

Safety Alert 11: Electrical accident

Accident sequence

Workers were transferring a mounting platen into storage. There were also some surplus precast units in the same load.

The mobile crane and the transport carriage were at a distance of more than 20 m from the power line. The photo shown was taken from where the crane was standing. The intention was to not work near the power line and a lifting test without a load was carried out over old mounting platens with the crane boom going round the other side of the power line.

However, the surplus units had to be removed before the mounting platen could be lifted. The first unit to be lifted was a sludge tank unit, weight ca. 1 000 kg.

As the unit was lifted, one employee was holding on to a dowel bar in the unit and was electrocuted through the crane and the slings. Electricity "jumped" to a crane wire or sling at a distance of ca. 1.5...2.0 m and was then transmitted to the employee.

Another employee was holding onto concrete and received an electric shock in his hands, but did not sustain any severe injuries.

The employee who had held onto the dowel bar was resuscitated on the site and taken to hospital, but died there later.



Preventing recurrence of accident

- Safety distances for power lines shall be indicated on the ground and/or pole e.g. with paint, or a fence, or a beam in areas where lifting work is carried out, machinery reaching into the danger area is used, or there is a risk of accessing the danger area of the power line for some other reason.
- The horizontal and vertical safety distances of power lines shall be indicated on all poles with e.g. sign plates.
- When working near power lines, a Work Safety Plan shall be prepared defining the risks associated with the work. This is particularly important in areas where work is normally not carried out. If necessary, the power company or TUKES shall be contacted for assistance.
- The risks related to power lines will be included in the employees' induction material.
- Cranes shall always be grounded when there is a risk of the crane coming inside the danger area of a power line.
- The safety distances of overhead power lines are shown in the Table on the right (source: Tukes)

Johdon jännite	Varoetäisyys metreinä (m)		
	avojohto		riippujohto
	alla	sivulla	
0,4 kV*	2*	2*	0,5**
20 kV	2	3	1,5
110 kV	3	5	-
220 kV	4	5	-
400 kV	5	5	-

1 kV = 1 000 V

* Pienjännitteiset 400 V (0,4 kV) avojohdot ovat nykyisin hyvin harvinaisia.

** Etäisyys koskee myös 1 000 V riippujohtoja.

Muista varoa myös törmäystä sähköjohtojen pylväsrakenteisiin. 110–400 kV voimajohtojen pylväiden suoja-alue ulottuu **kolmen** metrin etäisyydelle kaikista pylvä- ja harusrakenteista. Suoja-alueella ei saa kaivaa, läjittää eikä liikkua työkoneella.