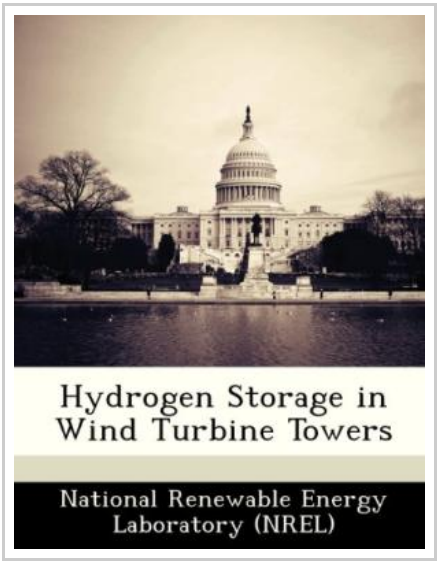

Hydrogen Storage in Wind Turbine Towers

By -

Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Low-cost hydrogen storage is recognized as a cornerstone of a renewables-hydrogen economy. Modern utility-scale wind turbine towers are typically conical steel structures that, in addition to supporting the rotor, could be used to store hydrogen. This study has three objectives: 1) Identify the paramount considerations associated with using a wind turbine tower for hydrogen storage; 2)Propose and analyze a cost-effective design for a hydrogen-storing tower; and 3) Compare the cost of storage in hydrogen towers to the cost of storage in conventional pressure vessels. The paramount considerations associated with a hydrogen tower are corrosion (in the form of hydrogen embrittlement) and structural failure (through bursting or fatigue life degradation). Although hydrogen embrittlement (HE) requires more research, it does not appear to prohibit the use of turbine towers for hydrogen storage. Furthermore, the structural modifications required to store hydrogen in a tower are not cost prohibitive.; We discovered that hydrogen towers have a crossover pressure at which their critical mode of failure crosses over from fatigue to bursting. Above the crossover pressure, however, storage costs rise quickly. The most...

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