

When it comes to natural or environmental hazards, they don't get much more serious than Lightning.

We are dealing with a rapid equalisation between the electrostatic charge in a cloud earthing to the ground with a current of up to 10000 Amps at 100million volts, so the potential for loss of life and equipment damage is extreme. Generally, electricity travels the most conductive or path of least resistance to the ground, but due to the enormous amount of energy it can arc to any object nearby. Usually resulting from cumulonimbus (Storm Clouds), it is not dependent on rain and hence, often occurs very suddenly. Cranes are vulnerable to lightning strike due to their metal construction, height off the ground and difficulty in disassembling quickly. There are checks and safeguards for earthing cranes in the event of an impact with electrical assets, however, due to the enormous amount of energy involved with lightning, we need far greater safeguards in place. (rubber tyres and 16mm earthing chains won't save us here!)



We need to protect our workers primarily, and then our equipment and assets. Fortunately, lightning is more often associated with weather conditions that prohibit crane operation like heavy rain and high wind, which means many lightning strikes to cranes occur when the machine is unmanned. The danger is rapidly approaching storms with dense cloud that builds up before the wind and rain arrive. However, shutting down a site and derigging cranes for every storm 'warning' could be unviable. Particularly in subtropical or thunderstorm prone climates.

To remain safe while economically efficient in storm prone regions, we need two things.

1. An accurate lightning detection method
2. A clear plan of what to do as the information is received.

Technology is on our side here, and the humble smart phone has a role to play due to its ability to run purpose-built applications and software, and the fact that most crane crews carry them as they work. There are many 'Weather Apps' that with an inexpensive subscription, will provide alerts on electrical storm closing distances

and detected lightning strikes via text message to nominated mobile numbers.



I'll use the Windfarm as an example as there is the added hazard of the towers containing workers that are erected being just as prone to lightning strikes as the cranes that erect them. This is combined with vast and relatively flat plains lacking any features to deflect lightning away.

Many Windfarm builders and contracted crane companies have their own risk mitigation systems (see example below) that consist of 3 alert stages and what action is to be taken.

Level 1 Alert – Lightning 80+km away

- AutoText message warning is received from the Lightning Tracking System.
- Prepare to initiate Level 2 Evacuation Protocols.
- All work may continue whilst storm / lightning activity is monitored.

Level 2 Red Alert -Lightening detected within 40km

- Red alert text warning is received from the Lightning Tracking System.
- Cease all Working at Height, Crane Operations.
- If safe to do so, prepare equipment for adverse weather conditions per manufactures guidelines.
- Seek appropriate shelter indoors or within light vehicles when in the field.
- Supervisors to complete welfare check on all team members.

All Clear

- All clear is received from the Lightning Tracking System. Usually after 30mins of no detected lightning strikes.
- Supervisor to confirm All Clear Alert received and advise on return to work once site conditions assessed.

There is always the rule of thumb that the time in seconds between the lightning and thunder multiplied by 340 is the distance to the storm. However, if you've seen lightning or heard thunder you would already be at Level 2 above! Also, if you are able to hear thunder, then you can be struck by lightning so work should have already stopped. Remember, as rare as lightning strikes are, its not a chance you want to take. *Stay Safe -CICA*