Lightning Eliminators & Consultants, Inc.

www.LECglobal.com
info@LECglobal.com
+1 (303) 447-2828

RETRACTABLE GROUNDING ASSEMBLY (RGA)

Prevent Tank Fires Caused by Lightning Currents

Effective
Permanent, reliable, low-impedance bond prevents fires triggered by lightning currents

Economical
Low initial cost and exceptional return on investment

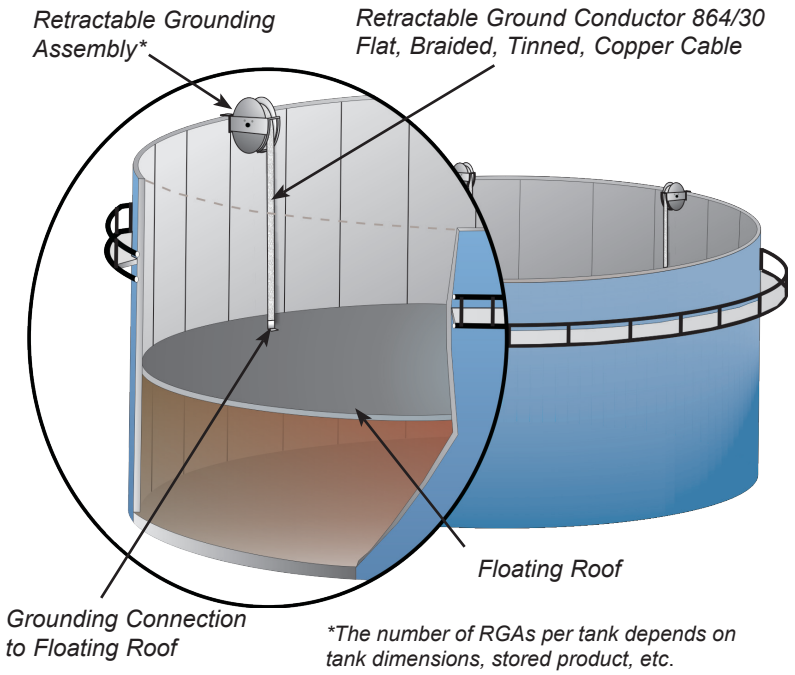
Easy-to-Install
2 hour install on new and existing tanks

Long-Lasting
Engineered for years of durability and reliable performance in corrosive environments

Low-Maintenance
Requires virtually no upkeep as compared to shunts

LEC's award-winning Retractable Grounding Assembly™ (RGA™) is a highly-effective and virtually maintenance-free grounding system specifically designed for floating roof storage tanks.

The patented RGA substantially reduces the risk of tank fires by subduing sustained arcs during lightning events and other electrical phenomena. The RGA is able to do this better than other methods, because designers analyzed and found ways to overcome the weaknesses of other, traditional, devices for grounding floating roof tanks.



*The number of RGAs per tank depends on tank dimensions, stored product, etc.

Diagram: *The RGA is typically mounted on the highest point of the tank with the cable extended to the roof and bolted into position. Once installed, the cable extends and retracts with the roof height.*

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Phone: +1 (303) 447-2828 • Toll Free: (800) 521-6101 • Fax: +1 (303) 447-8122
6687 Arapahoe Road, Boulder CO, 80303-1453, USA

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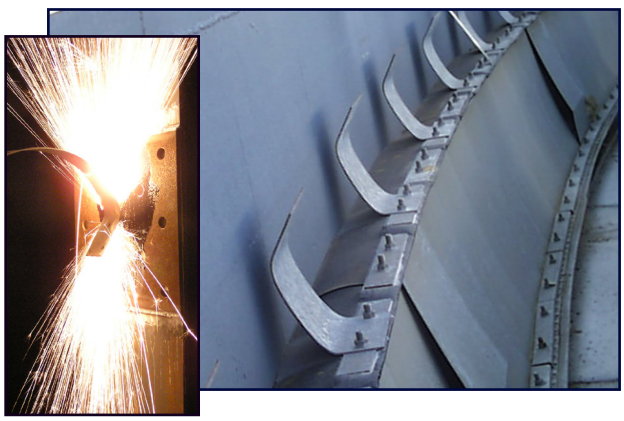
What is the Risk of Rim Fires?

A recent study has shown that at least 31% of all floating roof tank fires are caused by lightning. Floating roof tanks are uniquely vulnerable when lightning strikes nearby. The shell typically discharges its electrical charge more rapidly than the floating roof. This difference in electrical potential, increases the risk of sustained arcing, which can cause a shower of sparks at the roof-shell interface.

Inadequate Protection

To combat the risk of rim fires, the industry has been using metal strips called "shunts" that electrically bond the shell and roof of the tank in multiple locations. Unfortunately, the bond that these shunts establish is unreliable and creates a greater risk of sustained arcs:

1. Rust, waxy product deposits, and paint can line the inner wall of the shell
2. The floating roof can drift slightly off-center and disconnect some of the shunts from the shell



In an attempt to overcome these shortcomings, facilities have used many other grounding methods. But all of these methods suffer from similar drawbacks and typically have unreasonably high impedance, especially during lightning events.

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

The RGA Solution

The Retractable Grounding Assembly (RGA) is the only solution that is effective in meeting the risk-reduction requirements:

1. The retractable, braided grounding cable maximizes surface area and adjusts its length with the height of the floating roof, guaranteeing the lowest possible impedance/ resistance
2. The RGA is not affected by the condition of the tank because the RGA and cable are bolted and sealed to optimal locations on the tank shell and floating roof.
3. When properly applied, multiple RGAs on each tank provide low-impedance pathways to safely discharge lightning currents.

To resist corrosion, the reel is constructed from stainless steel and the copper cable is tinned. The RGA is designed to retrofit easily onto any existing tank, even those that are in service. It is also is easy to inspect and is designed to be very low maintenance.

To guarantee the best level of risk-reduction, the variables that can affect system impedance must be evaluated on a case-by-case basis.

To get a quote for the recommended number of RGAs for your facility, contact your regional sales representative or sales manager.