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archer

RIM SEAL
STORED PRESSURE FIRE PROTECTION SYSTEM

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PRODUCT DESCRIPTION

The Archer RS6 Rim Seal Foam Fire Protection System is an effective self-contained and power free fire protection solution for fires in rim seals of floating roof oil storage tanks. These types of fires occur in the gap between the floating roof structure and the tank wall. The Archer RS6 system is a self-powered system that can detect and control fire outbreaks, preventing their spread to other sections of the annular space and from fully involving the tank.

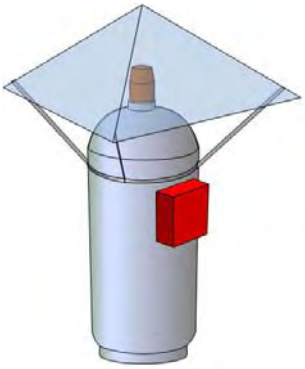
EFFECTIVE CONTROL

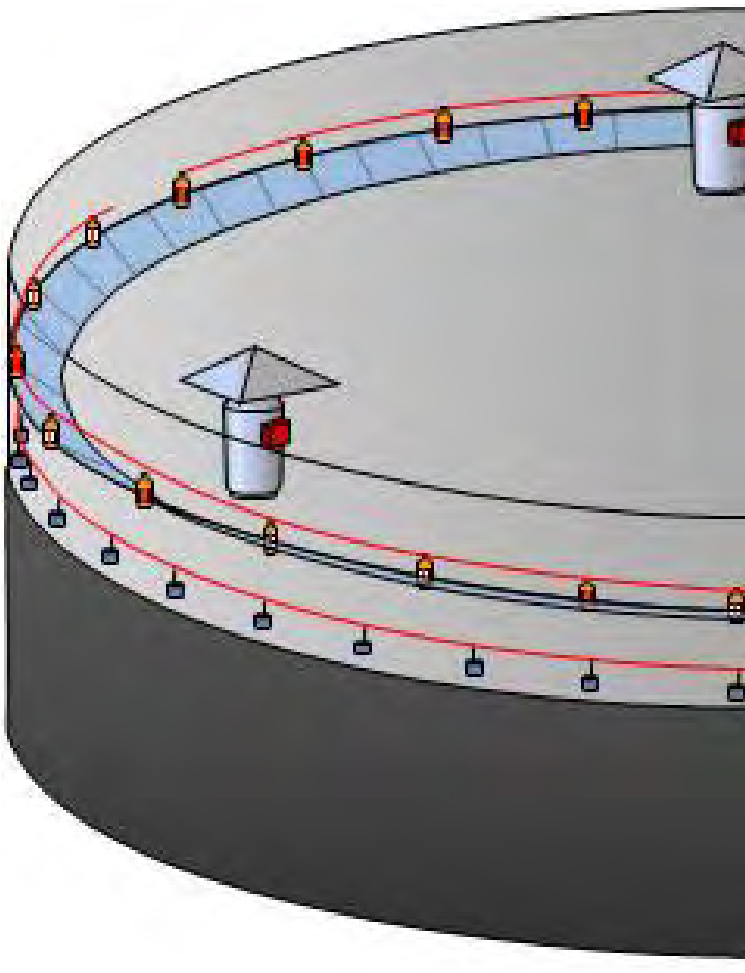
Oil storage tanks often contain enormous quantities of flammable liquids, in tank sizes over 100 m in diameter. In such large tanks, floating roofs are used to minimise vapour losses from the fuel, reducing the flammable or explosive zone above the tank. The annular zone between the roof and the tank wall use special seals to allow the floating roof to move easily up and down as the fuel level changes in the tank. The rim seal is a major fire risk zone that has high levels of flammable vapours and is exposed to ignition sources, such as lightning, friction or faulty electrical wiring from sensors and monitoring equipment. The RS6 system quickly detects any fire in the rim seal zone, discharging foam solution to effectively cover the fuel surface in the annular space. The RS6 system will retain its foam solution cover long after the system has fully discharged.

PRE-ENGINEERED FOR SIMPLE INSTALLATION

The RS6 rim seal system uses a simple pre-packaged design that provides all the necessary components to ensure complete fire protection for the rim seal zone. The RS6 system is designed to cover the rim seal zone to achieve quick control of the flames and prevent further flame spread. By using the cylinder pressure to control the detection and discharge, the system is continuously available at all times without the need for external power and without the intervention of outside controls.

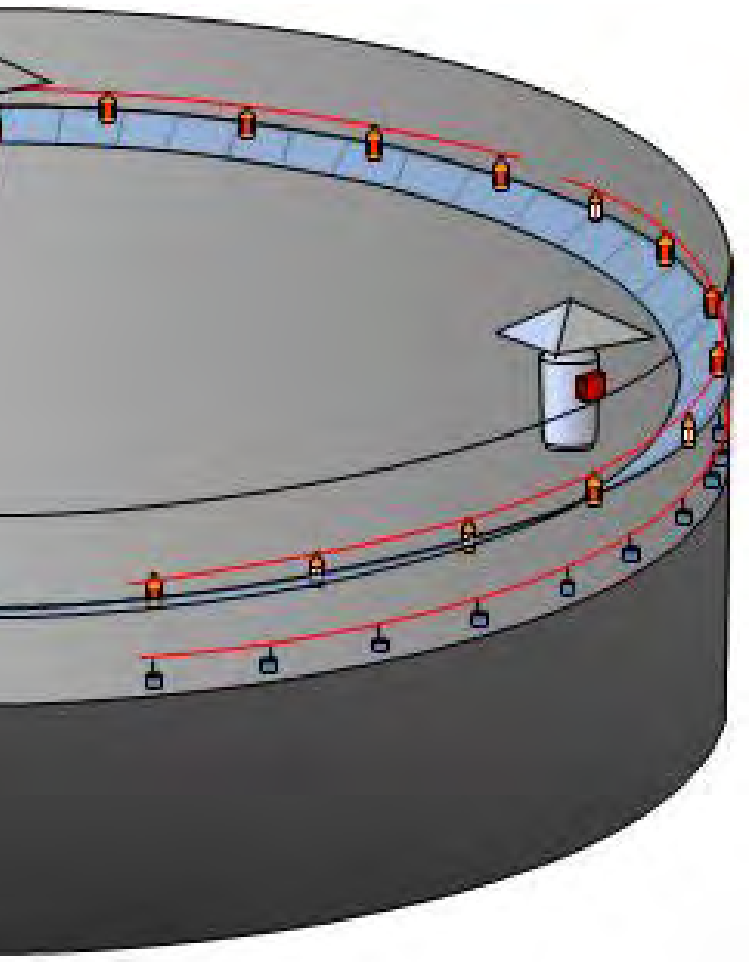
Pre-mixed foam solution is stored in a stainless steel cylinder. The type of foam solution used is matched to the fuel stored in the oil tanks. Once activated, the system will discharge the foam into the seal spaces covering any exposed fuel surfaces to prevent fuel vapours being released. The foam blanket covers the fuel and prevents re-ignition. By quickly responding to a fire outbreak, the RS6 system offers the most effective way to cover the entire annular rim area.





Archer RS6 Rim Seal Stored Pressure Foam Fire Protection system installed on tank roof

RS6 Valve allows remote filling and charging prior to installation on tank



The RS6 Rim Seal fire protection system employs fixed point glass bulb detectors set in a detection line of copper tube, stainless tube or rubber based hose, depending on the type of conditions where the tank is located. The detectors are spaced 2 m apart, ensuring quick response in the event of a fire. The spacing of the detectors can be adjusted, ensuring the most effective detection response for the conditions.

The Archer RS6 system is provided with a simple mounting bracket to fix the cylinder to the tank roof. The weather shield ensures the cylinder, valve and connections are protected from the effects of intense sun, rain or climate.

OPERATION

The Archer RS6 Rim Seal fire protection system uses a stored pressure stainless cylinder containing foam fire protection solution under nitrogen pressure.

The number of Archer RS6 systems required is based on the oil tank circumference, where each tank delivers enough foam to protect a 16 m length of annular space.

The cylinder contents are stored under nitrogen pressure of 10 to 16 bar, based on the location and conditions of use. The cylinder valve holds the agent solution under pressure, while the detection line uses the cylinder storage pressure to maintain the detectors in a ready state. The cylinder valve is held in the closed position by the pressure from the detection line, preventing the contents from discharging into the risk area.

When a fire occurs the flames produce heat that activates one of the glass bulb detectors connected to a storage cylinder. The pressure in the detection line is released, opening the cylinder valve and releasing the foam solution from the cylinders. The foam flows quickly through the distribution tubing and is discharged into the annular space from all the special spray nozzles connected to the cylinder. The nozzles are spaced every 1.5m apart, fitted above or inside the rim seal, ensuring fast and complete coverage of the fuel surface in the annular space.

Blow-off protective caps are fitted to the nozzles to ensure no contaminants may block the discharge spray.

Each cylinder valve can be fitted with explosion proof pressure switches to monitor the system pressure as well as provide an alarm in the event of a discharge. “Trouble”, “Alarm” or “System activated” signals can be sent to the alarm panel based on the system configuration.

A pressure gauge is fitted to each valve to provide a constant indication of system availability. If the pressure drops below the acceptable range, the stored pressure can be easily replaced on-site.

SPECIFICATIONS

Stainless Steel Storage Tanks
Tank capacity = 65 litres or 106 litres
Storage pressure = 1000 kPa or 1600 kPa
Colour of Cylinders = Polished Stainless, Red or Blue
Detector Temperature = 79 deg C or 93 deg C,
Detector type = Fast response glass bulb
Detector Material = Bronze
Detector Tubing = Stainless Steel tubing, Copper tubing or High Pressure Hose with JIC fittings
Discharge Tubing = 1/2" Stainless Steel tubing,
Maximum length discharge tube to furthest nozzle = 12 m
Maximum length of coverage = 18 m
Nozzles per cylinder = 10
Detectors per cylinder = 10

FEATURES

a) The foam agent from the Archer RS6 system discharges evenly throughout the annular space of floating roof oil storage tanks, providing quick and effective fire control.

b) The foam discharge controls the fire growth, suppresses the fuel vapours and cools the hot surfaces.

c) Following discharge, the foam agent continues to cover the fuel surface, maintaining the fire suppression capability for extended periods.

d) The foam discharge cools the fuel surface, and surrounding seal, preventing re-ignition after the fire has been controlled.

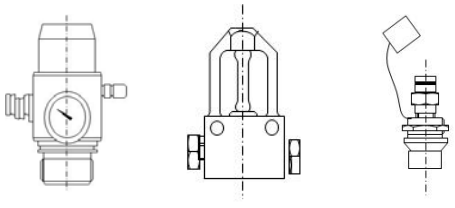
e) The foam agent will spread beyond the initial fire zone to cover and seal any fuel surfaces outside the initial fire zone, preventing the fire from spreading.

f) A pressure gauge allows quick and easy checking of the system availability.

g) The weather shield ensures the system is protected from the extreme effects of the weather, allowing the system to be ready to operate for many years.

h) The use of stored pressure allows the system to be easily maintained and refilled in the event of operation.

i) The simple design and construction of the Archer RS6 floating roof fire protection system requires only a minimal mounting footprint, and lowers the weight impact on the floating roof.



SYSTEM COMPONENTS

Item Description

1) 65 litre Stainless Steel Cylinders
2) Detectors
3) Discharge Nozzles with protective blow-off caps
4) High pressure detection tubing
5) High pressure discharge tubing
6) Monitoring and Control cabinet
7) Weather shield