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2pm (Rome time) - Aula Ruffini, Dip. di Scienze della Terra, Torino
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Underground Hydrogen Storage: techniques, challenges and future outlook

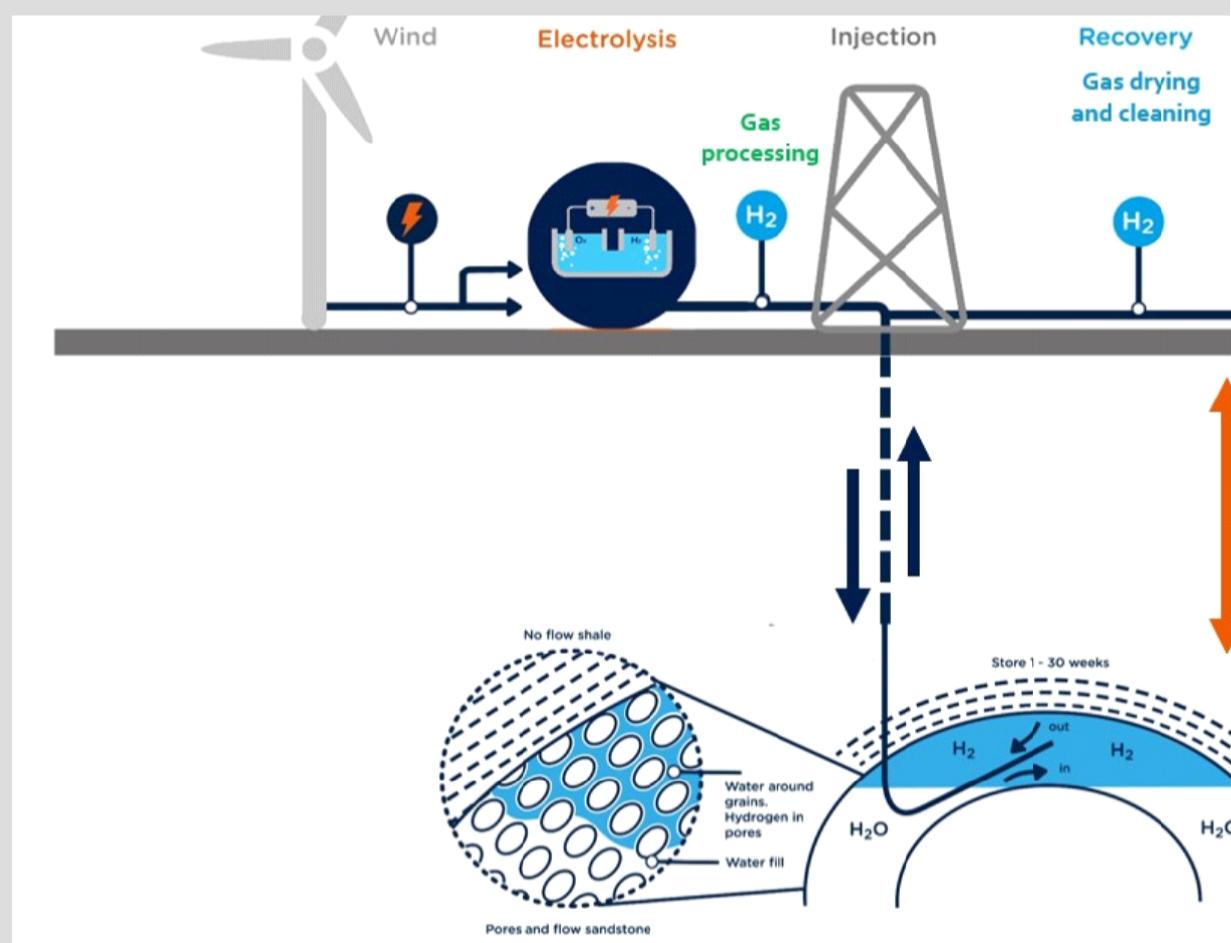
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Underground hydrogen storage (UHS) refers to the injection of hydrogen into porous and non-porous geological formations for subsequent withdrawal and reuse during off-peak periods, thereby contributing to the energy mix. UHS has been proposed not only as a large-scale solution for storing fluctuating renewable electricity in chemical form, but also as a pathway to use hydrogen produced via water electrolysis for additional applications, such as transport fuel and as an additive or substitute for natural gas. Recently, UHS has attracted considerable attention due to its potential efficiency for large-scale hydrogen storage. However, a thorough understanding of both subsurface reservoir characteristics and storage processes is essential to ensure safe operation, effective monitoring, and preservation of reservoir integrity during injection and withdrawal cycles.

This talk will provide an overview of the main storage techniques, with a focus on key geological and geophysical challenges. Specifically, I will: (1) introduce the broader energy context underpinning these techniques, (2) discuss the properties and behaviour of hydrogen in subsurface settings, (3) examine the required rock properties of porous formations and salt deposits suitable for hydrogen storage, and (4) review existing pilot studies worldwide, with a particular focus on initiatives in Italy.



The Speaker

David Iacopini is associate professor of subsurface and marine geology at the University of Naples Federico II. His research interest focuses on characterizing the subsurface structure and physical properties for both tectonic reconstruction and energy purposes. He combines field, subsurface data and geophysics techniques. He is currently leading industry, PNRR and EU projects on Underground Hydrogen storage.

