requirement)
- Having experience with battery modelling and parameterization using test data
- Strong theoretical understanding of interactions between electrochemical and thermal processes in lithium-ion cells
- Strong understanding about cell components and their interactions inside the cell
- Very good knowledge of programming in MATLAB/Simulink or Python
- Good handle on statistical methods
- Pro-active, self-starter, able to troubleshoot test stations and test hardware
- Familiarity with battery ageing mechanisms



- Fluent in English

The selected researcher will be contacted for MSCA development and training opportunity. We will support the candidate to prepare and submit the proposal. The candidates, whose proposal will be accepted by EU, will work with the battery team at FPT.

**Duration:** 2 years contract

**Application deadline to FPT:** August 15th, 2021

**Proposal submission deadline:** October 12th, 2021

**Start date:** March 2022 or later

**Workplace:** FPT Industrial S.p.A., 10156 Turin, Italy and FPT Motorenforschung AG, 9320 Arbon, Switzerland

### Interested?

For further information, please contact Dr. Michael Rawlence– Tel. +41 (0)71 44 77 180. Please send your application to Human Resources: [recruitment.arbon@cnhind.com](mailto:recruitment.arbon@cnhind.com)

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