

Hydrogen Rise AG plans 20 MW production systems for green hydrogen in key industrial applications in Oman

Oman is engaging intensively in the upcoming energy transition. Hydrogen Rise AG is closely involved in this process. Production and delivery systems of green hydrogen for industrial applications are currently being developed. The disruptive approach is an innovative system design, which is designed for the gradual expansion of green hydrogen production and thus takes into account local framework conditions and application systems such as ammonia or steel production. The goal: to produce green hydrogen in Oman for local industry usage as well as export.

Scalable green hydrogen system solutions as an entry point into supplying industrial customers

The transformation to a hydrogen economy is a huge structural, technological, operational and economic challenge. This applies not only to Oman, whose economy is predominantly based on fossil fuels, but also to established industrial nations across Europe. Industrial customers, in particular, require green hydrogen production capacities, which so far cannot be realized technologically and economically in one step on this scale for the requirements of an entire plant.

Hydrogen Rise AG therefore develops **scalable systems solutions** that can be scaled up gradually, incorporating the hydrogen consumption plants, to deliver **early strategic and economic benefits**. This specialization on current and future **Omani industry** thus **generates in-country value in Oman** on multiple levels.

With this concept, the green hydrogen production capacity can be expanded according to the availability of the components. In addition, however, it is also possible to respond to their expected unit-dependent cost degradation.

Towards „Hydrogen-as-a-Service“ with the help of international partners

Hydrogen Rise AG has selected local and international partners to plan, build and operate the projects in consortia. The projects each have an investment volume of EUR 40 - 45 million, covering the entire production chain. From the conversion of renewable energy (solar, wind) to the distribution and integration of the green hydrogen to the industrial customer as part of a "Hydrogen-as-a-Service" concept. The project is scheduled to start in the first quarter of 2021.

The aim is to meet the particular challenges of substituting grey hydrogen in existing plants, e.g. with steam reformers, but also in the design of new plants that will be designed for scalable substitution of grey hydrogen. This will make it operationally and technically easier to transition these to CO₂-free operation during their typical 20- to 40-year lifetime. Carbon capture and storage (CCS) solutions can be used independently by the plant operator during a transition phase.

The developed system concepts are **geared to three application scenarios** in which the integration of green hydrogen into existing plants is of particular importance: the "green" **production of steel, ammonia/urea** and the **feed-in of green hydrogen into sections of the natural gas grid**. The initial planned electrolysis capacity is 20 MW each.

The systems represent the possibilities of system scaling in all subsections of the production chain. In addition to an increase in production capacity from 20 to 500 MW, this relates in particular to the energy storage of volatile renewable energy sources for a green hydrogen supply to customers around the clock, as well as a scaling of the necessary infrastructure measures.

The 20MW green hydrogen production capacity in the selected key industrial projects will also serve at the outset for competence building in Oman, technical and economic validatability, regulatory and standards alignment and own national technology developments, as well as preparation and planning for widespread penetration. The targeted supply of green hydrogen to the Omani industry is a crucial step to offer green industrial products in a certified global market in the future.

Establishing a hydrogen economy as key contribution to the energy transition in Oman

The goal of building an Omani hydrogen economy is not only to decarbonize industrial processes in Oman, but in to build a long-term sustainable hydrogen export economy based on the export of "sun and wind", i.e. renewable energy in the form of energy carriers such as hydrogen, ammonia or LOHC, in addition to green hydrogen as an industrial feedstock.

Oman has the long-term potential to export 60 TWh of renewable energy in the form of green hydrogen or other energy carriers in 2030. This is a considerable part of what Germany – and Europe – will have to import in terms of green hydrogen in order to achieve their goals related to the energy transition.

Our perspective on the importance of the hydrogen economy in Oman

Hydrogen Rise AG focuses on the importance of green hydrogen in the global energy transition. Analyses with partners revealed, among other business focal points, the excellent framework conditions for renewable energies in Oman, but also the willingness and necessity to complement and substitute fossil energy sources:

- Enormous availability of land area to harness the required solar energy
- One of the lowest solar power generation costs in the world in the global sun belt
- Large offshore wind energy potentials
- Limited and costly fossil fuel resources
- Geographic location on international trade routes with three deep-water ports
- Concentrated industrial complexes for efficient sector coupling of resources
- Political stability and
- Favorable conditions and reliability for international investors

These framework conditions are excellent indicators for the economic potentials of the transition to a hydrogen economy in Oman. From this, solutions could be developed to produce green hydrogen cost-efficiently for the Omani industry, which can offer green certified industrial products for the world market in the future, as well as to export renewable energy as green hydrogen or in the form of other transportable and storable energy carriers. In particular, also to offer certifiable CO₂-free, unpolluted energy to new energy-intensive industries.

INTERLOCUTORS AND CONTACT PERSONS

CEO Dr.-Ing. Bernd Wiemann and CFO Olav Carlsen will be happy to provide you with background information or an interview concerning the work of Hydrogen Rise AG, its prospects for a global hydrogen economy and the experience gained from the cooperation in Oman.

For more information and appointments, please contact:

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