

LIGHTNING ELIMINATORS

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RGAR[®]750

Retractable Grounding Assembly Lightning Protection for Floating Roof Tanks

- Eliminates the most common cause of lightning-related floating roof tank fires.
- Increases the safety of floating roof tanks during thunderstorms.
- Eliminates dangerous arcing between the roof and shell on floating roof tanks.
- ATEX certified; meets NFPA and API criteria.

Corrosion Resistant for Long Life:

- Aluminum cable is resistant to corrosion from both hydrogen sulfide (H₂S) and saltwater. (Tinned copper cable available upon request.)
- RGA body and external parts constructed entirely from 316L stainless steel.
- Shaft seals, spring housing gaskets and internal conductive grease prevent water ingress and corrosion of internal spring.

Spring Strength: Strongest internal spring on the market keeps cable short and tight.

Pre-Tensioned: The RGA 750 is pre-tensioned at the factory, so no on-site tensioning is required.

Easy to Install: Typical installation requires only 2 hours for 2 men, on both new and existing tanks.

Meets Standards: Conforms to both API 545 and NFPA 780 recommendations and criteria for a bypass conductor. ATEX certified.

Durable and Low Maintenance: Engineered for years of durability and reliable performance in all environments.

The ATEX-approved and LEC-patented RGA nearly eliminates the risk of tank fires by preventing sustained arcing between the roof and shell during lightning events. The RGA is better than conventional bypass conductors because the retractable cable is always at the shortest possible length. The resultant low resistance and low impedance bond suppresses any voltage difference between the roof and shell, thus preventing ignition of flammable vapors which may be present near the floating roof seal.



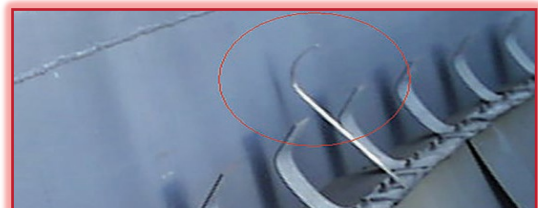
RGAR 750 Generation 2 mounted to a vertical standoff bracket* on a floating roof tank.

The Limitations of Shunts

Traditional storage tank designs use metal strips called "shunts" that are bolted to the roof and press up against the inside of the shell. The intent of a shunt is to electrically bond the shell and roof of the tank. Unfortunately, this type of bond is unreliable and creates an arcing risk at a location where flammable vapors are often present.

Consider:

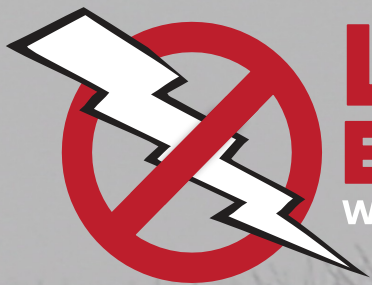
1. Rust, tar, wax and paint can coat the inner surface of the shell, increasing resistance.
2. The floating roof can drift off-center and/or the tank shell may become out-of-round, causing some shunts to disconnect from the shell.
3. API testing proved that shunts will arc during all lightning events, even if the tank wall and shunts are new and clean.



Shunt not making contact with shell.



Sludge on shunt and rust on inner shell wall.



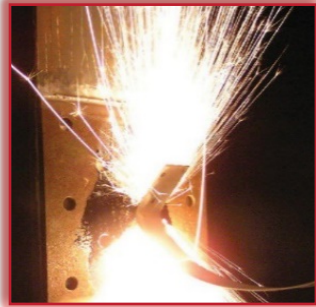
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Floating Roof Tank Fires are Common

There are 15 to 20 known floating roof tank (FRT) fires per year. FRT's are especially vulnerable to the direct and indirect effects of lightning. A direct or a nearby lightning strike will cause electrical currents to flow across the tank shell and roof. When these lightning currents arc across the roof/shell seal, they can ignite any flammable vapors that may be present. It is therefore necessary to bond the roof and shell to prevent arcing at the roof/shell seal.

Substantially reducing the risk of sustained arcs requires a reliable, full-time, low impedance and low resistance bond between the tank shell and roof. Additionally, the connection must operate regardless of the tank shell's condition.



Arcing shunt during API testing.

The RGA is designed to retrofit easily onto any existing tank, even while in service. The RGA is not affected by the condition of the tank because the RGA and its cable are attached to optimal locations on the rim and roof.** When properly applied, multiple RGA's provide low impedance bonds to prevent dangerous arcing between the roof and shell.

The RGA 750 contains TWO very strong internal springs to retract the cable, resulting in an increase in retraction force of 600% more than the original RGA. The RGA 750's spring retraction force is greater than any other comparable device on the market.

The RGA 750 Generation 2 features improved shaft seals and spring housing gaskets to prevent water ingress into the spring housing and meets UL 50 criteria for NEMA 4 rated enclosures.

* The standard RGA assembly does not include the vertical standoff bracket.

** The standard RGA cable bolts to the foam dam on the roof using included ground straps. Consult factory for other attachment methods.

Most Tank Fires Occur when the Roof is High

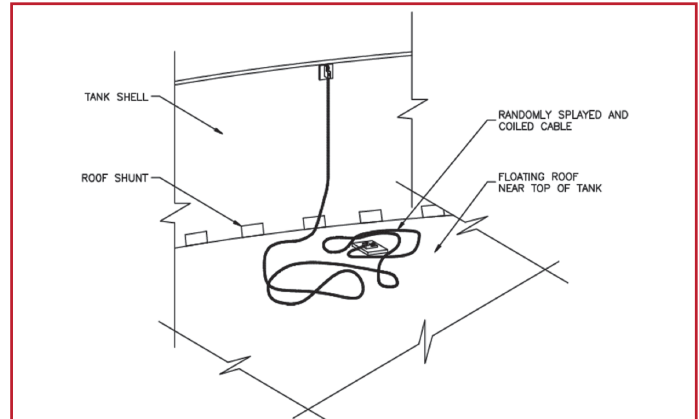


Figure 1 shows a conventional bypass conductor when the roof is high. Note how the conductor is randomly coiled upon itself, resulting in high impedance and greater risk of arcing between the roof and shell.

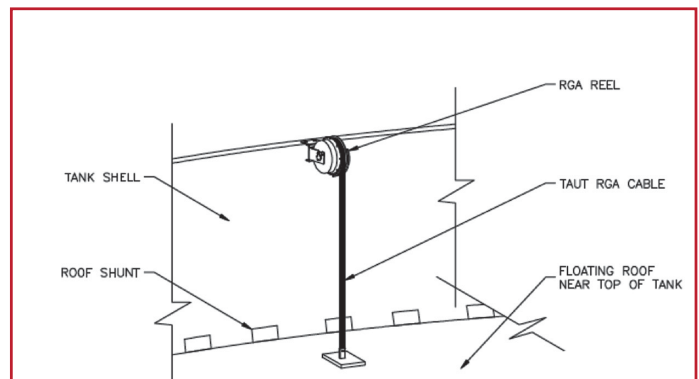


Figure 2 shows the RGA when the roof is high. Note how the RGA cable is as short as possible, thus providing the lowest possible impedance between the roof and shell.

When a typical floating roof tank is 80% full, the impedance of the RGA bond is only about 15% of that of a conventional bypass conductor. This means less risk and greater safety for the tank during thunderstorms.



US Patent # 10,246,253