

# STATIC SOLUTIONS



## ITSD (IN TANK STATIC DRAIN) IN TANK STATIC PROTECTION SYSTEM

In tank static drain consisting of a stainless steel cable with stainless steel electrodes, proven to withstand highly corrosive environments, inserted into the wind of the cable.

There are two related causes of ignition in tanks: static from normal tank operations and static from a direct or nearby strike. The mechanism is similar, with static ignition taking place over minutes whereas lightning ignition takes place over a fraction of a second.



### Conclusion

*In controlling the problem, it is generally only possible to mitigate — not eliminate — the production of a static charge and the creation of a flammable mixture. So consider implementing a system for steel and fiberglass tanks that dissipates the charge, bonds all the masses of inductance, and includes air terminals. It certainly will enhance the safety of employees, contractors and the public.*

### Conditions leading to ignition

According to API 2003, A.7, in order for an electrostatic charge to become an ignition source, four conditions must be met:

1. A static charge must be generated
2. The charge must be accumulated to the level at which it is capable of producing a incendive spark (A.6.2), that is, a spark with adequate energy to ignite
3. An appropriate gap across which the accumulated charge may arc (source of ignition),
4. An ignitable gas mixture must be present around the source of ignition

### Solution

- This type of drain, installed through the thief hatch and secured to the top of the tank, introduces thousands of electrically sharp points into the stored product, offering a low-resistance path for bound charge to leave the liquid and vapor space.
- Allows the charge to dissipate faster than it accumulates.
- The bonded mass of the tank system is electrically bonded (grounded) through existing electrically continuous metallic piping or with dedicated conductors on non-conductive piping to the injection well, truck load-out, and site electrical service ground.
- This brings all site components and structures to the same potential and to ground potential, thus reducing the possibility of arcing.

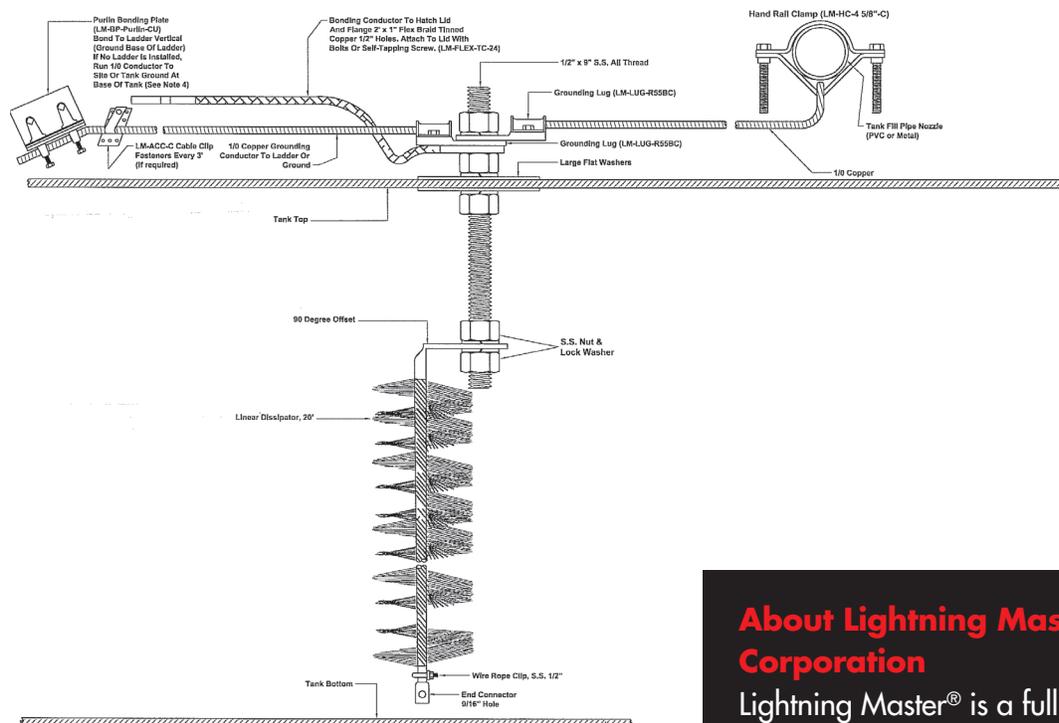
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## About Static Solutions

In fixed roof tanks, the drain is installed through the thief hatch. 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.



## Testimonial

*"It is unbelievable how much better these things work with the static drains in the tanks. We now plan to retrofit all existing and to equip all new radar sensor equipped fiberglass tanks with ITSD's regardless of lightning and static considerations. That way, we'll only pay for one benefit, but enjoy two."*

**- Jimmy Anderson  
Master Electrician**

## About Lightning Master® Corporation

Lightning Master® is a full service, full spectrum static solutions, lightning and transient protection company, serving the oil, gas and chemical industries since 1984. Our track record of success and exceptional customer service in North America, Asia, Africa, Europe and the Middle East has established LMC® as the global authority on lightning and static protection. With our unparalleled customer service we're with you, every step of the way.

