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FROM BASIC TO APPLIED RESEARCH TOWARDS DURABLE AND RELIABLE FUEL CELLS

Focus on accelerated stress tests, degradation phenomena, fault modelling, advanced monitoring, diagnostics, prognostics and control of SOC and PEMFC

Workshop jointly organized by H2020 Projects AD ASTRA and RUBY

5 July 2022 – Lucerne (CH)

European Fuel Cell Forum 2022

venue: www.efcf.com/2022/conference/highlights/venue

registration: workshop@rubyproject.eu

info: workshop@rubyproject.eu

schedule: 9:00 to 17:00

registration deadline: 27 May 2022

The workshop will gather scientists and engineers from EU research and industry communities active on the broad area of Fuel Cell lifetime enhancement and advanced management. The speakers will describe the achievements on stress tests analysis and degradation of high temperature Solid Oxide Cells together with the work undergoing in the field of monitoring, diagnostics, prognostics and control of both SOFCs and PEMFCs.

The partners of the projects AD ASTRA and RUBY will share the results of their efforts, connecting degradation phenomena, fault root causes and mathematical framework that serves for improved stack and balance of plant management. The event will address in a holistic framework the main topics that can lead to more performing stacks and competitive Fuel Cell Systems.

A comprehensive overview and the potential of the projects' outcomes are offered to the interested stakeholders and users from academia, industry and research. Emphasis will be given to methodological approaches that can help achieving reliable performance of both stacks and BoP components, providing a comprehensive vision on the improvement of efficiency, performance, reliability, lifetime and maintenance of SOFC and PEMFC. A talk will describe the results of the project REACTT dealing with advanced diagnostics and control towards increased lifetime of solid oxide cells.

AD ASTRA addresses the building of Accelerated Stress Test protocols for quantitative identification and prediction of critical degradation mechanisms, correlating them with overall performance variables in Solid Oxide Fuel Cell/Electrolyser and stack components. The experimental data are being exploited to build models to predict Remaining Useful Life based on operating profile in real-time. Final protocols will address realistic failure modes of critical SOC components (fuel electrode, oxygen electrode and interconnect) in two application profiles, namely: power-to-X and CHP.

RUBY aims at developing, integrating, engineering and testing a comprehensive and generalized Monitoring, Diagnostic, Prognostic and Control (MDPC) tool capable of improving efficiency, reliability and durability of SOFC and PEMFC systems for stationary applications. The tool relies on advanced techniques such as Electrochemical Impedance Spectroscopy and dedicated hardware and will be embedded in backup and μ -CHP Fuel Cell Systems for on-line validation in relevant operational environment.

Registration is free of charge; coffee, beverages and lunch will be offered to all guests.



The projects **AD ASTRA** (Accelerated Stress Tests and lifetime prediction for Solid Oxide Cells) and **RUBY** (Robust and reliable general management tool for performance and durability improvement of fuel cell stationary units) have received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grant Agreements No 825027 and No 875047, respectively. This Joint Undertaking receives support from the European Union's Horizon 2020 Research and Innovation program, Hydrogen Europe and Hydrogen Europe Research.