



LSH-BIOTECH ApS

Ålunden 36, 8500 Grenaa +45-29 60 30 08

Flares for biogas - Type GF25 - GF200 - Functional details (FAQ)

General function

The flare is of the open combustion type, where biogas is released through a burner head and ignited, creating a visible flame (bluish/red depending on biogas composition) above the burner shroud. The flame is protected from blowing out in strong winds by a flame shroud and continuous periodic re-ignition.

Capacity/modulation

In standard execution the flare is not modulating. When activated an on/off valve opens and the flare will burn the amount of biogas flowing to the flare, depending on upstream pressure and flow trimming.

The flare should be connected to a point in the process with a fairly constant pressure (minimum as specified for nominal capacity, typically 15-30 mbar). The branch pipe for the flare must contain an orifice or adjustable valve for flow/capacity trimming during commissioning at maximum pressure occurring under normal operation (ie. throttling away excess pressure).

Once trimmed burning capacity will vary with the square root of available pressure.

Flow to the flare may (outside standard scope) be modulated by addition of an actuated throttling valve (eg. controlled by a system pressure or similar), but this feature is seldom needed in connection with a gas holder, where it is much simpler to burn batches of biogas with rated capacity.

Activation

The flare is activated by the process via a control signal.

Standard execution is with a 24VDC or 230 VAC relay coil which the process can energize when burning is needed.

The flare does not decide when to burn as this is most often determined by several parameters, eg. gas holder filling level, system pressure, manual decision etc.

Once activated the process should ensure a minimum/reasonable burning time of min. 10 sec. or delayed reactivation, to avoid frequent on/off commands when/if flare activation influence system pressure or other monitored parameters. Alternatively sensors determining need for flaring must be with sufficient hysteresis to ensure same function.

When the local control cabinet supplied with the flare is not powered, the flare will be in a closed condition. A flare can not be considered a primary protection device against excessive pressure. The process and tanks therefore have to be protected by safety valves, although the flare may be used/set to burn excess biogas before safety valve action will occur.

Local control cabinet

There is no active feed back from the flare in standard execution, except for a relay contact signaling that the local control cabinet is powered and ready.

The local control cabinet include an igniter test button and a burn test button.

The flare should be tested periodically (eg. once a week) to ensure it will open and ignite if needed.

Active feed back can be offered optionally, eg. in the form of an inlet valve open indication, flame detector or other. However, open air flame detection may not be entirely reliable and may lead to occasional false alarms and it therefore not recommended unless demanded by local authorities.

It is considered much more important by periodic testing to ensure the flare is functional.

Mounting

The various flare sizes are available for mounting in a tower construction (free standing version) or mounted on a frame suitable for bolting to a building (with the flare head raised above roof surface) or on a free standing R/C pillar.

Before deciding on location of the flare local fire fighting regulations should be consulted. Normally horizontal distance to fire sensitive installations, eg. gas holder, buildings etc. should be minimum 15 mtr.

If permitted locally "above roof" mounting may also be considered, especially for the flares up to size DN50 with limited capacity.

Connection

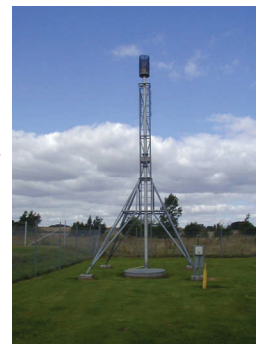
The pipe connecting from process to the flare shall be made with a well defined low point where condensate can be drained off.

The flare include a condensate eliminator to drain of rain water or condensate carried to the flare, but undrained condensate in the connection pipe will disturb flare function due to pressure fluctuations when activated.

Approvals

The flare is not ATEX approved as it is not intended for installation in classified areas for natural reasons. ATEX does not apply for equipment with intentional ignition.

The flame will not be able to "burn back" to the process as long as the biogas system/piping mainly consist of anaerobically produced biogas (ie. biogas is well above higher explosion limit). Nevertheless the potential ignition source is protected with a flame arrestor delivered with relevant certificate. The flare should not be powered/used when the biogas system after service or commissioning is not pure.



Biogas flare type GF 150



GF 125 - R/C pillar model