



HYDROGEN FLARES

The TCD Italia range of Low BTU flares are required to burn gases that would otherwise present a safety problem.

The flammability range 4 to 75% (Low Explosive Limit/ Upper Explosive Limit) of hydrogen in air at atmospheric pressure/ambient temperature is so wide, that virtually any release of hydrogen or a mixture of gas with high percentage of H₂ (greater than 40%) has a great potential of igniting.

The combustion of waste gases with a high hydrogen content accentuate the hazards due to the high burning rate, low ignition energy required and the non-luminous flame.

In flaring hydrogen precaution must be considered to ensure that the flare system is completely sealed in order to prevent air entry and possible detonation

Flare header must be of leaktight construction.

In a flare system with high hydrogen content it is a good practice to use nitrogen as purging gas seal. In a large diameter flare a molecular seal is strongly recommended instead of a velocity seal. Should fuel gas be used as purging medium the quantity of purge should be increased compared to the standard purge rate.

Hydrogen flare burner can be operated with combustion and destruction efficiency >99% providing that a good flame stability is achieved.

Operating combustions that have the largest influence on flame stability is the gas exit velocity. According to (new CFR 40 high H₂) a waste gas having 60 to 70 % in volume of H₂ requires a gas velocity at the flare burner exit of 240 m/s increased to 360 m/s if the percentage of H₂ rich 100%. The above stated velocity can be reached only if pressure is available, but customer should be aware that noise will drastically increased due to high burning velocity of hydrogen.

Should you wish to keep the noise generated by a hydrogen flame within a reasonable limit the gas stream exit velocity should be kept within 40 m/s.

Hydrogen flare burner incorporate a special flame retention device, heavy duty pilots and special wind deflectors designed to eliminate the local wind vortexes and flame impingement caused by the formation of low-pressure zones on the downwind side of the flare.

The flare burner is fabricated from high heat resistant stainless steel (usually 310S) as well as all the critical items such as flame retention device, pilot heads, wind reflectors.

Each flare burner is equipped with pilot burners that provide a constant and reliable source of ignition.



The pilot flame is constantly proved via thermocouple.

The flare burner is subject to rigorous inspection during fabrication.

Electrical equipment associated with a Hydrogen flare system should be required to comply with the Electrical Area Hazardous classification certified for use in HYDROGEN environment.

