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Hydrogen: It's All Down Hill

The purpose of this experiment was to show that regenerative braking in a truck does generate significant electricity which could be run through an electrolyzer and stored as hydrogen. To conduct this experiment a trailer was redesigned and upgraded to simulate regenerative braking @ a 1:40 scale. The 4 wheeler/trailer combination weighed 1 ton, while a semi truck weighs 40 tons. Trial runs were conducted on a 2.5 mile section of road with a 7% grade. Next, an electrolyzer which could handle 4v DC was used to turn electricity into hydrogen. It was a 1:25 ratio for the electricity used in the electrolyzer versus the electricity generated in a trial run. The hands on trial run of this trailer shows that the amount of electricity generated by trucks with regenerative braking descending from west bound Eisenhower Tunnel and Vail Pass could be used to power the County of Delta, Colorado; a population of 31,000. If converted to hydrogen, one truck would generate 50,000 cm /min of hydrogen. The magnitude of the effect that regenerative braking in trucks can have on the world today is truly amazing. This is just two passes in Colorado. The results of this experiment indicate that my hypothesis should be accepted that a truck with regenerative braking can travel down a slope and convert the braking energy to hydrogen for later conversion to electricity or to be used as hydrogen.