Workpackage 2, EMR H2-Booster Deliverable: Case paper;

‘Bundling multiple electrolyser projects in Limburg’

Project name: *Bundling 6 x 2MW electrolysers*

Starting date: tbd. October 2023

End date: tbd. October 2027

1. Introduction

There’s a huge challenge currently to provide enough green power for all planned electrification, e-mobility, heating homes, but foremost the industry. Next to this, there are many PV-solar-fields planned in the EMR region, some which even received permits, but cannot get the necessary connection to the grid. Besides green power for electrification, the EMR industry needs large quantities of green hydrogen, for which even more green power is needed. The challenge is so huge, that we’re already certain we also have to buy and import large quantities of Green Hydrogen. However, local green power-peaks of solar and wind should not be curtailed and PV-projects with permits should not be stalled for 5-8 years because of congestion issues, therefore we will need local electrolyser capacity. Not only to fill in a part of the local energy-need, but also to partially solve congestion issues, avoid expensive hydrogen transportation over long distances and keep the Carbon savings, economic- and other benefits to the local community. In short: use or store the energy where it’s produced.

This Case paper has been written mostly during April-May 2023, A recent article (by the Director of TKI nieuw Gas; Jorg Gigler 14th of June) actually confirms this whole idea, which is why we like to mention it here:: https://www.change.inc/energie/nederland-heeft-meer-kleinschalige-elektrolyseprojecten-nodig

2. Challenge

On all sides of the borders, the above described issues and challenges are more or less the same. To speed up electrification and local hydrogen production it’s of the utmost importance to not re-invent the wheel and to get barriers out of the way, in other words: learn from each other, combine buying power and cooperate. We believe that by developing many smaller projects as if it was one project, the synergy and combined knowledge and experience on all sides of the borders will speed up the process and therefore contributes to a faster decarbonization of the EMR-region and -energy system.

3. Reason for the start of the project

The congestion issues become thus problematic that it not only hinders or even stops the start, development and/or growth of companies, but also makes it almost impossible to further decarbonize and finally become carbon neutral. Many companies can only do so by electrification, or by replacing natural gas by hydrogen, so they need locally produced green power, biogas and/or green Hydrogen fast!

4. Objective

The ultimate objective, is to use as much of the locally produced green power as possible, as close to the production site as possible, with as many local SME's using hydrogen in their businesses, all year long. This means seasonal storage will be necessary and the consortium sees conversion into Hydrogen as one of the best ways to do this. Therefore we will develop the 6 most advanced electrolyser initiatives in the Dutch region as if it was one project and simultaneously check if at some locations, or even at one larger location, it makes more sense to install one bigger electrolyser plant of say 12 MW. We will also seek the combination and cooperation with similar initiatives in Germany (Aachen (Stawag), Duren, Heinsberg, Neumann & Esser) and/or with electrolyser projects in Belgium (Imec / John Cockerill / Zellie/ Cummins-Accelera). Another important objective will be to reduce grid-congestion. To be as efficient as possible, we will explore the potential to use oxygen and heat, the co-products of the electrolysers, which seems easier to do at smaller local electrolysers.

5. Deliverable result(s)

By the end of this project at least 12 MW electrolyser capacity should be installed, either at 6 separate location, or some combined, or even one larger central location, if that appears to be the most viable solution for all partners. By then, at least 60 SME's will have hydrogen integrated as an energy source into their daily processes.

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