Lightning Protection for Tower Cranes

EvoDis® Lightning Prevention System for Tower Cranes

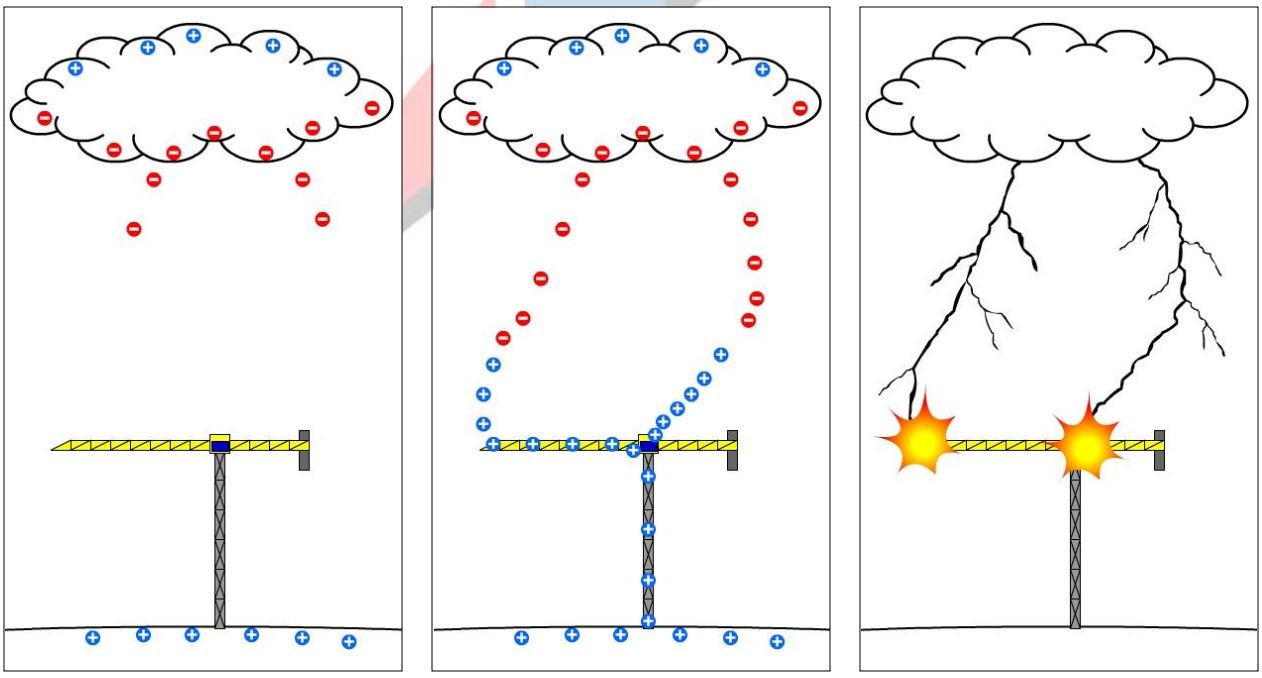
Cranes are widely used in contruction business. With boom lengths up to 80 meters, tower cranes are usually the tallest structures in the area existing from the very first start of the site to the end of construction and are consistently hit by lightning strikes. Lightning gives damage to electrical system on the crane and causes lethal results for the operating personnel.

Lightning Threat on Tower Cranes

Tower cranes are made of steel in order to remain stable for long years, but this conductive material and structural properties make these towers a target for lightning strikes.

During a storm, ground charges are attracted on structures by opposite cloud charges. These ground charges are emitted in form of streamers and move towards the opposite charged streamers from the cloud. When these two opposite charged streamers meet, they form a conductive channel between cloud and ground where lightning current flows through.

Lightning hits the tallest and sharpest structure in an area because emission of ground charges at a corner of tall objects is much faster comparing to shorter structures around and emitted ground charges meet with opposite charged streamers of cloud earlier and develop lightning channel quicker. Lightning current must reach the ground as quick as possible and it flows through the object of ground charge emission as it is the most conductive path.

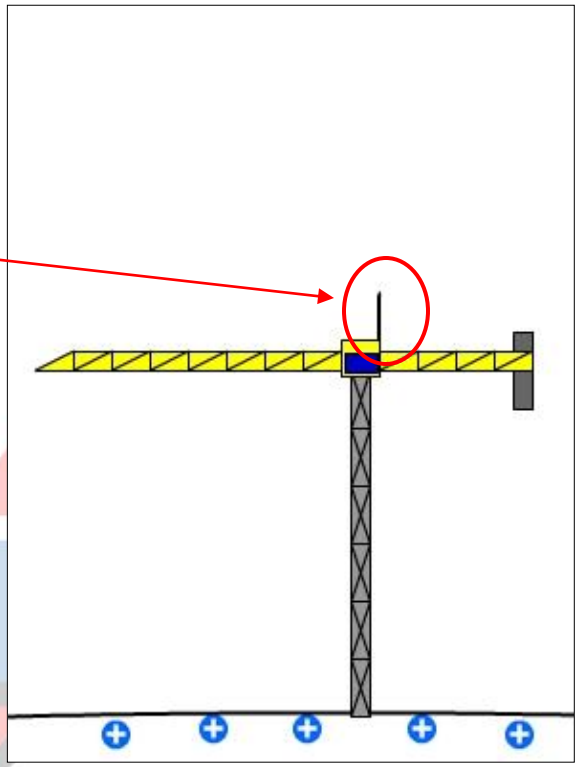


The meet of the upward charges with the downward streamers form a lightning channel. Lightning current flows through this channel, hits the crane and reaches to ground. During this flow, lightning current damages the electrical systems of crane and create a threat for the operator.

“Protection” with Lightning Arresters

Tower cranes are made of conductive material and they are the highest structures around. This makes these structures open to lightning threat and they need to be protected against lightning strikes and possible secondary damages.

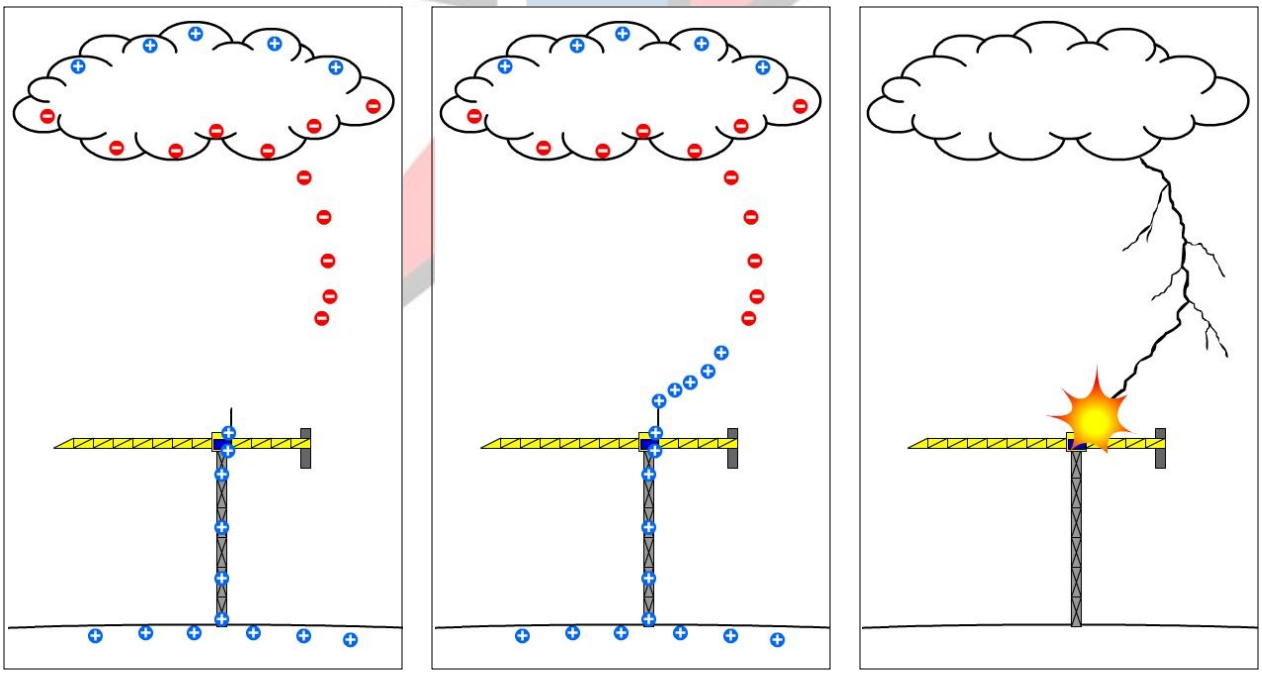
Lightning Arrester (Lightning Rod)



In case of use of a lightning arrester solution, the arrester collects all ground charges on itself and emit them towards the cloud charges in order to “protect” the surrounding area which is exactly their purpose of use.

However, lightning current must reach the ground through the shortest and fastest way which is still the tower body. Eventhough a conductor cable is installed between lightning arrester and grounding system, lightning current prefers to follow larger surfaces instead of a conductor cable and flows through surface of the tower.

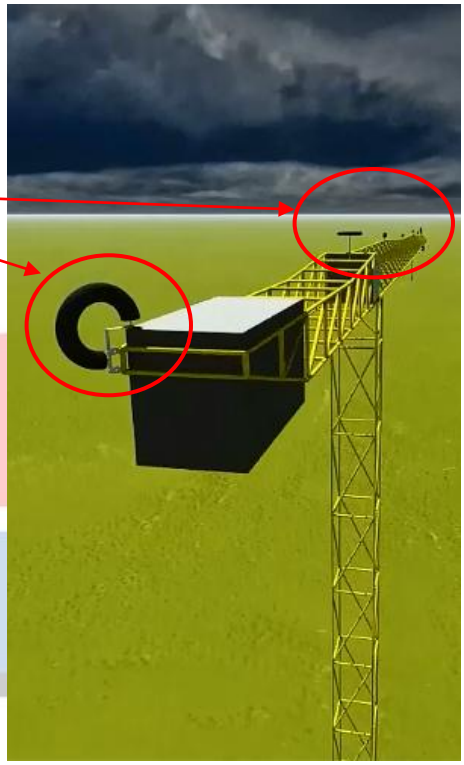
In this case, using a lightning arrester does not solve the problem and tower crane and all electricals on it are still affected by lightning current with risk of irreversable damages.



As a result, there is no difference between protecting tower cranes with a lightning arrester and leaving the crane unprotected against lightning.

EvoDis® Lightning Prevention System Protection

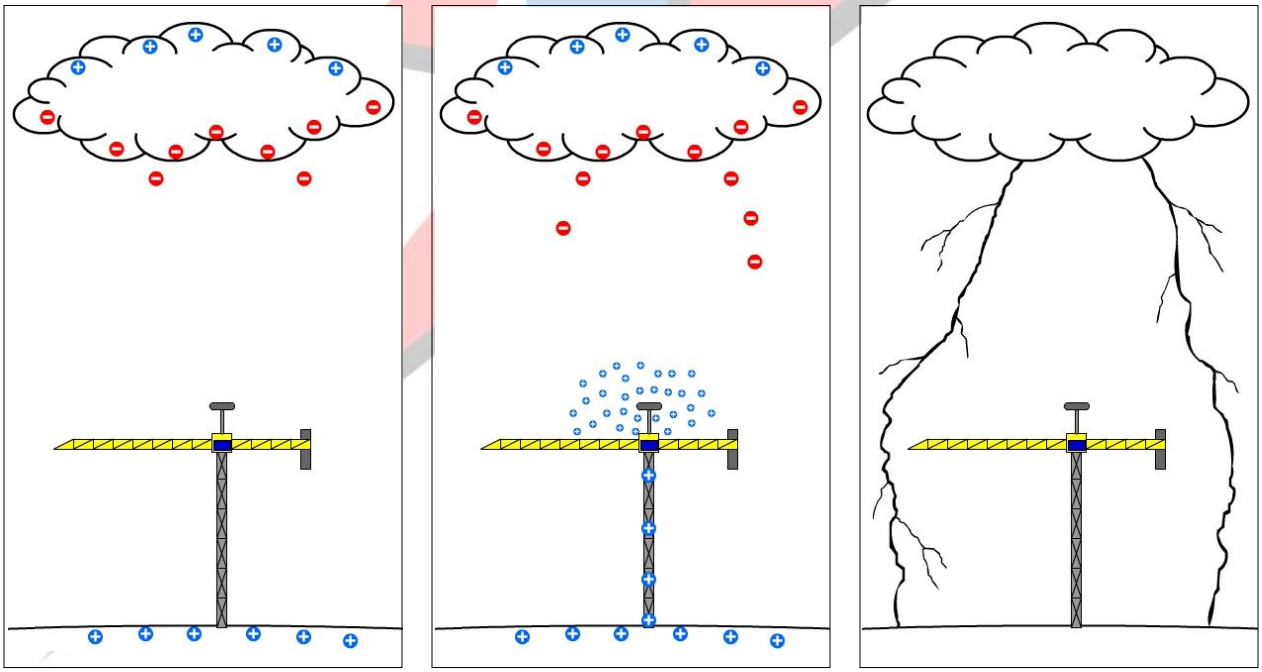
The best way of being protected from direct lightning strike damages and prevent secondary damages by electromagnetic field of lightning current is keeping lightning away from protected structure.



EvoDis® Lightning Prevention System dissipates ground charges on tower crane and minimizes the risk of getting hit by lightning. This prevents any damage on crane as well as electrical units and keeps the system in service.

The point of lightning strike depends on the ground charge accumulation and emission on a structure and reach of these emitted charges to oppositely charged downward streamers. Lightning hits the point of emission and lightning current flows down to the ground through the structure.

EvoDis® Lightning Prevention System dissipates ground charges on structure through thousands of tiny sharp points and blocks the emission of these charges. This process makes the protected site ***"invisible"*** to lightning and prevents a possible strike on it.



EvoDis® Lightning Prevention System is a lightning protection solution with 100% success in high voltage laboratory tests and in field tests. EvoDis® has been applied on hundreds lightning prone of towers worldwide and ***none*** of these towers have been hit by lightning since the dates of installation.

Best way of lightning protection is to stay away from lightning.

EvoDis® Lightning Prevention System keeps lightning away.

Building Equipments Corporation

12/05/2015

To Whom This May Concern,

We installed EvoDis System of MTO Ltd. Co.(country of origin: Turkey) on 5 tower cranes which were prone to lightening strikes before installations.

Since date of EvoDis application (27th of March, 2014) we have not observed any lightening damage on our tower cranes.

Mr. Bong Manalastas
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13.10.2017

To Whom This May Concern,

With previous experiences of lightning strikes at our sites, we applied MTO - EvoDis System to tower cranes of our contruction site in Yaoundé which is a heavy lightning area.

For the first 6 month of application, we received no lightning incident on our cranes and we will use EvoDis System in our future projects.

Alain Minkoumou Mengue

H&S Supervisor

GELTRA TECHNOLOGIES SA

LOCAR
TRANSPORTES TÉCNICOS E GUINDASTES

September 25, 2017

To Whom It May Concern,

Evodis Lightning Prevention System of MTO Engineering Co. of Turkey is installed on 2 of Liebherr132 cranes of our clients on May 20th.

There has been no report on any lightning related damage on the sites during the rain season.

Rodrigo Corera
Regional Sales Management

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