THE MC CLASS OF LANDFILL GAS FLARE STACK

The MC Class flare stack provides a combustion strategy which holds the gases at 1200ºC for the specified retention time. This takes to its realistic limit this method of emissions control from the combustion of landfill gas. Above this temperature NOx levels increase dramatically as a result of thermal NOx formation. The key to this form of technological solution is to raise the temperature of the combustion process to 1200ºC and retain the combustion gases at this temperature for an extended period of time.

This can only be achieved with a shrouded type of flare unit. Heat loss to the environment via the combustion chamber walls must be kept to the absolute minimum. The gases are held at the design temperature for a specified period within a combustion chamber of adequate volume.

KEY FEATURES

AUTOMATIC FLAME TEMPERATURE CONTROL

NON-VISIBLE, PARTIALLY PRE-AERATED, TURBULENT DIFFUSION FLAME COMBUSTION

1,200ºC MINIMUM DESIGN TEMPERATURE

0.6 SECONDS MINIMUM RETENTION TIME

EMISSIONS CONTROL TO UK, EUROPEAN AND US STANDARDS

BOOSTER TURN-DOWN TO ZERO FLOW WITHOUT SURGING

FULLY STAINESS STEEL CONSTRUCTION AS AN OPTION

SKID-MOUNTED FOR EASE OF MOVEMENT AROUND SITE

DUTY/STANDBY TEHRMO-COUPLES

SHROUD LINING WITH CERAMIC BLANKET BLOCKS HAVING NO HOT-SURFACE FIXINGS

A RANGE OF OPTIONAL INSTRUMENTATION INCLUD-ING FLOW RATE AND GAS CONCENTRATION MEASUREMENT

REMOTE ACCESS AND DATALOGGING OPTIONS

HIGH-RELIABILITY LANDFILL GAS PILOT

SPECIFICATION DATA

Flow rate in this standard range:
100 to 15,000 cubic metres per hour

Pressure rise across gas booster:
150 mbar

Flame temperature:
1000ºC minimum

Retention time:
0.6 seconds

Minimum methane concentration for combustion at specified temperature:
25%

Number of inlets:
The standard unit is fitted with 2 flanged inlets

Flow rate is controlled by a chemical duty butterfly valves

Additional inlets available upon request

Pipework finish:
Hot dip galvanised to industry standard

Burner material:
High temperature stainless steel

Flame arrestor:
On gas booster inlet and outlet

Flame detection:
Self-checking UV sensor

Colour:
Battleship Grey or to customer's specification

The calculation required to correctly calculate retention time involves adding the volume of landfill gas with the volume of air necessary to achieve complete combustion and correcting for temperature. The stoichiometric, or ideal, mix of air and methane is approximately 10:1. In reality the imperfect mixing of combustion gases requires a greater volume of air. Typically the ratio may be closer to 25:1. It is the additional air which cools the flame and prevents excessively high temperatures from being attained.

Tight control of combustion air is, therefore, essential with this type of flare system.

The standard flare unit comes as a skid-mounted package of equipment, ready for installation and commissioning on site. The equipment supplied will usually include an inlet knock-out pot for dewatering, a gas blower for landfill gas extraction and delivery to the burner and an MC Class flare, complete with safety functions and controls.

Flow metering is a standard for such units, unless specifically excluded.

As with the SC and the RB Classes of flare unit, the MC Class is equipped with flexibility in terms of the control panel arrangement.

Interactive control and other such requirements may be adapted to suit local circumstances.

Panels are built with a 20% expansion factor to allow for the installation of additional control equipment. If, for example, it is desired to retrofit a modem to enable remote alarm enunciation, an extension unit can be fitted to the plant controller via the RS232 port to manage the connection to the Public Switched Telephone Network. The panel size will allow for such adaptation and the standard wiring will facilitate the extension. In this manner the primary cause of an alarm signal can be isolated in the plant controller logic and reported via the telephone line.

The MC Class of flare stack provides the maximum specification to meet the Destruction Efficiency Rating (DER) requirement when employing the retention time and temperature strategy for emission control.

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