

The LFG is then directed to an automatic block valve. They are usually butterfly valves that are fitted with either a pneumatic, electric or a electric-hydraulic actuator. The valve is normally fitted with a valve position indicator.

The LFG is next transported to a flame arrester which is located immediately upstream of the flare. Test ports are usually installed to enable differential pressure measurement across the flame arrester. This allows checking for the plugging of the flame arrester element. Flame arresters usually have locations for the installation of such pressure measuring devices. If not already installed it is a good practice to do so. A high temperature sensor or fusible safety shutoff device is sometimes installed downstream of the flame arrester, this acts as a safety shutdown switch in the event of a flash back of the flare flame in the pipe.

The LFG then arrives at the actual flare where it is burned.

Typically the LFG flare is equipped with a propane or natural gas pilot ignition system and the flame safeguard system mentioned earlier. In some locations solar powered igniters can be used. The flame safeguard system is usually of the ultra-violet or thermocouple type. The purpose of the flame safeguard controller is to insure that the pilot and main flare have ignited and that the main flame is maintained. It shuts the flare down in the event of a flame failure.

7.3.2 Routine Monitoring

The following parameters must be monitored on a daily basis.

- Explosivity meter
- Flare Temperature
- LFG Flow
- Units of LFG sold or kilowatts produced
- Blower discharge temperature
- Blower motor amps
- Flame arrester differential pressure
- Valve positions
- Weather conditions
- Comments and problems encountered or repairs made

7.3.3 Checklist - Startup

1. Ensure that the flow control valves of selected gas wells in the LFG wellfield are appropriately set. Set each wells flow rate immediately after starting up the blower for the first time.
2. Open the main block valve at the inlet of the blower-flare facility. (It should normally be throttled to about a 10 to 25% open position (range of travel) depending upon flow setting needed.)

3. Open the inlet and outlet valves to the inlet separator. Close the bypass valve if present.
4. Open the inlet and discharge block valves for each blower to be operated and close the block valves for non-operating blowers.
5. Verify the propane or natural gas system is ready to start.
6. Walk through the flare station to verify that there are no gas leaks or unusual odors.
7. Turn the power switch to the "On" position.
8. Set any "Hand-Off-Auto" switch for each blower to be run in an "Auto" position. Leave each blower which is not to be run in the "Off" or "Standby" position.
9. Verify that all alarms have been reset by pressing the main control panel "Alarm Reset" button.
10. Turn the automatic block valve switch to "Auto" position.
11. Press or turn the "Start" button to initiate the automatic start up sequence.
12. The blower should come on, the automatic block valve should open, and the flare should light. Watch for the flowmeter indicator to indicate flow and then verify that the flare main burner is lit. If flame fails to prove on an automatic system, the flare should time out and lock out. If manually controlled if the flare fails to light, shut the system down and allow sufficient time for a convection purge, before attempting a re-light.
13. Once the flare is lit and proven, check to be sure that combustion is satisfactory and that the main fuel pressure (burner back pressure) and LFG flow to the flare is satisfactory.

Once online verify the following:

1. Automatic block valve is fully opened.
2. LFG flow is adequate to satisfy minimum flow requirements of blower and flare.
3. Listen for abnormal blower and motor sound
4. Check for unusual odors that could indicate a gas leak.
5. Once the flare operation has stabilized, verify performance, temperature, and flow.
6. Visually observe combustion inside the flare by looking through the view ports

7. Verify damper operation.

7.3.4 Checklist – Routine

1. The landfill gas collection system should be operated according to the specifications of the manufacturer and the engineer.
2. Only individuals undergoing the proper training should operate any aspect of the landfill gas collection system. Those parties responsible for any aspect of operating the landfill gas collection system must be identified in the bioreactor operations planning meeting.
3. The landfill gas collection system should be inspected for leaks, broken pipes, and damaged hoses. Any sounds indicating possible air entrance into the system should be inspected further even if the leak is not visible.
4. All manipulations to the air injection system must be recorded in the bioreactor operations log.

7.3.5 Checklist – Shutdown

Hit the “Stop” button or turn the “Start” switch to “Off” on the control panel. Turning off all control panel power is to be avoided.

7.3.6 Checklist – Emergency Shutdown.

1. Hit the “Stop” button or turn the “Start” switch to “Off” on the control panel. Turning off all control panel power is to be avoided.
2. Ensure that the source of gas from the wellfield is blocked outside the facility plot.
3. Verify closure of the automatic block valve. Do not rely solely on it.
4. Close manual block valve. This valve should be located at the facility plot limit or outside the facility.

If there is a fire, protect personnel first. Isolate the facility from the combustible gas. A gas fire cannot be put out with water. The gas source must be eliminated.