Dynamic life cycle assessment of Electrolysers

## **Description**

As a part of a project for integration of environmental analysis in a community-level energy simulation software, the objective is to develop integrative life cycle assessment (LCA) models for Electrolysers. Hence, the challenge is to make scalable models taking into account the size, manufacturing options and technology evolution. Data regarding size dependency of LCA and main inventories in the literature have already been identified. Implementation of LCA of 3 Electrolysers types (SOEC, PEM & Alkaline) will be done using Brightway2 framework in Python. The energy simulation and optimisation software is called Odyssey, used internally by LSED laboratory of CEA for sizing renewable energy systems. Main tasks of developing the model will thus include:

* Representativeness and completeness check of the data
* Review of market reports & literature to assess projections for market/technology evolution
* Modular/Dynamic provisions in the model to implement the insights gained from the previous step, such as evolution of manufacturing efficiency, process efficiency, electricity mix, and other background processes.
* Sensitivity and uncertainty analysis
* Integration of the LCA model with process flows, life time, operation and other inputs from Odyssey

## **Profile**

We are looking for someone who is wants to do an internship to ultimately pursue a career in Energy industry or research with the following credentials:

* Background in energy systems or environmental sciences
* Experience with any programming language such as Python
* Affinity with life cycle assessment is a plus
* Curiosity to learn and independent working style
* Fluent in English

## **Duration: 5 month**

## **Location :** CEA Grenoble, 17 rue des martyrs 38054 Grenoble Cedex.

**Contact :** Stéphane COLASSON, stephane.colasson@cea.fr