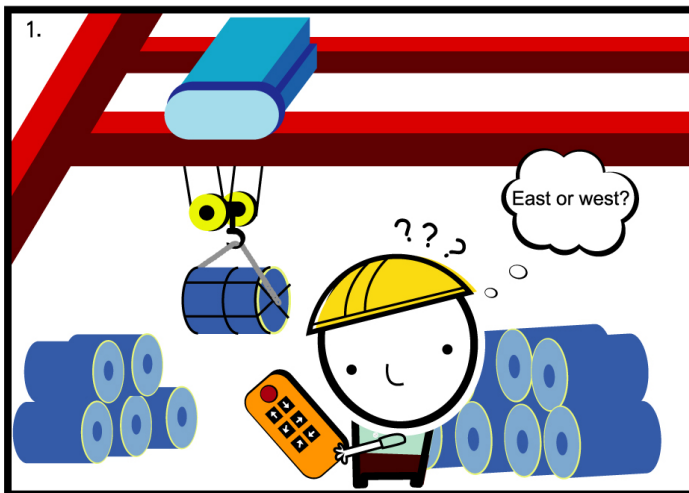


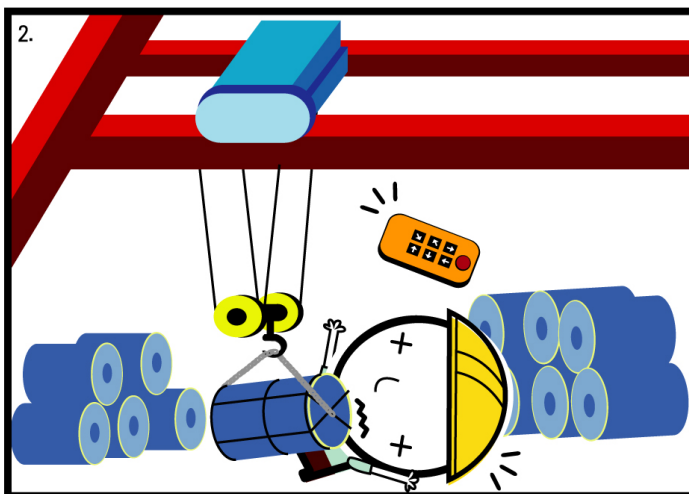


## Safety Pays. Accidents Cost!

### Before Using

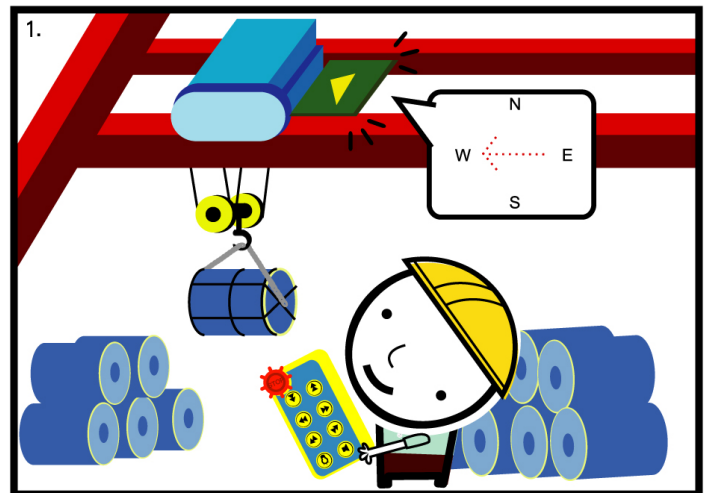


The operator forgot the direction and moved the crane by try and error.

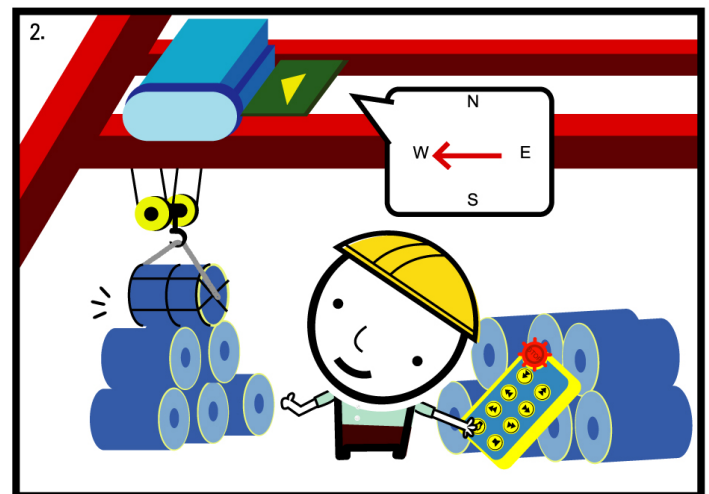


The operator was struck by the steel roll.

### After Using



The operator checks the direction by the crane direction early warning system.



The operator moves the steel rolls to the right position.

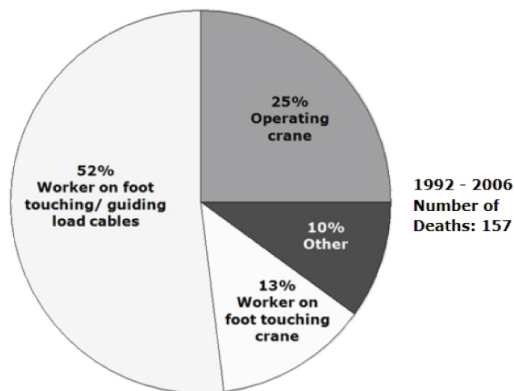
## The origin of the development

A safety instrumented system is a worthy investment.

When occupational injuries occur, they are accompanied with both direct and indirect costs. Direct costs include medical costs and indemnity payments, while indirect costs result from production time lost, production delay, spoiled production facilities or products, training of new employees, legal costs, increased insurance costs, and bad publicity. As the U.S. Occupational Safety & Health Administration suggests, one study estimates that for every \$1 invested in workplace safety and health, employers see a \$4 to \$6 return. [1]

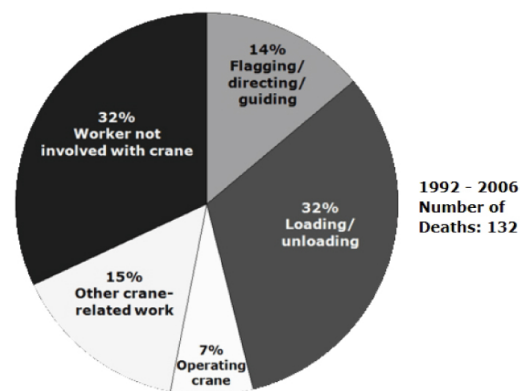
The crane is an indispensable machinery to many factories, but unfortunately it is also known as one of the most accident-prone facilities. The statistics (charts below) from U.S. Department of Labor [2] indicate that, from 1992 to 2006, 157 people died from crane power line electrocutions, an average of 10.46 people per annum. Meanwhile, 132 people died from being struck by crane loads, an average of 8.8 people per annum. In 2011, the occupational fatality rate of Taiwan is 0.036‰, and that of the U.S. is 0.022‰.[3]

Why Workers Died: Overhead Power Line Electrocutions



Source: U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries Research File

Why Workers Died: Struck By Crane Loads



Source: U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries Research File

When operating an overhead crane, an operator could easily get disoriented due to changes of operating positions. This could be hazardous, especially when the crane is already loaded. Mistakes of crane moving direction could lead to lethal consequences. In 2006, an crane operator of a steel company was struck dead by crane load. As the operator got confused with the moving path of the crane, a 20-ton steel coil crushed upon him. With piles of steel coils behind him, he failed to escape and died on the spot.

Kunye Industrial Ltd. invents the very first crane direction early warning system in the world to **ensure the safety of your employees and to avoid damages by crane accidents**. It guarantees safe and efficient operation of overhead cranes. A light press on direction buttons of the control panel displays the moving direction of the crane. With no need to move the crane to check its moving path, crane accidents caused by disorientation could be totally avoided. In addition, diagonal movements can also be achieved by simultaneous presses on two direction buttons (for example east and north buttons) to reduce moving distance and increase production efficiency.

Kunye Industrial Ltd. also invents a fast-install safety rear light to identify the invisible killer, electricity. Different from the conventional welding installation, it uses a fast adaptor connecting to the rear part of power rail, and saves 90% installation time. **Maintenance personnel can easily identify if the power is on and avoid electrocution**.

**Kunye's crane direction early warning system and safety rear light are the safety guardians for your industry.**

### Reference

[1] Website of Occupational Safety and Health Administration <https://www.osha.gov/Region7/fallprotection/safetypays.html>

[2] Understanding Crane Accident Failures: A report on the causes of death in crane-related accidents, Presented at 2010 Crane & Rigging Conference May 27, 2010

[3] Council of Labor Affairs of Taiwan, 2011 and 2012 International Labor Statistics

## Instructions on the operation of the crane direction early warning system

When handling valuable or vulnerable machineries, such as aircraft engines, it is vital that the operator know the moving direction of the crane. With the crane direction early warning system, the operator can press the button lightly to check the moving direction first. When the moving direction is confirmed, he then holds down the button to move the crane.

Please see the demonstration below.

### Moving the crane to the east

Step 1. A static arrow  indicates moving direction



Press the button lightly to check the moving direction (East).

Step 2. A running arrow  indicates continuous movement



Hold down the button to move the crane.

### Moving the crane to the south

Step 1. A static arrow  indicates moving direction



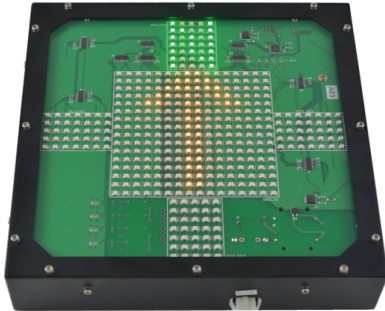
Press the button lightly to check the moving direction (South).

Step 2. A running arrow  indicates continuous movement



Hold down the button to move the crane.

# Technical specification and on-site performance

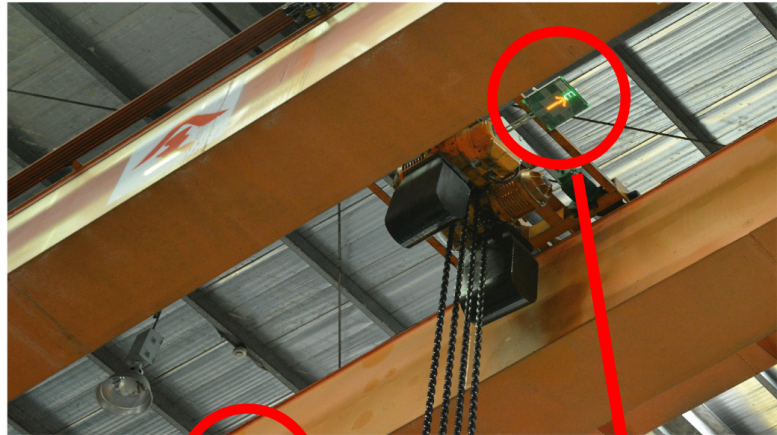


## Crane Direction Early-Warning System

### Crane Direction Early-Warning System Specification

Direction Indicator	8 directions(E/W/N/S/EN/ES/WN/WS)
Receiver Frequency	419.2MHz
Receiver Sensitivity	<-112dBm
ID code	4.2 billions (2^32) sets
Voltage Option	AC 48/110/220/380 V
Power Consumption	<8W in average
Operating Temperature	-10°C ~ +75°C
Operating Humidity	10% ~ 85%
Size	270mm X 270mm X65mm
Weight	1.9Kg

\* The crane direction early warning system should be installed with Sigma remote controller.



Crane Direction Early-Warning System

We thank Shine Far Metal Industry Co. Ltd. for adopting the crane direction display system in their production line of car body and stamping parts. The system significantly improves the safety and efficiency of the mold changing process.



## Safety Rear Light

### Safety Rear Light

Voltage Option	AC 48/110/220/380 V
Power Consumption	<8W in average
Operating Temperature	-10°C ~ +75°C
Operating Humidity	10% ~ 85%
Size	245mm X 137mm X90mm
Weight	1.1Kg



The safety rear light is installed on the rear part of power rail to indicate if the power is on. It greatly improves the safety of the crane maintenance personnel.



# KYEC

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