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Metal Hydride Based Hydrogen Storage System

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TECHNOLOGY READINESS LEVEL (TRL)

- TRL 4

PATENT/ GRANTED NUMBER

- MY-176842-A

TECHNOLOGY OVERVIEW

The present invention relates to a metal hydride based hydrogen storage system comprising of a frame structure having a base; a pair of side frames erected vertically from two opposing sides of the base; a plurality of corresponding spaced apart shaft members, running horizontally from edge to edge at each side frame, to define different levels inside the frame structure; at least two bars connecting each corresponding shaft member on the two side frame to form a platform accommodating one or more canister at each level; and a plurality of U-bolts fashioned to removably secure onto the bars to fasten the canisters onto the platform; a mounting plate mounted on top of the frame structure having a plurality of check valves, a plurality of pressure gauges and a pressure regulator; an inlet tubing connected to the first pressure gauge on mounting plate for

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hydrogen inlet; and an outlet tubing connected to the third pressure gauge on mounting plate for hydrogen outlet; wherein the canisters fastened in the frame structure are connected to the mechanical ball valves on the mounting plate using connecting tubing for storing hydrogen in the system. The present invention provides passive ventilation using ambient air for cooling the canisters in the system and allows continuous operation of the canisters upon maintenance in one or more canisters through the application of check valves wherein the canisters are made from metal hydride material. The metal hydride based hydrogen storage system is utilized in a solar electrolysis hydrogen refueling system for hydrogen storage in the system.

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