



PP30 Gasifier Prestart Duties

For a list of all parts of the Power Pallet including a list of parts, definitions and all other useful information see the *PP30 Component Reference* document

Gas Making Supersystem

1. Manually check the air inlet swing-check valve on side of pyroreactor for free movement
 - a. Remove the plug that is screwed onto the air inlet swing-check valve and push the swing-check valve with your finger to check if it swings freely (Image 2).
 - i. If stuck, use a suitable tool such as the back end of a wrench to knock it loose and then assure that it swings freely.
 1. Hitting the brass valve will not damage it
 - ii. If it does not, clean it by spraying it with alcohol while manually moving the flapper. Wear gloves during this procedure
 - b. Reinstall the plug



Image 1

2. Empty the “Ash Collection Vessel” (ACV) following site procedures (Image 2)
 - a. **CAUTION** Before opening up the ACV make sure that the area is well ventilated and are wearing proper PPE
 - b. Remove the sanitary clamp holding the ACV to the unit
 - c. Empty the can into its appropriate receptacle
 - d. Record data according to the site procedures
 - e. Replace the ACV onto the unit, and secure it with the sanitary clamp
3. Empty the “Cyclone Collection Can” (CCC) following site procedures. (Image 2)
 - a. **CAUTION** Before opening up the CCC make sure that the area is well ventilated and are wearing proper PPE
 - b. Remove the sanitary clamp holding the CCC to the unit
 - c. Empty the can into its appropriate receptacle
 - d. Replace the CCC onto the unit, and secure it with the sanitary clamp



Image 2

4. Ensure that the hopper is filled with feedstock either manually or with the Continuous Feed system (refer to feedstock specifications in your manual for more information)
 - a. **NOTICE:** when starting the Power Pallet for the first time or after maintenance that removed the charcoal has been performed, fill the reactor with charcoal until

it reaches the tip of the feedstock switch. If there is not enough charcoal provided, use locally sourced charcoal (e.g. sifted ACV char). The correct size of the charcoal to use to fill the reactor is roughly that of the charcoal produced from the ACV. APL provides an initial bag of the correct size for starting the power pallet the first time.

5. Check that the CO detector works by pressing the test button, and listening for the beep
6. Turn on the automation assembly by flipping the power switch (Image Set 3)



Image Set 3

7. Record data per site operating procedures.
8. Check functionality of ash auger and grate shaker from PCU control (Image Set 4)
 - a. Grate shaker check
 - i. Press next once from the status screen to get to **manual controls**

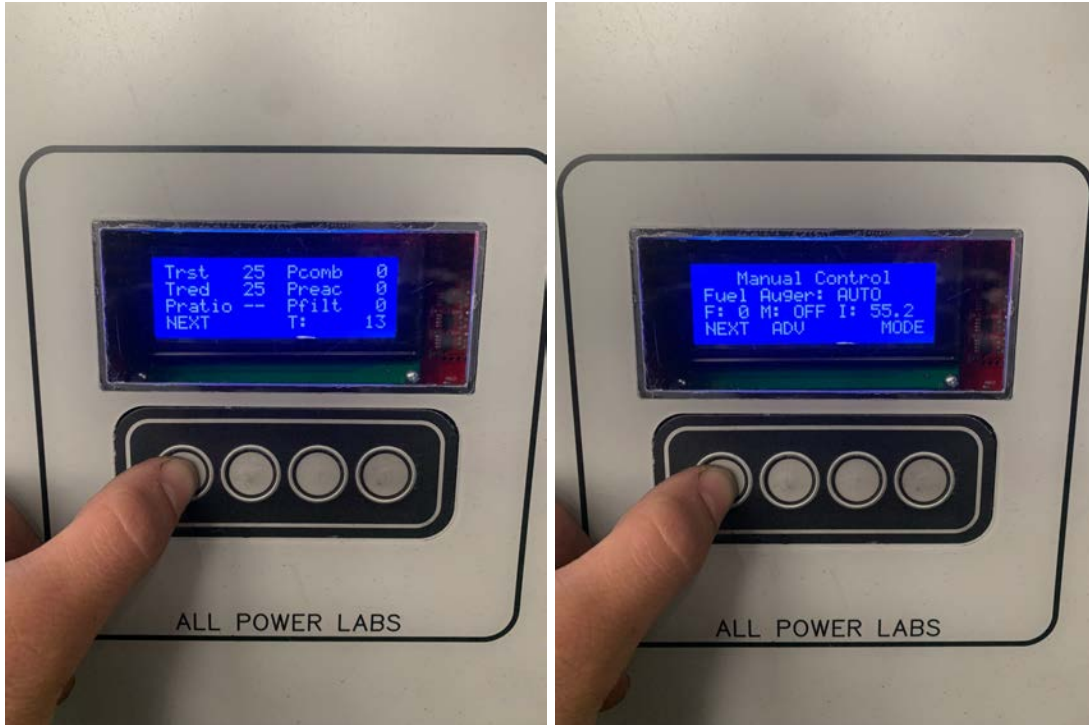


Image Set 4

- ii. Press adv once to advance from *fuel auger* to *grate shaker* (Image 5)



Image 5

- iii. Press mode twice to change from **auto** to **on** (Image 6)



Image 6

- iv. Run for a few seconds, listen for the shaker functioning and then press mode once so display reads auto (Image 6)



Image 7

b. Ash auger function test

- i. Ensure status screen is on **manual control** (Image Set 8)

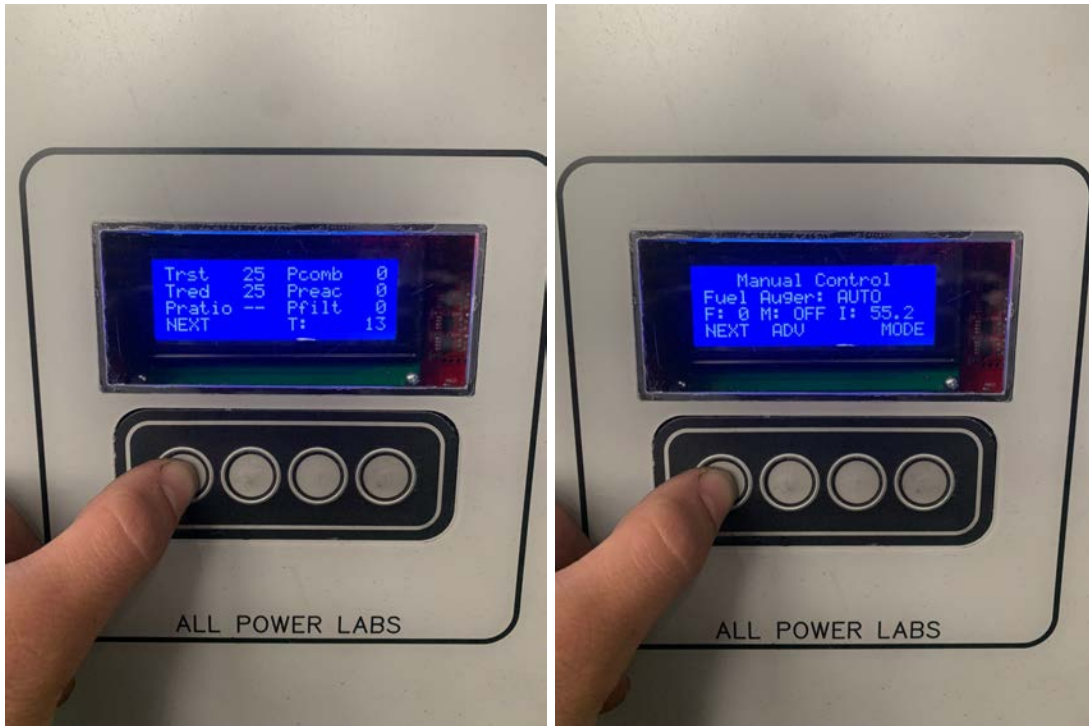


Image Set 8

- ii. Press adv twice to advance from **fuel auger** to **ash auger** (Image 9)



Image 9

- iii. Press mode twice to change from **auto** to **on** (Image 10)



Image 10

- iv. Leave on for one minute, visually confirm rotation by going around the back of the Power Pallet and looking at the gears that turn the ash auger, they are attached to the bottom of the cowling near the Reactor Access Door (Image 11)



Image 11

- v. Then press mode twice so display reads **auto**
- vi. Return to the status screen by pressing next

9. Perform a Leak Down test (this is a test where we determine if there is an air leak in the system) (Image Set 12)
 - a. Open the flare valve by turning it until it is vertical and close the valve to the engine by turning it horizontally
 - b. Ensure that the air inlet plug is tight
 - c. Turn the gas blower up to 11 (the maximum setting) to apply vacuum to the entire gas circuit
 - d. Check if Test Criteria #1 is passed
 - e. Shut the flare valve, then turn off the blower. The valve should lock in the vacuum pressure
 - f. Check if Test Criteria #2 is passed

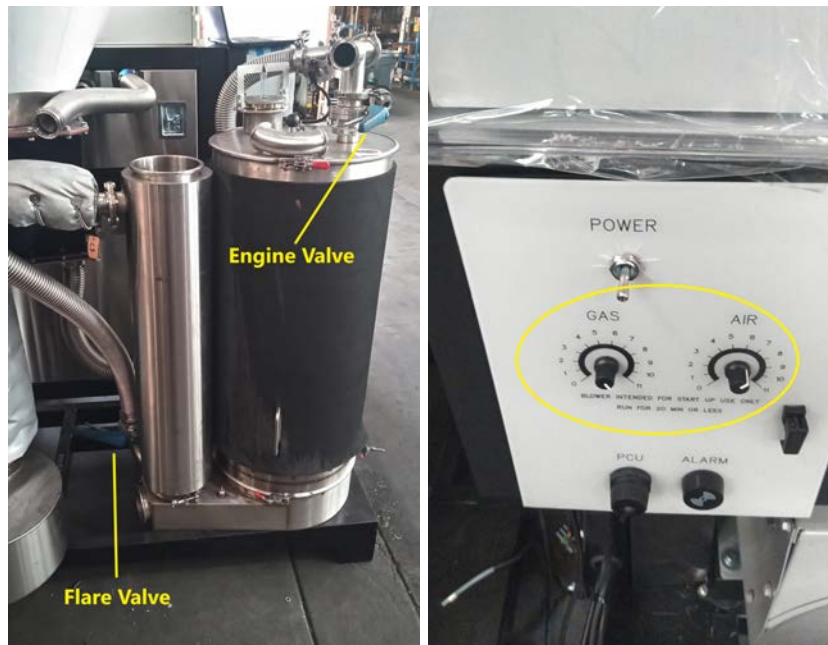


Image Set 12

Test criteria #1: When the numbers indicated for **Preac** and **Pcomb** on the PCU

stop rising:

- **If the reactor pressure reading is near or >90**, the reactor passes the first leak test
- **If the pressure is <90, the test fails.** It may be that the battery has insufficient charge, there is a significant leak, blowers need to be checked, or there is a large pressure drop in the system. This needs to be solved before continuing. See (troubleshooting doc)

Test criteria #2: After closing the flare valve, the pressure will begin to drop. Immediately after the valve is closed, start timing. Watch as the pressure drops on the PCU (seconds in the lower right corner)

- **Takes >30s to reach 0.** This is typical for new and well sealed systems. The reactor passes the leak test
- **If the pressure drops to zero <30 sec**, the reactor fails, and should not be operated until the leak is repaired. This time can be counted, or monitored with the timer in the bottom right of the PCU

If the test fails, check, clean, grease and tighten all gasifier gas connections, bolts, and sanitary clamps, anywhere where air could leak into the system. See [Troubleshooting](#) document for more information on repairing and finding air leaks.

GASIFIER PRE-START PROCEDURE COMPLETE