

EUROPEAN COMMISSION

SEVENTH FRAMEWORK PROGRAMME

FUEL CELLS AND HYDROGEN JOINT UNDERTAKING (FCH JU)

THEME SP1-JTI-FCH.2013.3.5

Field demonstration of large scale stationary power and CHP fuel cell system

GA No. 621256



Demonstration of a combined heat and power 2MWe PEM fuel cell generator and integration into an existing chlorine production plant

Deliverable No.	DEMCOPEM-2MW D8.6	
Deliverable Title	Project II Workshop	
Dissemination level	Public	
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Checked and Updated by	EB members	18-12-2018
Approved by	Ton Pichel (Nouryon/ANIC)	20-12-2018
Issue date	21-12-2018	

Publishable summary

As stated in the Description of Work (under task 8.3), workshops have been organised for the chlor-alkali and chlorate industries; for central- and local governments and for other relevant stakeholders. Officially two workshops have been planned and linked to two project deliverables: a first workshop at M30 and a second one in the final stage of the project at M42.

The first official workshop was combined with the launching ceremony of the PEM plant in China and, therefore, it has been anticipated to M22 (October 2016). The programme, participants and further information related to the first workshop can be found in the public [deliverable D8.5](#).

The second workshop, considered as the final public project event was combined with the “International Hydrogen Energy and Fuel Cell technology” ([CHFC 2018](#)) organised by the Chinese Hydrogen Association in Foshan, China 6-8 November 2018. This was meant to link the project workshop to a dedicated event in the field of Hydrogen and fuel Cell technologies to further promote out technology to a broader public.

Therefore, the second workshop has been postponed to M47 (November 2018).

This document reports on the programme and activities of the second official project workshop.

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1 Introduction

Nouryon (former AkzoNobel Specialty Chemicals) together with the DEMCOPEM partners organized the second and last official DEMCOPEM-2MW workshop in Foshan, China. In combination with the [“second International Hydrogen Energy and Fuel Cell technology”](#).

Partners could also access the conference, where the DEMCOPEM EU project officer (PO) has been invited to give an introductory speech.

In combination of the project workshop other dissemination activities were organised:

- Promotional booth at the exhibition linked to the conference (from Nov 6th till Nov 8th)
- Pitch by the exhibition podium (afternoon of Nov 7th)
- Presentation of the PO at the conference (afternoon of Nov 6th)

2 Second official project workshop

On November 7th, 2018 the second project workshop took place in the meeting room of the Garden Hilton Hill, in Foshan China.

During the workshops presentations from the European and Chinese delegations were given. The workshop was planned upon invitations and the targeted audience was a mixed group of experts in the Chlor-alkali industry, Hydrogen industry and decision makers / associations in the fuel cell field. More than 30 participants joined the workshop, among them major representatives of the chloro-alkali industries, local governments and end users.

The full [agenda and programme](#) can be found on the project website.

2.1 Presentations and Panel Discussion

The workshop addressed, with different high-level presentations, the two main aspects:

- The DEMCOPEM project, its background and proposed solutions
- The possible market and business case for the proposed technology

2.1.1 Highlights of presentations and Discussion

The DEMCOPEM project officer, representing the FCH JU funding entity of the project, briefly reported on the importance of the Fuel Cells and Hydrogen technologies in the context of the European Energy policy and stressed the importance and value of collaboration EU/China which can hopefully be continued.

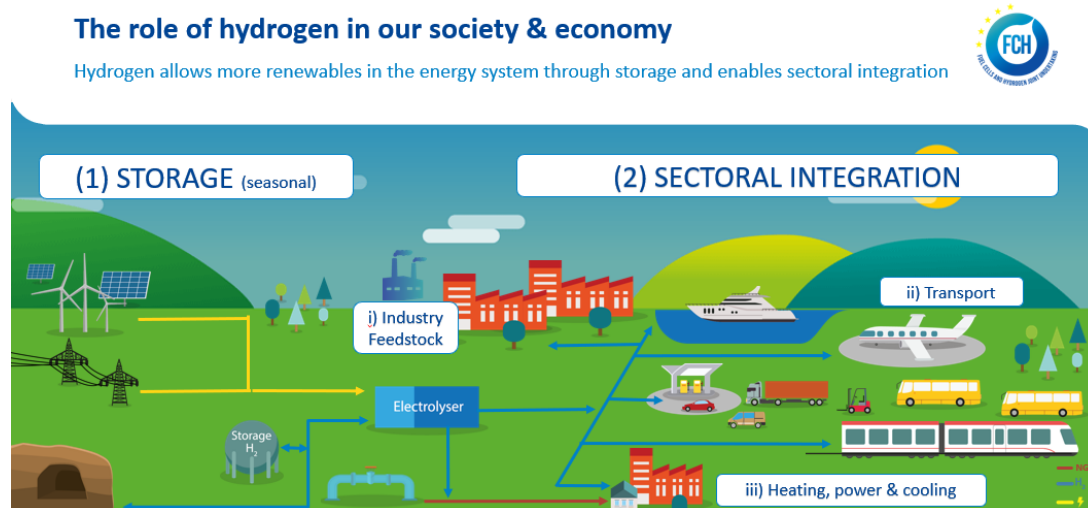


Fig. 1 – Simple scheme of role of H₂ in the European economy (presentation FCH JU)

Two project partners, NFCT and MTSA, gave a detailed presentation of the project objectives, main targets but also results and also possible market applications.

Short Summary of the Plant performance registered by the DEMCOPEM consortium:

- Nominal fuel cell output: 2000 kW

- Fuel cell efficiency (LHV): 55 %
- Auxiliary consumption: 120 kW
- BoP efficiency: 90 %
- Electrical efficiency: 50 %
- Available heat @ 60°C: >1000 kW
- Total efficiency: 80 %

Considering the accumulated results, the following was presented:

- more than 13 GWh_{el} and 7 GWh of thermal energy produced
- 800 ton H₂ recovered, with avg electric efficiency of ~49%_{LHV}
- 14.000 tCO₂ emission avoided
- Uptime largely determined by H₂ and grid capacity availability

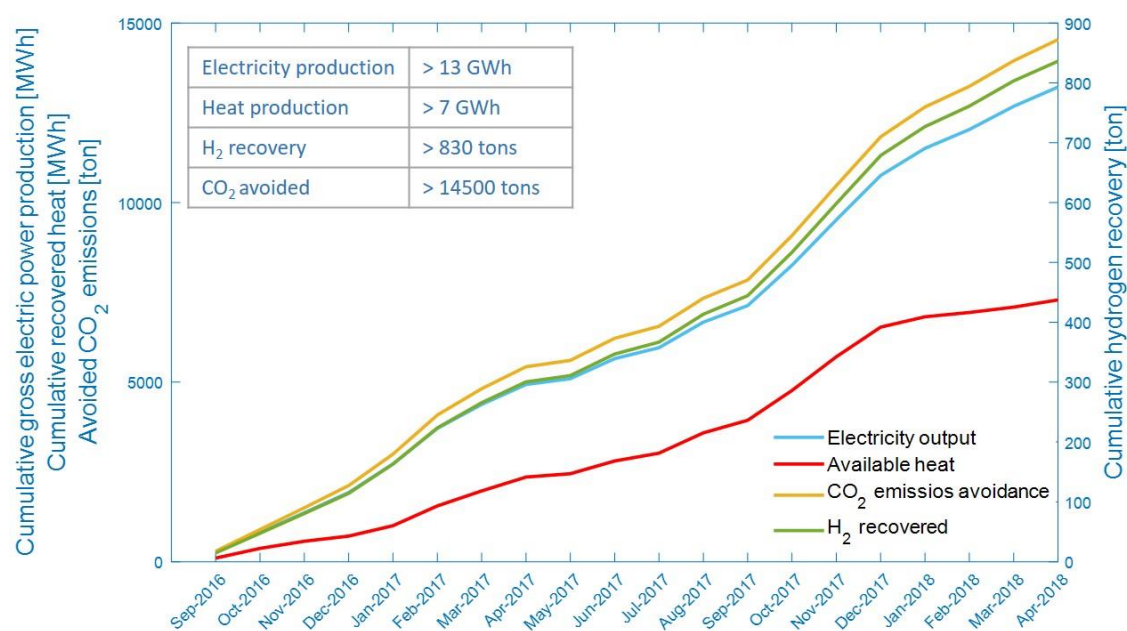


Fig. 2 – Summary of DEMCOPEM plant data (presentation DEMCOPEM consortium)

Following, representatives from the Chinese Chlor-Alkali association (Mr. Zhen Jiebing, CCAIA) and scientific expert in the energy sector (Prof. Mao, Tsinghua University & VP of International Association for H₂ Energy) presented the opportunities for the DEMCOPEM technology for the Chinese industries and energy segment.

The discussion continued with a presentation on the visibility of the business case, here presented below some of the final remarks:

- PEM technology is a proven technology
- Roll out phase design of PEM power plant is available
- Aim for further improvement to reduce CAPEX & OPEX
- Economic viability of PEM power plant depends on:
 - Availability of surplus hydrogen
 - Local market conditions e.g. power price
 - Capacity of the power plant (economy of scale)
 - Potential value of heat generated
 - Possible grants from authorities

- Regulation e.g. CO2 emission
- Possible markets: CA, P2P, Maritime, Grid stability

The workshop was concluded with a very active panel discussion, during which the participants at the audience asked direct concrete questions to the invited speakers.

Clear outcome of the discussion was that the Chinese government should try to work even more closely with European companies and funding entities in order to make the up-take of such hydrogen technology a real success (very promising but still too expensive for many small industries).

2.1.2 Selected Pictures

Below some selected pictures of the event



Fig. 3 - Welcome from Ton Pichel – Project Coordinator



Fig. 4 – Panel discussion



Fig. 5 Audience – project partners, stakeholders and relevant associations

2.2 DEMCOPEM booth at exhibition

Linked to the conference an international exhibition has been organised.

At this exhibition national and international industries, associations, universities, research centres and many other companies and entities working in green technology and the hydrogen sector, could present their product and results.



The DEMCOPEM project also obtained a booth to present its results and attract many companies possibly interested in the developed technology.

The full list of exhibitors can be found [here](#) (in there also “AkzoNobel” is mentioned).

On the afternoon of Nov 7th the DEMCOPEM consortium has been invited to give a short pitch presentation by the exhibition.

2.2.1 Selected Pictures

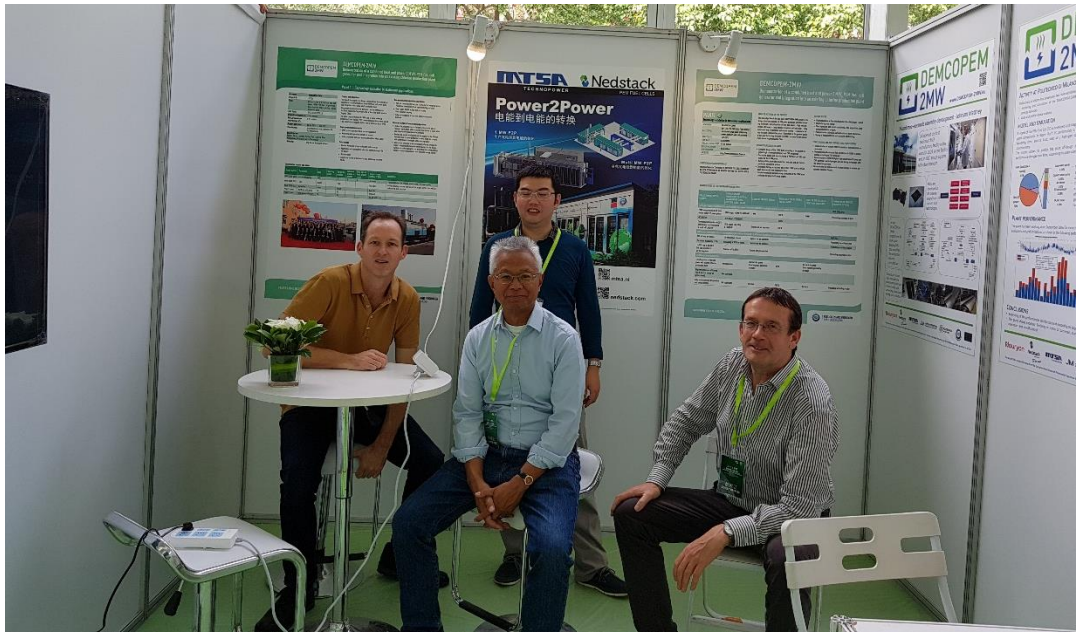


Fig.6 – DEMCOPEM booth and partners

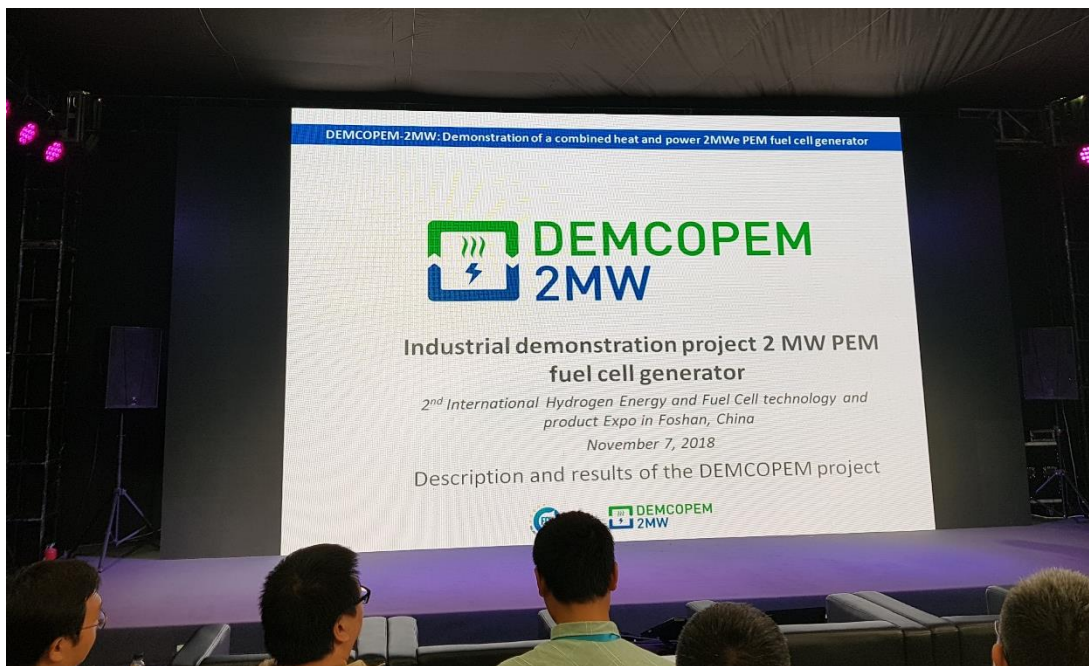


Fig.7 – DEMCOPEM presentation at Exhibition

2.3 DEMCOPEM representation at conference

The DEMCOPEM project has been promoted also during the official programme of the conference, on Nov 6th, when our project officer (Mr. Antonio Aguilo Rullan) was invited to give a short key note speech at the beginning of the panel session on Fuel Cell technology.



Fig. 8 – Key note speech of project officer

2.4 Follow up

As results of this important dissemination milestone, different Chinese company contacted the project partners (mostly NFCT and MTSA) looking for further possible business collaboration.

Most of the partners are also busy in Europe with follow up projects and further international collaboration.

3 Acknowledgment

This project is co-funded by the 7th FP (Seventh Framework Programme) – Fuel Cells and Hydrogen Joint Undertaking

<http://www.fch-ju.eu/>

<http://ec.europa.eu>



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