# System Level Requirements

## 1.0 Function

1.1 The system must produce hydrogen gas.

1.1.1 The system must produce 0.02 grams of hydrogen gas to run the fuel cell for 10 minutes at 1 watt.

1.2 The system must store 0.04 grams of hydrogen gas.

1.3 The system must use DC power to be able to use both alternative energy sources and battery power.

## 2.0 Safety

2.1 The system must allow for safe extraction of hydrogen gas without risk of major leaks.

2.2 The system must follow Embry-Riddle Prescott Campus’ safety requirements. <https://myerauedu.sharepoint.com/teams/APPM/section-2/Pages/2-4-policy.aspx>

## 3.0 Educational

3.1 The system must serve as an educational demonstrator or lab device for the student body of Embry Riddle Prescott campus.

3.1.1 The internal system components should be visible for educational purposes.

3.1.2.1 The system must display the approximate amount of hydrogen gas being produced.

3.1.2.2 The system must display the approximate amount of hydrogen gas stored.

3.1.3 The system must have a learning feature about the hydrogen economy and where it could go in the future.

3.1.4 The system must display all values used for demonstration purposes in English units.

## 4.0 Performance

4.1 The material storage efficiency (hydrogen in vs. Hydrogen out) must be at least 50%.

4.1.1 The fuel entering the system will produce hydrogen gas at 50%.

4.2 The system must include a proposed Energy Land layout.

4.2.1 The system must be movable.

4.3 The electrolysis unit to fuel cell system must be able to run for 20 minutes.

4.4 The material storage to fuel cell system must be able to run for 10 minutes.

## 5.0 Human Factor

5.1 The system must operate in a room that has a fire/smoke alarm system if working indoors.

5.2 The system should be easy to operate by authorized users.

# Electrolysis Subsystem Requirements

## 6.X Function

# Material Storage Subsystem Requirements

## 7.X

# System Integration Subsystem Requirements

## 8.X Integration from Electrolyzer to Piping

X.X.X H2 will have a secure connection point from the electrolyzer to the piping subsystem.

X.X.X.X The interface between the piping and electrolyzer will be through direct insert piping.

X.X.X H2 will have a secure connection point from the piping and the material storage.

X.X.X.X The interface between the piping and the material storage will consist of a rubber stopper

# Extraction Subsystem Requirements

## 9.0 Extraction

# Piping Subsystem Requirements

## 10.0 Function

XX.1

## 10.1 Integration

## XX.0 Safety

XX.1 Follow ASME B31.12 as necessary

## XX.0 Verification?

# Interactive User Interface Subsystem Requirements

## 11.0 Function