

Enclosurement III

to the order N. 08/19 prot. N. 30/19 of 24/01/2019

CURRICULUM VITAE (CV)

**Engineering Consultancy for integration of a Solid Oxide Electrolysis system SOEC
in the laboratory “X to Liquid” located in Sustainable Energy Research Center
(SOTACARBO), for hydrogenation of CO₂ to produce clean fuels**

The Hydrogen National Center TEAM for SOEC project is formed by two PhD Engineers, two Engineers and one Technician.

2 Engineers from Applied Engineering Unit

Applied Engineering unit is aimed to design, development, testing and validation of hydrogen technology based systems. Its main role is to carry out engineering projects and demonstrate the feasibility of the technology and the certification and approval of prototypes and developments.

Members of Applied Engineering Unit involved in the present project

José María Olavarrieta Téllez, Industrial Engineer, Energy Technics Intensification since 2006. He got his Energy Engineering degree at the University of Castilla La Mancha. Mr. Olavarrieta was working for different Solar Energy companies up to 2011 when he joined CNH2. He is a member of the UING since then. Mr. Olavarrieta holds a vast experience in designing and construction of H₂ technology based systems, such as custom test benches for Water Electrolyzers or Fuel Cells. His skills cover all the overall process: BOP, 3D design, start up, optimization, development of tests methodology, development of test protocols, etc.

Mr. Olavarrieta has actively participated in many National and European projects, in which he has developed engineering, optimization and start up activities. Some of them are described as follows:

- EXPOHRENOV: Design, construction and start-up of a PEMFC test station for single cells and short stacks up to 150 W.
- PROJECT OF CERTIFICATION AND CHARACTERIZATION OF PEM FUEL CELLS: Design, construction, start-up and optimization of PEMFC test station of 1 – 10 kW and 10 – 30 kW.
- RENOVAGAS: Design, construction, start-up and optimization of 15 kW electrolyzer of a Power to Gas pilot plant.
- Contract for designing, building up, starting-up and optimization of a test bench for PEMFC single cells and short stacks up to 500 W electric power

Currently, he is collaborating in different standard-setting and certification projects for developing a PEM fuel cells stacks and components certification. He is also interested in pressuring H₂ systems of low, medium and high pressures and their connection to vehicles. He participated in the Technical & Standardization committees as AENOR CTN 2036/SC 105, GT4 and GT12 groups, as an international member and national coordination, respectively.



David Abad Correa, Chemical Engineering Bachelor, Industrial Engineering MSc. Mr Abad has participated in different H₂ technologies projects, working on electrolysis systems analysis for H₂ production, auxiliary equipment for H₂ technologies, analysis of H₂ storage technologies, process engineering, 3D design, PFD and P&ID process diagram, etc. Currently he is working on optimization of Alkaline Water Electrolysis systems, using modeling and simulation tools.

Previously, Mr. Abad has been working in different sectors such as mining, metallurgy and CO₂ research, where he has worked actively in CO₂ capture and storage technologies. In this area, he has been studying about MEA (Monoethanolamine) and similar chemical compounds for CO₂ absorption and desorption of it on a pilot scale, developing tasks of chemical characterization, equipment acquisition, engineering and starting-up (HIBRICAP project).

José Manuel González García is an expert in assembly and maintenance of installations, plants and systems for energetic applications, especially in the area of H₂ technology. Mr González has wide educational technical background in Industrial maintenance, Electricity and Electromechanics, Solar Energy, Hydraulics, Optical Fiber Networks and Structured Cabling, Industrial Ceramic Processing, etc. This knowledge is completed by an over 20 year experience in some of the most relevant Spanish Industries, such as:

- Ceramic Industry, where he was responsible of Electro-mechanic Maintenance Team, working in pressing processes, electromechanic and electrical maintenance of equipment and installations, hydraulic and pneumatic system maintenance.
- Electric Industry: working on electric power distribution and Industrial Electric Systems Maintenance.
- H₂ Technology. Apart from conventional industrial maintenance, such as electrical, hydraulic and pneumatic system maintenance, during the last ten years, Mr González has worked in Renewable Energies and H₂ systems assembly and maintenance: Photovoltaic power plant, wind turbines, H₂ and other gases installations, Hydrogen Stations, Commercial electrolyzers and fuel Cells, Test-bench for Fuel Cells and Electrolyzers, smart management systems for power grids, etc. In particular, he has been part of many projects aimed to the design and assembly of test-bench for Fuel Cells (e.g.: GEBE, EXPHORENOV, etc.) and electrolyzers (e.g.: Desphaga, Exsiva, etc.), as well as pilot-plant and industrial systems and prototypes.

Additionally, Mr González is constantly upgrading his technical skills by an ongoing continued education in complementary techniques.

2 PhD Researchers from Research Unit

The Research Unit's work is focused on identifying the technical challenges of H₂ technology, in order to overcome them and improving the development of technology to specific and defined applications. To this aim, this unit plays a critical role based on technology watch, specialized basic research, and scaling-up of the successful

developments.

Roberto Campana Prada, PhD. has more than 14 years of experience on Fuel Cells, and more than 12 in Solid Oxide Technology (SOT). Additionally, he was one of the world's pioneer in the development of microtubular Solid Oxide Fuel Cells (mSOFC). During these years, Dr. Campana has developed an active research work, participating in some of the most relevant SOFC technology national and European projects. He has also spent more than 28 months on different research stages in some of the most prestigious R&D centers such as: Instituto de Ciencia de Materiales de Aragón-Universidad de Zaragoza (Spain), Universidad de La Laguna (Spain), Institut de Recerca En Energ a de Catalunya (Spain), Imperial College of London (UK), and Denmark Technical University (Denmark). Currently, Dr. Campana is coordinator of the Research Unit at CNH2, supervising a team of seven researchers. Furthermore, he is responsible of Solid Oxide Technology Laboratory at CNH2 where he coordinates and actively works on different research projects, in collaboration with some of the most important SO Technology groups. He is also supervising and coordinating degree students, PhD students, postdocs and visiting researchers from national and international Universities and Research Institutes.

Jes s Rodr guez Ruiz, PhD. has worked for more than 12 years in electrochemical characterization of materials and systems for H₂ technologies: Solid Oxide Technology, Alkaline electrolysis, PEM Fuel Cells, Microbial Fuel Cells, etc. Dr. Rodr guez has an international career, since he graduated in Chemical Engineering at the University of Castilla La Mancha and he got his PhD at the University of Cagliari (Italy). He spent more than 10 months as visiting researcher in different institutes in Portugal, Germany and Spain during his research studies. His research interests cover Microbial Electrochemical Technologies, Photoelectrochemistry, Proton Exchange Membrane and Solid Oxide Technologies. Dr. Rodr guez has participated in many research projects and is co-author of more than 12 scientific papers. Currently Dr. Rodr guez is responsible of the Laboratory of Bioenergy in the CNH2, a new facility which is focused on Microbial Electrochemical Technologies and Biological Processes for energetic applications. Moreover, he actively collaborates with the PEM and SO Laboratories in the CNH2.

