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End Of Line Flame Arrester Specification

1.Summarize:

End Of Line Flame Arrester is a safety device used to prevent flammable gas and flammable liquid vapor from spreading. Generally, ventilated tanks are installed to prevent external fire sources from entering the tanks, which can trigger explosion. end of line flame arrester have been used in the petroleum industry, and later widely used in mines, coal mines, water transportation and chemical industries. In the petroleum industry, end of line flame arrester are widely used in the storage tanks of petroleum and petroleum products. When an oil tank storing light petroleum products encounters open fire or lightning strike, it may cause fire. Fire arresters are used to prevent this danger.

2.Composition:

end of line flame arrester is mainly composed of shell and fire element. There are two kinds of commonly used metal mesh filter element and corrugated filter element. The metal mesh filter element is composed of stainless steel or copper mesh with a diameter of 0.23-0.315 mm and overlapping layers. end of line flame arrester in China usually use 16-22 mesh metal mesh with 4-12 layers.The corrugated filter element is supported by stainless steel, copper-nickel alloy, aluminium or aluminium alloy. Corrugated flame retardant can prevent the fierce flame of deflagration, and can withstand the corresponding mechanical and thermal effects, flow resistance is small, easy to clean and replace.

3.Installation：

1. Remove all flange cover and discard all packaging materials.
2. Check the seat, the matching flange gasket on the seat surface. It must be clean, flat, scratch-free, corrosion-resistant, tool traces.
3. Check the gasket to ensure that the material is suitable for application.
4. Lubricate all studs and nuts with proper thread lubricant. If the fastener is a high temperature stainless steel material, a back-grabbing compound, such as molybdenum disulfide, is used.
5. Inside gasket of bolt ring.
6. Installing flange of end of line flame arrester shell to butt with flange of pipeline, attention should be paid to the position of lifting handle and top nut of end of line flame arrester element to facilitate the removal of end of line flame arrester elements in the future.

4. Working principle:

一： based on heat transfer.One of the necessary conditions for combustion is to reach a certain temperature, that is, the ignition point. Below the ignition point, the combustion will stop. According to this principle, as long as the temperature of the burning substance is below its ignition point, the spread of the flame can be prevented. When the flame passes through many small passages of the fire retardant, it becomes several small flames. When designing the fire-retardant elements inside the flame-retardant, the contact area between the small flame and the passage wall should be enlarged as far as possible, and heat transfer should be strengthened so as to reduce the flame temperature below the ignition point, thus preventing the flame from spreading.

二：based on wall effect：Combustion and explosion are not direct reactions between molecules, but are stimulated by external energy. Molecular bonds are destroyed and activated molecules are generated. Activated molecules are split into short-lived but very active free radicals. Free radicals collide with other molecules to produce new products. At the same time, new free radicals are generated and then react with other molecules. When the combustible gas passes through the narrow channel of the flame retardant, the collision probability between free radicals and the channel wall increases, and the free radicals participating in the reaction decrease. When the channel of the flame arrester is narrow to a certain extent, the collision between free radicals and the channel wall is dominant. Because the number of free radicals decreases sharply, the reaction can not continue, that is, the combustion reaction can not continue to spread through the flame arrester. With the decrease of channel size, the collision probability between free radicals and reactive molecules decreases, while the collision probability between free radicals and channel wall increases, which leads to the reduction of free radical reaction. When the channel size is reduced to a certain value, the wall effect causes the condition that the flame cannot continue to propagate, and the flame is blocked. Therefore, wall effect is the main mechanism to prevent flame.

5.Material:

Carbon steel breathing valves, stainless steel (304, 304L, 316, 316L) breathing valves, aluminum alloy breathing valves.

6.Acceptance criteria: ISO 16852

7.Maximum experimental safety interval

The flame passes through a small passage of the fire retardant and cools in the passage. When the flame is partitioned to a certain extent, the heat removed through the passage is enough to lower the temperature below the ignition point of the combustible and extinguish the flame. Or it can be explained by the wall effect that when the channel is narrow to a certain extent, the collision between free radicals and the pipe wall dominates, and the free radicals are greatly reduced, so the combustion reaction can not continue. Therefore, the channel size that can make the flame extinguish under certain conditions (0.1 MPa, 20 C) is defined as the "maximum experimental safety gap" (MESG, Maximum Experimental Safe Gap). The channel size of fire retardant is the key factor to determine the performance of fire retardant. Different gases have different MESG values. Therefore, the MESG value of combustible gas should be determined according to the composition of combustible gas when choosing flame retardant. In the specific selection, the gas is divided into several grades according to MESG value. Two kinds of methods are often adopted internationally. One is the classification method of the National Electrical Association (NEC), which classifies gases into four grades (A, B, C, D) according to MESG values of gases; the other is the method of the International Electrotechnical Association (IEC), which also classifies gases into four grades (IIA, IIB, IIC).When choosing the flame retardant, the grade of combustible gas used can be found in the design specifications, and then the corresponding fire retardant elements can be selected according

8.Classification

1.Classification by use： tank flame arrester, gas station flame arrester, heating furnace flame arrester, torch flame arrester,vent pipe flame arrester, gas pipeline flame arrester, etc.
2. Classification by installation location： End of line Flame Arrester : installed at the end of exhaust pipe,inline Flame Arrester : Installed in the middle of the pipe.
3. According to the speed of flame arrest:Deflagration Flame Arrester,Detonation Flame Arrester
4. Classification by gas classification:Flame Arrester for class IIA gases
Flame Arrester for class IIB gases
Flame Arrester for class IIC gases

9. Maintenance:

1. In order to ensure the performance of end of line flame arrester to achieve the purpose of use, before installing end of line flame arrester , it is necessary to carefully read the manufacturer's instructions, and carefully check whether the signs are in accordance with the requirements of the installed pipelines.
2. The flow direction marker on the end of line flame arrester must be consistent with the flow direction of the medium.
3. Check every six months. Check for blockage, deformation or corrosion defects in the fire retardant layer。
4. The blocked fire-retardant layer should be cleaned to ensure that each hole is smooth, and the deformed or corroded fire-retardant layer should be replaced.
5. High-pressure steam, non-corrosive solvents or compressed air should be used to clean the core of end of line flame arrester , and sharp hardware brushing should not be used.
6. When re-installing the fire-retardant layer, the gasket should be updated to ensure that the sealing

10.Pressure test:

1. Whether the performance of flame arrester can achieve the desired effect and play the role of fire retardant, it is necessary to test the flame arrester .
2. Flame Arrester should not only possess certain mechanical strength, but also undergo explosion-proof and fire-proof tests, and should meet the requirements of test standards.
3. Flame-retardant test means that the flammable gas in the test device is ignited within a certain distance, and the flame or spark generated can not be blocked and extinguished by passing through the flame-retardant. This kind of test is called flame-retardant test.
4. Fire resistance test is that flammable gas flame passes through the fire-retardant layer and continuously burns on the fire-retardant layer without reburning. The flame retardant layer can withstand a certain time of flame combustion without being burned out. This kind of test is called fire resistance test.
5. According to the purpose of use, fireproof devices can have both explosion-proof and fire-proof properties, or only explosion-proof or fire-proof properties. Therefore, the flame retardant performance and fire resistance are the main items for testing and appraising the flame retardant. flame arrester that have not been tested and identified are not usable.