



PP30 Gasifier-Engine Startup

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

Collect the following items

1. ½" NPT Pipe tee for lighting port
2. Sifted ACV Charcoal
 - a. Sift ACV using a screen (wear proper PPE)
3. Propane torch
4. Small Pipe wrench
5. Heat protective gloves
6. Ear and eye protection

Gas-Making Supersystem

CAUTION Before starting up the Power Pallet sure that you are in a well ventilated area and are wearing proper PPE

1. Ensure power is on (Image Set 1)
2. Remove cap from lighting port
3. Attach pipe tee to lighting port, a single turn is enough
4. Place a few grams of ACV charcoal in pipe tee
5. Close both flare & engine valve by turning to horizontal and turn gas up to 11 (Image 2)



Image Set 1



Image 2

6. Using a propane torch, light the ACV char in pipe tee (Image Set 3)
7. When char is glowing, slowly open the flare valve, letting the embers be sucked into the reactor
8. If any charcoal is stuck in the tree, light it if not glowing, and poke it into the reactor



Image Set 3

9. When the top of the flare stack starts to smoke (should take a several minutes depending on feedstock and weather conditions) the producer gas should ignite
10. If the flare stack does not smoke, and Trst on the PCU screen does not start to climb, repeat steps 4-7. If Trst is climbing, and no smoke is seen, check that the flare valve is open, and that Preac is a negative number
11. If Trst is slow to climb, the grate shaker can be activated to speed the process up
12. Once ignited, turn the air to 5. A loud roaring sound indicates that the PP is flaring properly
13. Remove air intake plug (with wrench if needed)
14. Wearing heat resistant gloves, remove the pipe tee and reinstall the ½" NPT cap on the lighting port and tighten lightly with the pipe wrench
15. Increase the air blower to 7 and continue to adjust to maintain a strong roaring sound from the flare to allow the reactor to reach full operating temperature. This can take 10-15 minutes
16. Once Trst (PCU - temperature at the restriction zone) is greater than 750°C and Tred (PCU - temperature at the reduction zone) is greater than 300°C, the engine can be started using the following steps (note: while the engine can be started at lower values, the PP30 system will accumulate more tar and require more maintenance)

Power Generation Supersystem

1. Turn both the gas and air down to 0, close the flare valve, and open the engine valve (turn it vertically)
2. On the generator controller, press **Stop/Reset**, then **Manual Mode**, then **Start** button to start the engine
3. The status screen will confirm that the engine is running and count down timers will elapse for about 1 minute. If the engine does not start, repeat the process up to 3 times. See *Troubleshooting* if engine still does not start
4. Once the engine has warmed up, the 'Generator Available' light (listed as 2 on the Four Configurable status LEDs table below) will turn on. Press the **Close Generator Button** to close the connection to the generator and export power/energize load



Image 5

Four Configurable status LEDs

1	Bus Live
2	Generator Available
3	Contactor Closed
4	Power Export

GASIFIER-ENGINE STARTUP PROCEDURE COMPLETE