



BDL-275-PPSX Batch Operating Sequence

Congratulations on joining the world of small scale Biodiesel Production; Take time to become intimately familiar with every aspect and feature of your new processor, find the location of each tagged valve and each one of the process buttons and switches. Each one of them plays an important part in the proper operation and function of the processor. If you feel comfortable with the location of all of the valves, buttons and switches it is time to proceed with making your first batch of Biodiesel.

1. Check all isolation valves and make sure that they are in the open position and fill the Stage One Reaction vessel (preconditioning tank) with feedstock to the 1040 liter level
2. Turn on the control power switch
3. Press the preheat switch the unit will begin the preheat stage, if the oil is cold this stage could take several hours to complete when complete the preheat light will go out let the oil temperature fall to below 120 degrees F
4. Drain off or pump off all accumulated water from the bottom of the vessel
5. Press Glycerin transfer #2 and pump the Glycerin from the Stage Two Reaction Vessel over to the Stage One Reaction vessel.
6. When Glycerin transfer is complete press the Pre-Treat button to start the Stage One Reaction.
7. When the Pre-Treat period times out the glycerin will fall through the oil just as normal reaction will. When the glycerin fallout is complete move to the next step
8. Press Glycerin transfer #1 and pump the Glycerin from the Stage One Reaction Vessel over to a suitable storage vessel.

9. Transfer the oil from the Stage One Reaction Vessel into the Stage Two Reaction Vessel by pressing the Oil transfer switch the pump will shut off when the vessel is empty
10. Press the Re-heat button; This will enable the process to gently preheat the feedstock to 140 degrees F and maintain it at that temperature until you are ready to proceed to the next step
11. Refill the stage one reaction vessel (preconditioning tank) with feedstock to the 1040 liter level
12. Press the Pre-Heat switch the unit will begin the preheat stage, if the oil is cold this stage could take several hours to complete when complete the preheat light will go out; let the oil temperature fall to below 120 degrees F
13. Drain off or pump off all accumulated water from the bottom of the vessel
14. Once the feedstock in the stage two reaction vessel has reached temperature it is time to move on to the React phase of the process; Press and hold the Glycerin Drain button for 60 full seconds; this operation insures that you have true clean conditioned feedstock available in the suction manifold to draw a sample from
15. Open the titration sample valve slowly and draw aprox 400 milliliters of feedstock for a sample to titrate. Close valve
16. Titrate feedstock to determine the amount of KOH or NAOH to add to the methanol to generate the reaction process
17. Open air valve and adjust regulator (if necessary) to establish air pump stroke rate of 2 strokes per second
18. Fill methyl/oxide mixer drum to the indicated 55 gallon mark
19. Close air valve
20. Weigh out KOH or NAOH as dictated by titration
21. Remove the cam-lock plug from the methyl/oxide Mixer drum and using a wide mouth funnel pour in the prescribed amount of KOH or NAOH
22. Replace the cam-lock plug
23. Press the Mixer button; The Mixer runs for 7 minutes
24. After the Mixer times out Press the React button
25. open manual injection valve and press the Inject Button to start the injector pump and inject the methyl/oxide into the process pump suction stream
26. When all of the methyl/oxide has been injected into the feedstock the injector pump will automatically shut off, close the manual injection valve and (secure the bulk methanol drum and move it away from the processor)
27. The process pump will continue to run for aprox 1 hour and will then time out; at this point the glycerin will begin to fall out of the raw biodiesel. The amount of time it will take for all of the glycerin to fall out of the raw biodiesel will vary from batch but should take at least 2 to 2 1/2 hours to complete
28. When you are reasonably sure all of the glycerin has fallen Press and hold the Glycerin button to pump out the glycerin out to the top of the stage one reaction vessel ( note you will have at a minimum 55 gallons to 60 gallons of glycerin to remove from the reactor) when you see the color phase change at the glycerin hose discharge release the Glycerin Drain button and (secure the glycerin container and move it away from the processor)
29. Press the pretreat button on the stage one vessel to allow the pretreat pump to operate it will time out in less than 15 minutes. at this point the glycerin will begin to fall out of the raw biodiesel. The amount of time it will take for all of the glycerin to fall out of the raw feedstock will vary from batch to batch but should take at least 1 to 2 hours to complete
30. Press the Methanol Recovery button and open the water valve to establish cooling water flow through the methanol recovery condenser. The unit will now start the methanol recovery stage which will take two hours then will time out.
31. Press the Fuel transfer button to move the raw biodiesel to the interim storage tank.
32. Press the Dry Wash button; After about two minutes check the pressure gage on the methanol recovery heater the proper flow rate is 5 lbs to 6 lbs. The Dry Wash cycle will take aprox 2 ½ hours more or less to complete.
33. Repeat all steps above for your next batch of Biodiesel

Note at all times when handling potentially dangerous chemicals such as methanol, KOH or NAOH it is recommended that safety precautions such as wearing protective gloves and a respirator be a matter of normal operation.