



GENVIA

INTERNSHIP OFFER

Efficiency Modeling of High
Temperature Electrolyser for Green
Hydrogen Production

January 2022



GENVIA

At Genvia, our mission is to support international organisations and industry in the energy transition, in order to enable them to achieve the objectives of decarbonation and Net-Zero on a global scale.

We are convinced that carbon-free hydrogen is a sustainable and virtuous solution for our planet, our daily life and for the next generations. Beyond the vision, it is the ability to achieve that matters. This is why we recruit talents, in all positions, who adhere to this vision and contribute to the success of this project.

If you too want to get involved in a project:

- > innovative and meaningful,
- > which makes it possible to provide answers to the energy transition thanks to carbon-free hydrogen,
- > within a caring and efficient team, who share a common goal daily,

So, join us!

About Genvia

Joint venture created in 2021 by Schlumberger, CEA, Vinci Construction, Vicat and AREC. We develop and manufacture high temperature electrolysers to produce low-carbon and affordable hydrogen, energy storage and applications at large-scale.

- > **Domain** / Process system and energetic efficiency modeling
- > **Title** / Efficiency Modeling of High Temperature Electrolyser for Green Hydrogen Production
- > **Scope** / The electrolyser system engineering team in Clamart is developing a green-H2 production system based on Solid Oxide (SOC) High Temperature Electrolysis. The benefit of this technology is its high efficiency compared to traditional electrolysis technique such as PEM or Alkaline. Harnessing the full potential of this technology requires a characterization of the process performances and understanding of parameters influencing the system overall efficiency as well as its integration into an energetic predictive model.

This model will be used extensively by the engineering team for:

- Identification and quantification of technical levers to increase system efficiency
- Steer the design of future larger scale system to maximize performances
- Predict system efficiency for tenders and FEEDs technical proposal
- Provide input to R&D roadmap for improved efficiency gains

- > **Mission** / Candidate will work with the systems engineering team. The internship deliverables are:

- Definition of energetic system efficiency and identification of contributing process and system parameters
- Process sensitivity analysis using Symmetry® software to:
 - o Determine the impact of these parameter variations on H2 production
 - o Impact on system elements power consumptions and system efficiency

- Built a model for energy consumption based on the parameters and process and system analysis. This model will include the energetic performances of system sub elements (heat losses of high temperature enclosure ...) as a reduced order model extracted from numerical simulations.

- > **Target diploma and year of study** / Engineering degree (Master).
2nd or final year of engineering school

- > **Skills Areas** / Thermodynamics, thermomechanics with skills in modeling and simulations

- > **Duration** / 6 months. (From: April 2022)

- > **Location** / Clamart (92)

- > **Application** / Send application (CV + short motivation) to:
jprost@slb.com