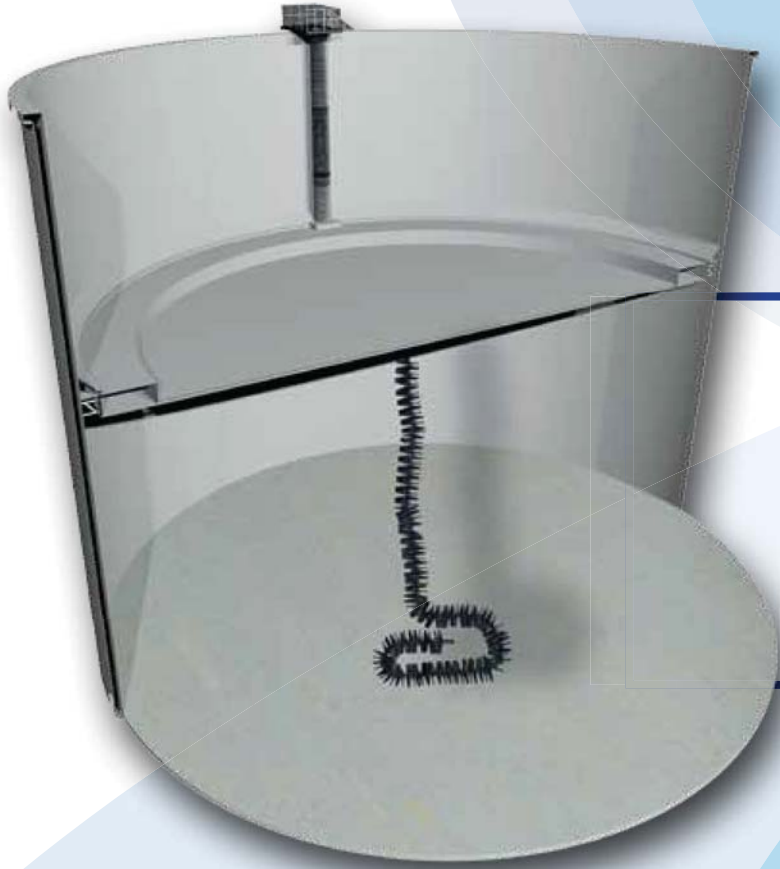


# Static Solutions for Above Ground Storage Tanks



## CUT OUT VIEW OF FLOATING ROOF TANK WITH LIGHTNING MASTER IN-TANK STATIC DRAIN

### FEATURES

- Easily installed into most types of above ground storage tanks
- Designed to coil and uncoil as floating roofs raise and lower
- An alternative to retractable grounding reels
- Suitable for use in tanks with mixing blades

**Lightning Master** is a full service, full spectrum static solutions and lightning and transient protection company serving the oil and gas and chemical industries since 1984.

## LIGHTNING MASTER IN-TANK STATIC DRAIN

### ACCUMULATION OF STATIC CHARGE

Charge dissipates from a fluid into points and sharp edges, not flat surfaces. That is why charge does not readily dissipate into the shell of a metal tank – it is flat. This allows the charge to accumulate at a rate faster than it dissipates. Because the static charge eventually relaxes, an incendive spark is most likely while the charging mechanism is active.

### NEW APPROACH

The wild card in tank protection has always been equalizing the bound charge on the stored product. Even in a steel tank, there are none to help dissipate the bound charge on the stored product. The liquid simply lies against the side of the tank, and the charge

must inductively couple onto the flat surface. It takes time for the potential to relax, allowing the static charge to accumulate faster than it dissipates.

Lightning Master has designed an in-tank static drain consisting of a **stainless steel cable with stainless steel electrodes inserted into the wind of the cable**. In fixed roof tanks, the drain is installed through the thief hatch, and in floating roof tanks, it is attached to the floating roof and sides or bottom of the tank. The thousands of electrically sharp points provide a low-resistance path for bound charge to leave the liquid and vapor space. It dissipates the charge on the product, allowing it to relax much more quickly. This allows the charge to dissipate faster than it accumulates.



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## About Lightning Master

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**Lightning Master** is a full service, full spectrum static solutions and lightning and transient protection company, **servicing the oil and gas and chemical industries since 1984**. Our complete line of products and systems is backed by our worldwide support and customer service. Lightning Master has become recognized internationally as the industry leader in lightning and static protection.

**Unparalleled Customer Service · We're with you every step of the way**

### Site Survey and Evaluation

- Our field engineers create a detailed report with the findings and recommendations on your site
- Our team of experienced engineers perform forensic analysis of lightning and static damage

### System Design

- We custom-tailor site-specific protection
- We help you write specifications and best practices that meet your specific needs

### Products

- Bonding and Grounding
- Surge Protective Devices
- Structural Lightning Protection
- LMC In-Tank Static Dissipators\*

### Customer Service

- Turn-key installation by Lightning Master-employed crews
- Training, supervision, and ongoing support of Customer personnel or contractors
- Lightning Master approved installation contractors (in selected areas)

### Industry Leaders

Lightning Master Principals serve as members of the National Fire Protection Association NFPA 780, Committee on Lightning Protection, the American Petroleum Institute API 545, committee on lightning protection for hydrocarbon storage tanks. They also served as principal members of NFPA 781, Committee on Lightning Protection using Early Streamer Emitting (ESE) Air terminals and the Institute of Electrical and Electronics Engineers IEEE 1576, committee on lightning protection using charge transfer (static dissipation) systems.



### Technology Development

- Lightning & Static Protection Systems for Salt Water Separation/Disposal Tanks & Batteries \*
- Flowback Tank Static Protection Systems\*