

Information sourced from IMCA Safety Flash

Failure of 1 ton chain hoist

What happened

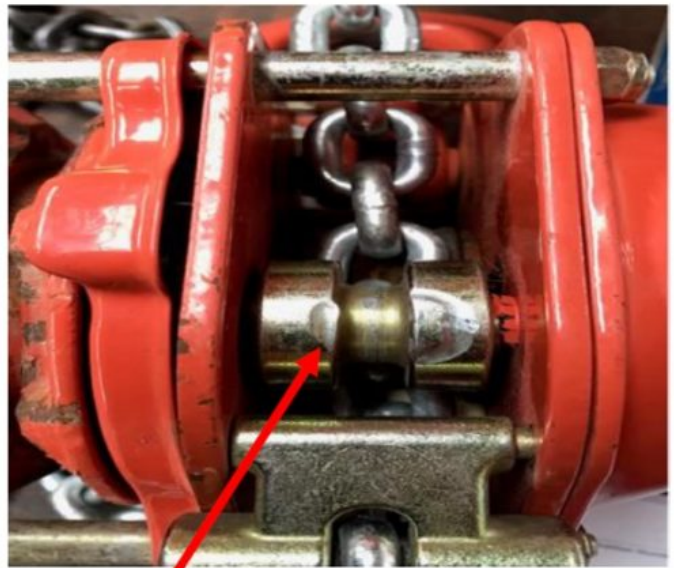
A chain hoist failure resulted in a chain link breaking which caused an 800kg load to fall to deck from a height of 1 metre. Personnel were working on a wind turbine foundation. A regular shaped load was being moved out of the tower using a chain block suspended from a cantilevered trolley beam on a temporary gantry structure erected on the site. A lifting bag was positioned beneath the gantry structure onto which to lower the winch. When the winch was 1 metre above the lifting bag, one of the chain links on the main chain hoist failed causing the load to fall. No-one was in the line of fire; no-one was injured.

What went wrong

Findings indicated that at some point during the operation, the chain had entered the hoist in a twisted or knotted configuration and excessive force applied resulted in damage to the chain link which subsequently failed.

- Insufficient attention was given to ensuring that the chain between the block and the load was not twisted or in a knotted configuration;
- The headroom between the gantry beam and the tower floor was less than expected which resulted in the chain hook having to be pulled as tightly into the block as possible to keep the load clear of the floor. This put additional load into the chain and block and left nowhere for any residual twist in the chain to go, causing the damage to the chain and its subsequent failure.





Sign of compression, indicating the chain link was twisted side on and snapped due to the change in dynamic loading placed on the chain link.

Recommendations

When using a chain hoist, consider checking the chain for twists as it enters the block. Continually monitor the chain to ensure no twisting occurs. Avoid pulling the hook into the body of the hoist.

What went right?

There was no-one in the line of fire! Ensure personnel are always positioned well clear of the line of fire. Members may wish to refer to:

- [Shackle failure during over-boarding of pennant wire and ballast chain](#)
- [Near-miss: Safe use of chains in rigging](#)