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Bright idea

Lightning Eliminators protects oil and gas operators against the threat of lightning strikes on their infrastructure

LIGHTNING strikes more frequently and more unpredictably than many realise and, while many are harmless, some can cause catastrophic damage. This damage potential of a lightning strike is of considerable concern to vulnerable industries such as the oil and gas sector, where facilities house flammable and other sensitive materials. Indeed, in 2008, a Kansas City fuel storage tank holding 1.2 million gallons (4.54 million litres) of petrol caught fire after such a strike, while a similar incident in Malaysia in 2012 resulted in a US\$40 million loss.

Finding solutions to the risk that lightning strikes pose has been the mission of Lightning Eliminators & Consultants (LEC) for more than four decades.

Using technology to help with the problem of lightning is not new, but there has been a great deal of advancement since Benjamin Franklin invented the lightning rod centuries ago.

Beginning with the vision of a NASA chief engineer, LEC's strategy was to design a lightning prevention system based on physics rather than the guesswork of the previous 200 years – and the result was the company's proprietary and patented Dissipation Array System (DAS).

Unlike lightning rods, LEC's solution redirects rather than attracts lightning, ensuring that a protected area remains free from strikes. Such a solution is compelling for the energy sector, which must deal not just with flammable materials susceptible to direct strikes but also sensitive electronics vulnerable to secondary surges.

LEC has such confidence in its solution that the company issues a no-strike warranty with each sale including DAS. And the company has reason to be confident, according to LEC's executive vice president and director of applied engineering, Peter Carpenter, who said: "Over time, the reliability of these systems stands at 99.85%, with over 60,000 system years of data."

Install base

LEC has installed over 3,000 solutions, including DAS and Retractable Grounding Assembly (RGA) solutions for floating roof tanks, in more than 70 countries as well as throughout the US.

Although lightning is less likely to strike over open water, the continued risk to both personnel and advanced electronic systems at offshore developments has seen LEC commissioned to install protection systems on offshore platforms all over the world, including Mexico, Egypt, Nigeria, Malaysia and South Korea.

For tank storage farms the risk can be even more pronounced, with a single spark not only threatening millions in destroyed product but also serious financial repercussions from lengthy downtime.

Floating roof tanks, in particular, are notoriously difficult to protect from lightning. Takreer, a storage and refinery subsidiary of Abu Dhabi National Oil Co. (ADNOC), opted to have LEC outfit more than 450 RGA assemblies on its storage tanks, given the high volumes of storage it handles.



Above: India

Left: Takreer refineries

Below: Installation in Tupras, Izmit.

Lightning prevention is all about preventing disaster and sometimes the results can literally be seen at first hand.

Ashley Automation, a leading provider of construction services for hydraulic fracturing salt-water disposal facilities, informed LEC that after DAS protection was added to its installations there was an onsite report of seeing lightning moving away from the protected site, just weeks after a different facility had taken several direct strikes.

LEC's clients have found shelter from the unpredictability of lightning and its secondary effects. However, the company is not content to stand still and aims to continue refining its technologies so as to remain at the forefront of lightning protection. ■

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