

## Semi-annual Meeting of PRETZEL Project at Ibercat, Parque Científico of Madrid

<http://pretzel-electrolyzer.eu/>

On February 28<sup>th</sup> and March 1<sup>st</sup> 2019, project partner **IBERCAT**, located at the Parque Científico of Madrid (**FPCM**), hosted the latest official meeting of **PRETZEL** project. Overall 17 teachers, researchers, PhD students and administrative staff from the 9 project partners participated to the semi-annual-meeting for the project **PRETZEL**.

EU-Project **PRETZEL** is oriented to the design of a polymer electrolyte membrane water electrolyzer (**PEMEL**) based on the hydraulic compression technology to improve efficiency and operability of such devices in order to satisfy urgent market requirements. The current status and progresses reached on each work package of the project and the corresponding deliverables as well as future actions have been presented and discussed by its lead beneficiary partner involved in the meeting.

Fulfilment of the project goals was evaluated and time plan of the project was defined with special focus on next meetings and workshop within **WP1** which deals with the coordination tasks. The **WP2** presentation brought progresses made on crucial components of the **PEMEL** cell such as the Membrane Electrode Assembly (**MEA**), the anode and cathode catalysts, the Catalyst Coated Membrane (**CCM**) or the Porous Current Distributors (**PCD**). Specifications and achievements related to the **PEMEL** stack design and testing protocols were

also exposed. A more detailed discussion was conducted on the **PEMEL** cell components manufacture within **WP3**. First tests on coated **PCD** were reported and optimization tasks on the methodology and materials involved were decided. Possible improvements on the catalyst synthesis were also proposed, based on the promising results obtained after the first characterization tests on catalyst supports and the impact of synthesis parameters. Integration of such catalysts in the **MEAs** was designed for optimized performances and subsequent scaling-up after the report of preliminary tests already carried out.

The **WP4** section exposed the advances reached on compliance testing and characterization of components at stack level. Corrosion tests on the bipolar plates (**BPP**) consisting of vacuum plasma sprayed **Nb** coatings on copper plates revealed low values of corrosion currents and corrosion rates, complying with the required values set in Deliverable **D2.1**. Physical characterization showed dense **Nb** coatings and no pinholes beneath the coating after the corrosion tests. Further characterization of **Nb** coatings should be completed by interfacial contact resistance (**ICR**) measurements.



Activity and performance stability tests were also carried out on the catalysts obtained in WP3 allowing for optimization of synthesis conditions and a better choice of reactants based on electrochemical and textural characterization.

Degradation tests performed on MEAs under conditions established in D2.2 project deliverable were also discussed as well as resistance measurements and physical characterization of CCM, BPP and PCD.

From a point of view of the stack, a successful proof of principle and further ex-situ characterization to improve cell and stack components development were performed within **WP5** with special focus on the pressure housing, the cell frame and the PCD. System engineering was started in the scope of **WP6** with the presentation of the first results for retrofitting the cooling system and some improvements on the heat transfer through the cell. Operation conditions were discussed for a more precise definition of the final specifications of the high pressure PEMEL stack prototype with regards to system integration and operation in the test facility.



Fig.1: High pressure PEMEL stack

Finally, dissemination tools and activities were discussed in WP7 with special focus on the need of a definitive project factsheet for close events to be attended by project partners. Participation to congresses and workshops was reported and organization of the project internal workshop, planned for M19 was initiated.



Fig.2: PRETZEL partners during the second semi-annual meeting at Parque Científico of Madrid

PRETZEL project progresses, publications and events can be followed on our social media profiles:

Twitter (<https://twitter.com/PElectrolyzer>)

Linkedin (<https://www.linkedin.com/in/pretzel-electrolyzer-pemel-747522167/>)

### Participating partners:



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