



DEFACTO

The DEFACTO project launches a free software that allows simulating efficiently and accurately the behavior of Lithium-ion batteries

- Universidad Politécnica de Madrid and CIDETEC join efforts to develop an open-source software
- This is the first tool based on a reduced adaptive model focused on simulating the behavior of a lithium-ion battery
- The software will provide the European scientific community with a freely available tool to carry out their own simulations

Madrid (Spain) March 10th, 2022; – The **Universidad Politécnica de Madrid** and **CIDETEC**, coordinator of the DEFACTO project, have developed open-source software that allows **efficient simulation of battery behavior through pseudo-4-dimensional (p4D) multiphysics models**. Currently, many of the available tools for battery development relies on the p2D two-dimensional systems where only one spatial dimension is considered. However, multiphysics models that consider all dimensions of the battery are required to evaluate the dynamic and heterogeneous behavior of the cell.

There are some tools that solve the three-dimensional problem. However, these resources are under proprietary software that makes it difficult for research centres and companies that work in the field of battery research and development to have access. The **“Time-adaptive reduced p4D tool”** software developed in the framework of the DEFACTO project is the first freely available tool that proposes a **reduced adaptive model** capable of **reducing the computational cost** by a factor of 10.

The software is already available for Windows, MAC OSX, and Linux systems and can be downloaded from the [DEFACTO website](#) in a dedicated section. Additional resources can be found such as the installation guide, the code documentation as well as a tutorial to run the software. This will allow the European scientific community to use the tool to carry out their own simulations for free, and the opportunity to improve the tool with other contributions from the community.

About DEFACTO

DEFACTO is an initiative funded by the Horizon 2020 Research and Innovation Programme of the European Union that has a total budget of € 5,988,318.75 and will last for 42 months.

The consortium that makes up this initiative is made up of thirteen partners: five research centers (CIDETEC Energy Storage, the French Commission for Alternative Energy and Atomic Energy, the Hellas Research and Technology Center, the German Aerospace Center DLR and Fraunhofer-Gesellschaft), two universities (Technical University of Brunswick and Polytechnic University of Madrid), two leading industries (ESI Group and Irizar Mobility), three small and medium enterprises (Sustainable Innovations Europe, Lechlanche GmbH and Avesta Battery & Energy Engineering), and a standardization body (UNE), all coordinated by CIDETEC Energy Storage.

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