03.110 Electrolysis System Checkout
(03. HSS Procedure)

OBJECTIVE:

To perform a system checkout of the Solid Polymer Electrolysis (SPE) System.

EQUIPMENT:

PPE safety glasses
PPE Kobalt work gloves
PPE static wrist tether
Coolant pump water syringe
Alkaline water container

L2C 1. CONFIRM AUXILIARY ELECTROLYSIS CANISTER WATER LEVEL

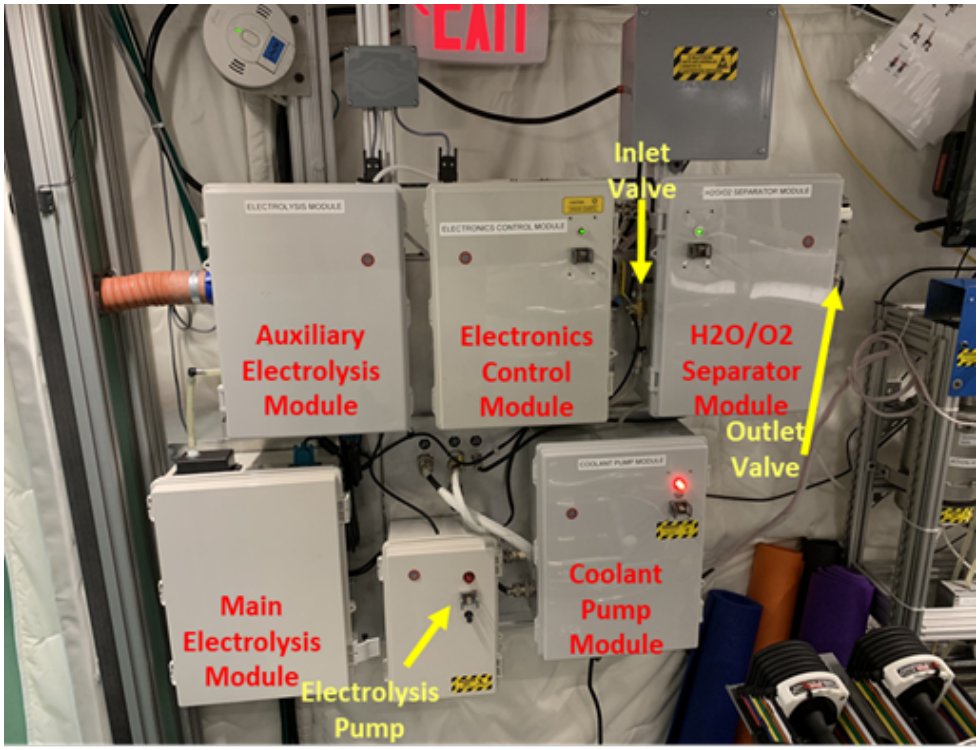

Figure 1: Solid Polymer Electrolysis System

1.1 Don static wrist tether and attach to any unpainted metallic surface.

1.2 Don PPE safety glasses.

1.3 Don PPE gloves.

1.4 Unlock both latches to Auxiliary Electrolysis Module and open door (see Figure 1).

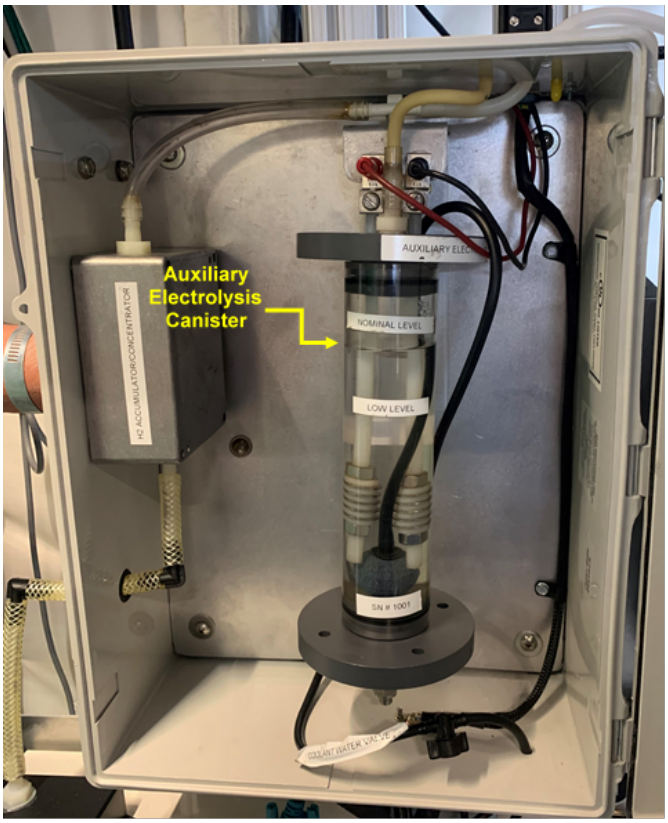

Figure 2: Auxiliary Electrolysis Module

1.5 Note the level of water in the Auxiliary Electrolysis Canister (see Figure 2).

{If water level is below “LOW LEVEL”:

Perform the rest of step 1

Else:

Proceed to step 2.}

1.6 Switch “Coolant water outlet” valve to “CLOSED” (see Figure 1).

Confirm outlet water valve is perpendicular to hose.

1.7 Unlock both latches to H2O/O2 Separator Module and open door.

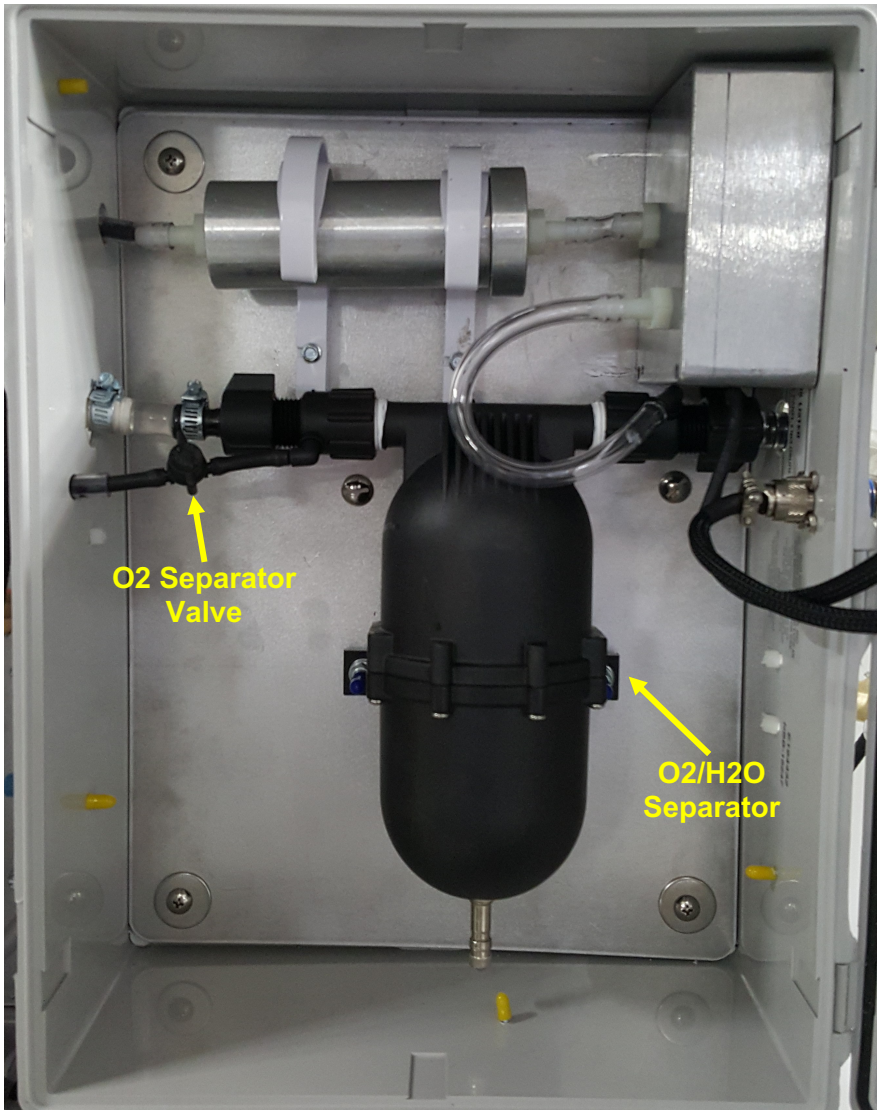

Figure 3: H2O/O2 Separator Module

NOTE
Read through step 1.10 before attempting step 1.8. As soon as the valve is opened in step 1.8, the water will enter the Auxiliary Electrolysis Canister. The fill rate takes ~2 minutes if completely empty.

1.8 Switch O2 Separator Valve to open by turning tabs 90 degrees counterclockwise(see Figure 3).

Confirm O2 Separator Valve tabs are parallel to hose.

1.9 Monitor Auxiliary Electrolysis Canister until water level reaches “NOMINAL LEVEL”.

1.10 Switch O2 Separator Valve to Closed by turning tabs 90 degrees clockwise.

Confirm O2 Separator Valve tabs are perpendicular to hose.

1.11 Close H2O/O2 Separator Module door and lock both latches

1.12 Switch outlet valve on right side of H2O/O2 Separator Module to “OPEN” (see Figure 1.)

Confirm outlet water valve is parallel to hose.

1.13 Close Auxiliary Electrolysis Module door and lock both latches.

L2C 2. CONFIRM COOLANT PUMP SUPPLY TANK WATER LEVEL

2.1 Unlock both latches to Coolant Pump Module and open door (see Figure 1).

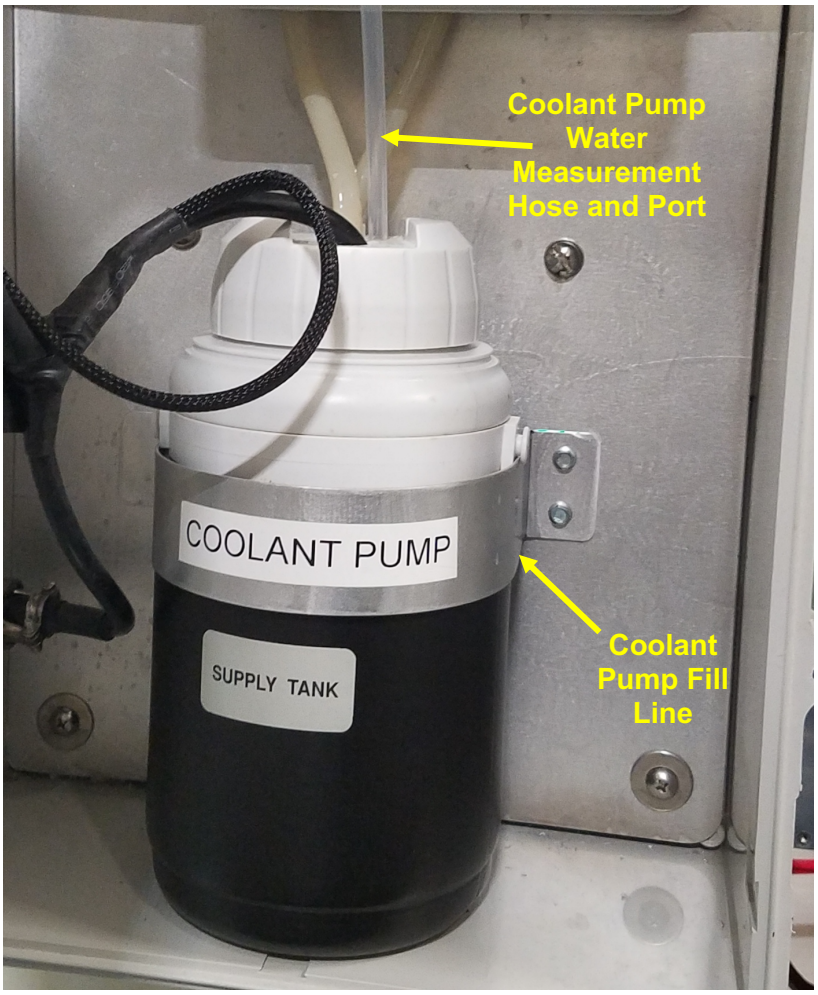

Figure 4: Coolant Pump Module

2.2 Doff gloves and static wrist tether.

2.3 Place index finger over end of Coolant Pump Water Measurement Hose to create a vacuum seal. (see Figure 4).

2.4 Keeping finger on hose, remove hose and note the water level in the Coolant Pump Water Measurement Hose.

-If water level is below “NOMINAL LEVEL” on hose:

Perform the rest of step 2

-Else:

Proceed to step 2.14.

2.5 Place Coolant Pump Water Measurement Hose back into Coolant Pump, release index finger to remove vacuum seal, and release the hose water back into coolant pump. Do not let go of the hose.

2.6 Remove hose and temp stow in galley sink.

2.7 Insert the hose end of the Coolant Pump Water Syringe into the Alkaline Water Container.

2.8 Pull syringe to withdraw 100 CCs of water from the Alkaline Water Container.

{If the Alkaline Water Container is low on water: Insert the black hose attached to the

Alkaline Water Container into the clear hose of the syringe to withdraw water.}

2.9 Insert syringe tube into Coolant Pump water port and push plunger until syringe is empty.

2.10 Remove syringe from Coolant Pump and temp stow in a Ziploc bag.

2.11 Retrieve Coolant Pump Water Measurement Hose from galley sink and insert into Coolant Pump Supply Tank. Confirm “Nominal” is on top of “Low” to ensure hose is upright and not upside down.

2.12 Place index finger over end of Coolant Pump Water Measurement Hose to create a vacuum seal and measure the water level.

2.13 Remove hose and note the water level in the Coolant Pump Water Measurement Hose.

{If water level is below “NOMINAL LEVEL” on hose:

Remove syringe plunger from syringe tank and repeat steps 2.7 to 2.12

Else:

Proceed to step 2.14.}

2.14 Place Coolant Pump Water Measurement Hose back into Coolant Pump.

2.15 Close Coolant Pump Module door and lock both latches.

L2C 3. CONFIRM MAIN ELECTROLYSIS MODULE WATER LEVEL

3.1 Unlock both latches to Main Electrolysis Module and open door (See Figure 1).

3.2 Visually inspect each of the 4 Main Electrolysis Canisters.

-If water level is below “NOMINAL LEVEL” on any of the 4:

Perform steps 3.3 to 3.5 for each low level canister

-Else:

Proceed to step 3.8.

3.3 Retrieve Coolant Pump Water Syringe from temp stow Ziploc bag (See Figure 5).

3.4 Fill syringe tank with 100 CCs of water from the Alkaline Water Container.

3.5 Attach syringe tube to blue-taped black hose on Main Electrolysis Canister and push plunger until syringe is empty.

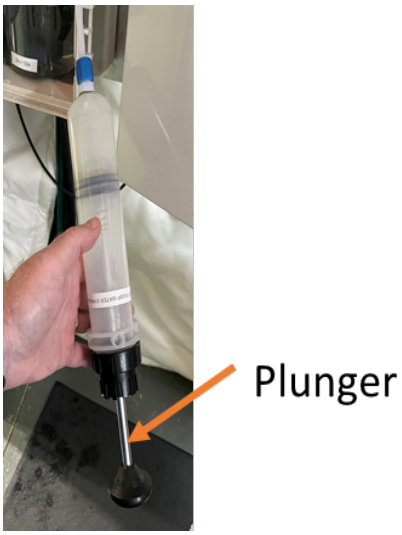

Figure 5: Syringe

3.6 Pull back on plunger handle to purge excess water in Main Electrolysis Canister line before disconnecting.

3.7 Repeat steps 3.4 – 3.6 until all 4 canisters are at “NOMINAL LEVEL”.

3.8 Close Main Electrolysis Module door and lock both latches.

3.9 Doff PPE safety glasses.

3.10 Stow all tools and materials.