



# THE SC CLASS OF LANDFILL GAS FLARE STACK

The SC (Standard Combustor) Class of flare stacks provides a realistically priced option to meet growing public concern about emissions from landfill gas flares. The key to the current technologically preferred solution is to raise the temperature of the combustion process to at least 1,000°C and retain the combusted gases at this temperature for an extended period of time. This can only be achieved with an SC (or “enclosed”) type of flare unit which controls heat loss to the environment and holds the gases at the design temperature for a specified period, referred to as the “retention time”. Critical to a successful application of this approach to meet emission standards is control of the combustion air. This must provide homogenous conditions in the shroud, achieved by means of good mixing of fuel gas and combustion air within the combustion zone



## KEY FEATURES

AUTOMATIC FLAME  
TEMPERATURE CONTROL

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

1,000°C MINIMUM DESIGN  
TEMPERATURE

0.3 SECONDS MINIMUM  
RETENTION TIME

EMISSIONS CONTROL TO UK,  
EUROPEAN AND US  
STANDARDS

BOOSTER TURN-DOWN TO  
ZERO FLOW WITHOUT  
SURGING

FULLY STAINLESS STEEL  
CONSTRUCTION AS AN  
OPTION

SKID-MOUNTED FOR EASE  
OF MOVEMENT AROUND  
SITE

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:**  
1000°C minimum

**Retention time:**  
0.3 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 principle involved is a trade off between time and temperature in the process of destroying and removing the trace contaminants in landfill gas that are the cause for concern.

The Destruction and Removal Efficiency (DRE) of a combustion process is a balance between time and temperature. The higher the temperature the shorter the residence time required. With municipal incinerators the requirement at present is a temperature of greater than 850°C for a duration of 2 seconds. With landfill gas flares the temperatures attainable are higher and the residence time can, therefore, be shorter. The cut off point, in terms of temperature, is approximately 1,200°C, at which point thermal NOx formation commences to increase sharply. Whilst the higher temperatures will have a higher DRE for the trace gases often found in landfill gas, the increased production of NOx negates the benefit.

The SC class of flare units are equipped with flexibility in terms of the control panel arrangement. The requirement for gas analysis packages is now becoming the norm. The control panel is designed to be able to accept both methane and oxygen analysers giving dual stage trigger levels for either shut down or alarm. The basis of the panel operation is a PLC (Programmable Logic Controller) which is fully programmable. Delay times, re-ignition sequences and other such factors may be adapted to suit local requirements.

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

telemetry unit to be controlled through the PLC, an extension unit can be fitted to the PLC to take the signals.

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 PLC logic and reported via the telephone line.

All pipework is fully galvanised and the ground flare shroud is also galvanised or painted with high temperature paint, depending upon the flow rate and consequent size of the ground flare shroud. Fully stainless steel combustion chambers are available as an option, offering an increased life-cycle and enhanced visual appearance.

The SC class of flare stack provides the minimum specification to meet the DRE requirement. Minimum flame temperatures of 1000°C may be maintained for a minimum retention time of 0.3 seconds. For higher temperature combustion it is necessary to move up to the MC class of flare units. See Data Sheet ODSF03.



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