ME 440 Energy Engineering Preliminary Design

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Embry-Riddle Hydrogen

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**ABSTRACT**

Educating students about hydrogen production and storage is crucial to the development of the hydrogen economy. To accomplish the goal of hydrogen education, ERH2 proposes a hydrogen production and storage demonstrator consisting of an alkaline electrolysis unit to produce hydrogen and a material-based hydrogen storage using graphitic carbon nitride. The graphitic carbon nitride allows for storing hydrogen without specialty equipment, saving cost and energy. The system will cost approximately $1800 and operate at 20 Amps producing 0.0142 grams of hydrogen gas per minute. The electrolysis unit will have a clear polycarbonate housing to make the internal components viewable, increasing the educational value. The storage will demonstrate its ability to store and release hydrogen to run the Embry-Riddle fuel cell. The proposed design is a safe and educational method to introduce students and the general public to hydrogen production, storage, and economy.