

Visual and audio safety when lifting and lowering loads with a crane

CrosbyTech Series

Safely lift and lower Loads

White Paper
Crosby BlokCam - October 2022

Abstract

This paper looks at the hazards and solutions of lifting and lowering loads from mobile and tower cranes, whilst identifying areas for improvement and providing a more effective and proportionate approach to safe maneuvering of loads. It also discusses ways to increase safety and efficiency.

It was written upon completion of a new and improved camera and audio systems that adds speed, safety and efficiency when lifting and lowering loads. However, this white paper is not exclusively related to that technology BlokCam and BlokAlert.

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No sight below the crane hook

Although cranes are designed to lift and move heavy objects safely, they pose a number of potential hazards.

The most common cause of fatalities is workers or bystanders who are struck by an object that fall from the cranes. Other causes include being run over by a crane, falling from a crane, and electrocution.

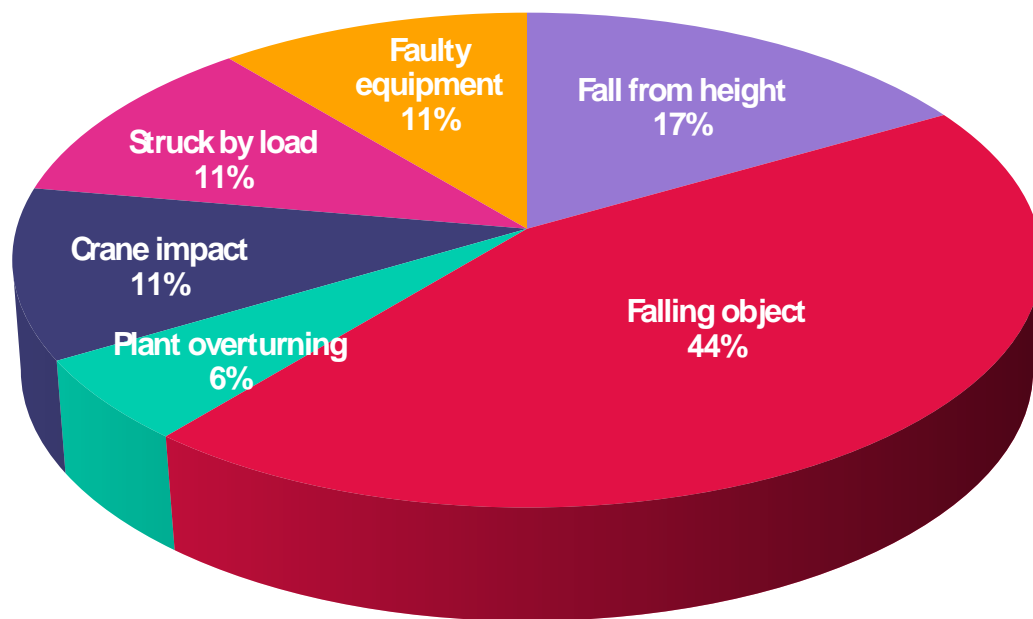
When a crane operator is lifting and lowering loads there are blind spots, they are unable to see the loads below the hook or boom or actively be able to gauge the surrounding area.



This can be hazardous for the crane operator, who is unable to see, for example:

- The load
- Grounds crew below
- Equipment on the construction site
- Surrounding buildings
- Overhead power lines

All can cause accidents to personnel and damage to expensive equipment. And halt construction incurring heavy costs.



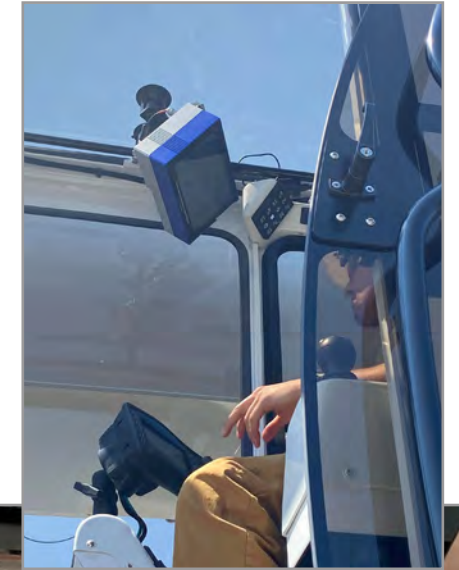
What is the solution

A large number of accidents could be avoided onsite with cranes with audio and visual systems installed.

Crane operators will have an unobstructed view from their crane cab and know where the load is below the hook at all times, and the surrounding area.

With this added safety precaution operators will have an advantage with the following:

- Visually see if a load becomes unstable
- Notice rigging failures
- Accurately steer loads into tight or awkward spaces
- See clear instruction from crew
- Avoid crew on the ground
- Quickly alert crew on the ground of possible hazard
- Avoid surrounding buildings
- Prevent expensive damage to assets
- Improve efficiency



Where is the crane hook

Not knowing where the crane hook is on a construction site can potentially be hazardous.

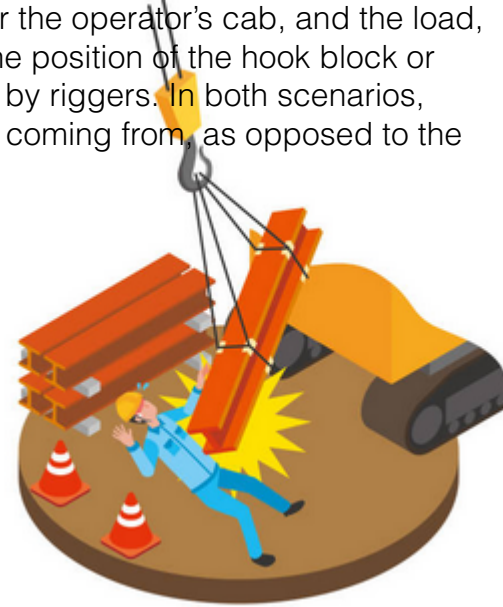
Traditionally: The distance between the horn, often located near the operator's cab, and the load, is inconsistent and does not efficiently warn site personnel to the position of the hook block or load. The same can be said for airhorns or whistles when used by riggers. In both scenarios, the attention of the work force is diverted to where the sound is coming from, as opposed to the hazard.

When the grounds crew are unaware of the movement of loads this can cause damage and even fatality!

Hazards include:

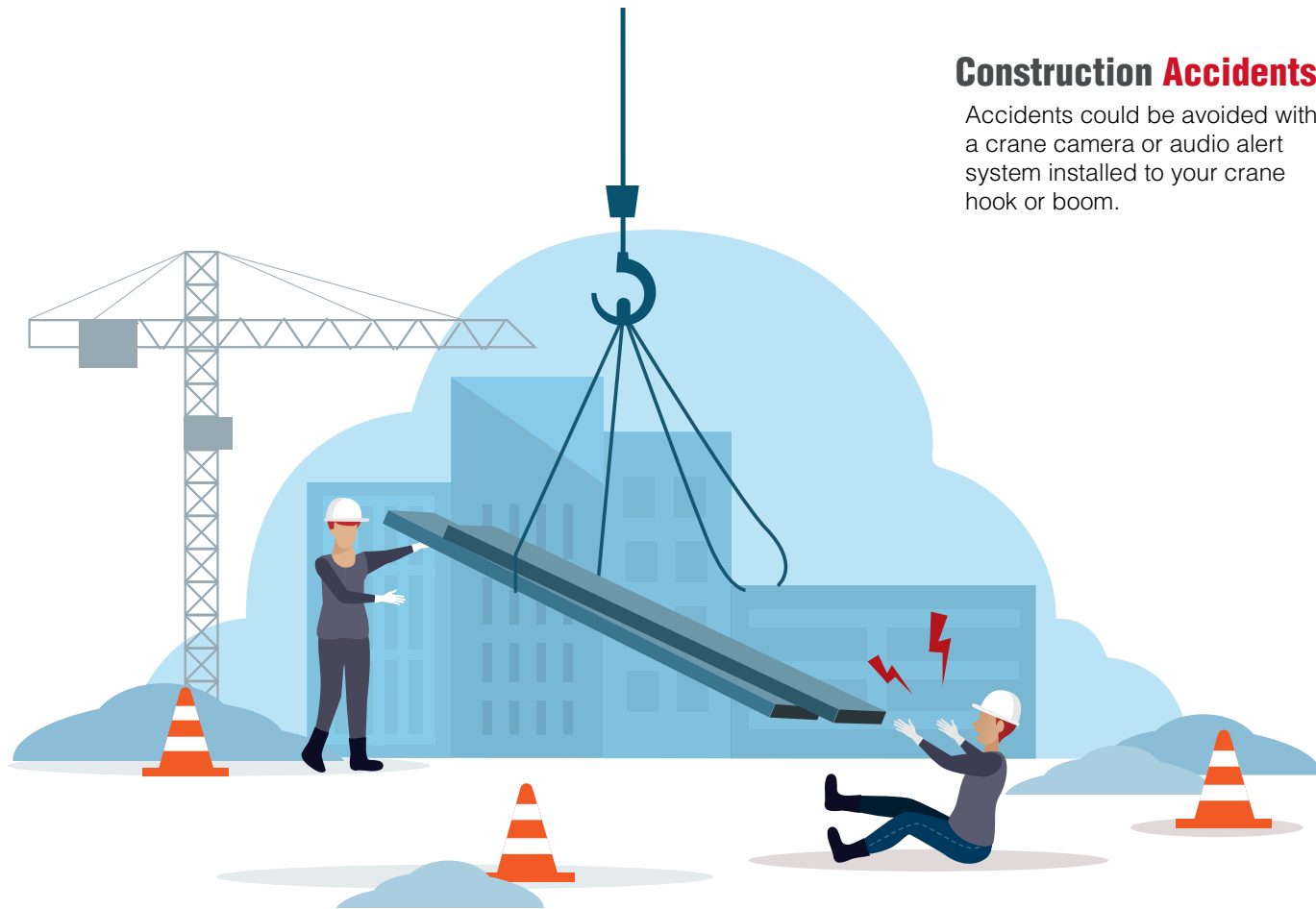
- Grounds crew injuries
- Assets damaged
- Damage to surrounding buildings
- Falling loads

Remember: When working around a crane, the crane operator is going to be watching his load or the signal person and not for stray workers.



Construction Accidents

Accidents could be avoided with a crane camera or audio alert system installed to your crane hook or boom.



What is the solution

Fit an audio warning system to the hook block.

When activated, the consistent proximity between the hook block and the load enhances the efficiency of the audio warning system and draws attention to the hazard, not away from it.

This will improve safety and efficiency:

- The ground crew more aware of moving loads
- Increase awareness of the proximity of the load
- Protect assets from damage
- Help to prevent accidents or even fatalities



What is a BlokCam

BlokCam is a crane camera system specifically designed to aid a crane operator to visually see the loads attached below the hook or boom from any crane cab.

The sound and view from below the camera is transmitted and received wirelessly via the antenna systems to a screen in the cab. This allows the operator to see and hear the load and surroundings, giving an unobstructed, live, audio-visual feed of the critical areas that working in the blind would never allow.

There are two crane camera systems:

M3L - For crawler & mobile cranes

This consists of four main components:

- M3 Monitor
- S5 Sensor
- T3 Transmitter
- B6 Lithium Battery

X3L - For tower & large crawler cranes

This consists of six main components:

- M2 Monitor
- S5 Sensor
- T3 Transmitter
- R5 Repeater
- P3 Processor
- B6 Lithium Battery



All components are effectively installed within one hour, onsite, by our expert technical engineering team.

What is a BlokAlert

BlokAlert is a crane audio system specifically designed to aid the grounds crew when loads are being moved via a crane.

When activated by the lifting crew, the BlokAlert receiver gives out a recognisable audio-visual signal that can be seen and heard by site personnel in proximity to the hook block or load.

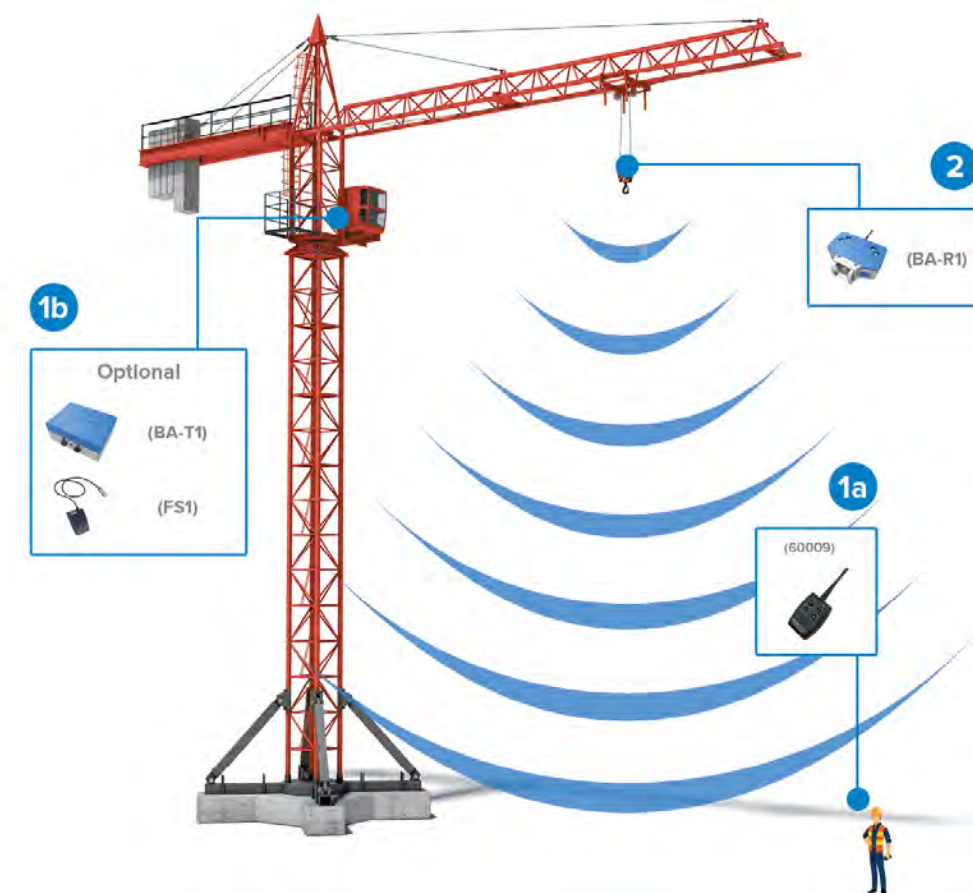
BlokAlert - Any crane

This consists of two main components:

- BA-R1 Receiver
- 60009 Remote control fob

Handsfree footswitch available on request.

Easily operated and installed. With the control of up to 4 BlokAlert systems across sites.



Industries affected

Any industries utilising cranes can be affected by crane related accidents. Our research and feedback from customers clearly points to the fact that crane camera and alert systems greatly reduce the hazards, injuries (sometimes fatal) and bring construction to a halt. Causing spiralling costs and late deadlines!



Improve safety and efficiency summary



Summary

It is without doubt that with more tools on site such crane cameras will greatly reduce the risks for crane drivers and groundsmen, while audio awareness of where the crane hook and load are located will greatly increase safety on the ground of constructions sites.

This will mean less manpower aiding the crane driver and enhance communications to the crew below, increasing efficiency, saving time and helping to prevent injury and expensive accidents.

Crosby BlokCam developed this system to aid all of the above, their customer testimonials prove that these systems are needed on construction sites.

“Health and safety is our highest priority. Crosby BlokCam crane cameras help to ensure that crane operators on our sites have an unobstructed view of blind spots from inside the cab.”
BAM



Safely manage lifting operations.
Standards
- BS7121
- ASME B30

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