Oman hydrogen energy storage

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The Sultanate of Oman has launched an ambitious green hydrogen program. Green hydrogen and its derivatives constitute a strategic opportunity for the country to ensure its energy security and diversify its economy while supporting the decarbonization efforts of hard-to-abate sectors both in Oman and around the world.

Oman is blessed with very strong renewable resources, positioning it as one of the most attractive locations globally to produce green hydrogen competitively and at large-scale. Oman has, as such, set ambitious green hydrogen production targets, to cover both local demand as well as exports globally.

Besides its favorable natural resources, Oman is an economically and politically stable country, offering an attractive destination for foreign investors with a highly competitive offer. In addition, Oman offers world-class logistics and infrastructure to support the localization of industries.

Muscat:Hydrom, the Sultanate"s green hydrogen orchestrator, announced signing two new green hydrogen projects in Dhofar worth US$ 11 billion. The signings follow the successful completion of Hydrom"s second round of auctions bringing the total hydrogen production in Oman to 1.38 million tonnes per year (mtpa) by 2030.

Hydrogen storage remains a critical challenge for global hydrogen adoption, with nations and corporations eager to expand the use of low-carbon fuels as part of climate change mitigation efforts. Oman’s underground storage capabilities offer a promising avenue for investments that could drive renewable energy utilization in hydrogen production while reducing carbon emissions. This positions Oman as a pivotal regional player in underground hydrogen storage.

The workshop provided insights into modern technologies and projects related to underground energy storage in the European Union and North America. It also sheds light on the vast opportunities Oman presents in this sector.

Oman’s prowess in underground hydrogen storage sets the stage for future global investments, further solidifying its role in this vital domain. This event precedes the Oman Green Hydrogen Summit scheduled for December, where the latest technologies and investment prospects in underground hydrogen storage will take center stage under the Ministry of Energy and Minerals’ patronage.

Hydrogen storage is indispensable for the clean fuel economy, especially as hydrogen aims for widespread adoption. Existing hydrogen production methods remain costly, making them less competitive against fossil fuels. Therefore, the development of cost-effective and reliable storage systems is imperative to propel this sector forward.

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Recent research has highlighted oil and gas reservoirs as ideal solutions for underground hydrogen storage. Utilizing depleted oil and gas reservoirs to store future fuel could reduce storage costs to $1.29 per kilogram. This approach leverages cutting-edge technologies in geological storage, akin to methods used for natural gas and carbon dioxide storage.

Oman’s green hydrogen production potential has captured the International Energy Agency’s attention and garnered praise from foreign experts. It’s poised to become a top contender for global hydrogen exports by 2030.

Oman has set ambitious goals, aiming to produce at least one million tonnes of green hydrogen by 2030, with projections reaching 3.75 million tonnes by 2040. By 2050, Oman’s green hydrogen production is expected to double to 8.5 million tonnes, surpassing current European hydrogen demand.

The International Energy Agency has high hopes for Oman, envisioning it as the sixth-largest global hydrogen exporter and the largest in the Middle East by 2030 if the hydrogen production roadmap stays on course. Achieving Oman’s one-million-tonne green hydrogen target by 2030 necessitates a colossal 50 TWh of electricity and an investment of $33 billion.

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