



Deliverable Report

Project fact sheet

(D7.2)

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

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Project 779478 - PRETZEL

Novel modular stack design for high pressure PEM water electrolyzer technology with wide operation range and reduced cost

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Abbreviations and Indices

Abbreviation	Explanation
FCH JU	The Fuel Cells and Hydrogen Joint Undertaking
IEA	International Energy Agency
IPHE	International Partnership for Hydrogen and Fuel Cells in the Economy

1 Summary

Open dissemination for stakeholders as scientific community and industry as well as policy makers and regulators and international organizations (FCH JU, IEA, IPHE) offer the project scope, research plan and results. The wide communication by means of updated website and periodical newsletter are a key point on the PRETZEL project. The present deliverable refers to the starting fact sheet.

2 Introduction

Deliverable 7.2 aims at presenting the first PRETZEL newsletter which, with the website <http://pretzel-electrolyzer.eu/> and the PRETZEL logo constitute the brand identity in dissemination tasks, allowing for better visibility and recognition of the project.

The dissemination material aims to allow for public knowledge of the technologies involved in the electrolysis field. In particular, the target audience are:

- Industrial community (companies providing products, solutions and services)
- Scientific community
- Policy makers and public administrations
- Public

Here, a detailed presentation of this dissemination material is given which is already included.

3 Project fact sheet

The newsletter design is based on the colours of the project logo and uses a language that allows a wide audience to understand the project concept, its goals, expected results and partners. The information held in the newsletter will be updated regularly with an overview of the website including the website link in case the document is distributed otherwise (social media, printing, etc).

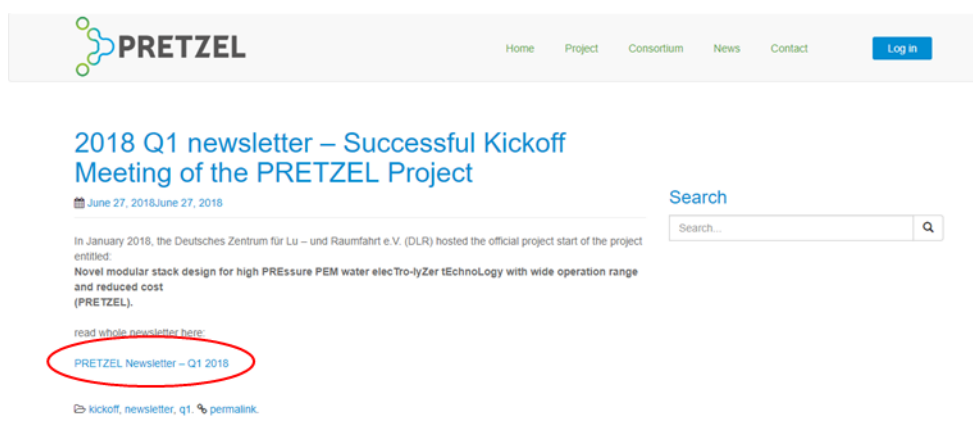


Figure 1. Screenshot taken from PRETZEL website showing where to download the newsletter

Simultaneously, the newsletter can be downloaded from the website to get access to a summary of the overall content of the project. In addition, the PDF document could be

loaded to different social media and information channels (Linkedin, Twitter, Google+) to promote and disseminate relevant information about the project.

Figure 2 and figure 3 shows the final version of the starting PRETZEL newsletter:



Figure 2.



Therefore, the central objective of this project is the development of a novel PEMEL system with a maximum 25 kW electrical power consumption that generates 4.5 m³ H₂ per hour at rated power, at an output pressure of 100 bar and feed water temperature of maximum 90 °C.

At the system level, the specific energy demand at rated production rate will be below 25 kWh per kg H₂, referring to a system efficiency of above 70% on the basis of higher heating value (HHV). Furthermore, this system will be able to operate in overload mode referring to a production rate as high as 6.8 m³ H₂ per hour (1.5 times overload). Rapid response of 1 second for a hot start and 10 seconds for a cold start are also operating targets of the system.

At the stack level, the project will implement a patented design approach based on hydraulic cell compression. This design allows for large planar cell components, which is required for future mass production, and effective cooling at very high production rates and temperature levels. Regarding sufficient stack conditioning, a cooling system will be developed for voltages of maximum 2.0 V per cell at rated power and of 2.3 V per cell in overload modus.

Additionally, the target of PRETZEL is the development of a high pressure PEMEL stack with innovative components having non-precious

metal coatings and advanced ceramic aerogel catalyst supports, which opens a perspective for specific stack costs of below 500 €/kW. As for the hydrogen production at 100 bar an additional compressor is omitted, thus specific system cost are possible in the range of 750 €/kW.

The PRETZEL project will realize the next generation electrolyzer technology, whilst meeting the needs of industrial scale hydrogen production in the near future.

Beyond these challenges, a significant increase of lifetime and improved operability will be achieved to cope with intermittent electricity supply from renewable energy sources.

Over the coming three years, the PRETZEL project will be carried out by an experienced and well-rounded consortium represented by the following partners:

- Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) German Aerospace Center (coordinator, Germany).
- Westfälische Hochschule Gelsenkirchen, Bocholt, Recklinghausen (Germany).
- Association pour la recherche et le développement des méthodes et processus industriels (ARMINES, France).
- Universitatea Politehnica Timisoara (Romania).
- Adamant Composites Ltd. (Greece)
- GKN Sinter Metals Filters GmbH Radevormwald (Germany).
- Centre for Research and Technology – Hellas (Greece).
- Soluciones Catalíticas IBERCAT, S. L. (Spain).
- IGas Energy GmbH (Germany)

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Figure 3.

4 Conclusions

The project fact sheet will be available under a newsletter format for all partners and website visitors to be used for dissemination purposes. The newsletter is a summary of the project current advances, described in a greater extent at <http://pretzel-electrolyzer.eu/> website. In addition, the document offers a potent tool to promote and disseminate an overview of the relevant information for PRETZEL project.