

Here is the footage of Site Safety Forum for Works Contracts and Property Services Contracts 2017 which was held on 6 July 2017.

The speaker is the senior project manager of Gammon Building Construction Limited Mr. Lee Man-chau.

His presentation topic is interlocking guard of bar bending machines, the use of radio frequency identification technology in warning system in fatal zone and the use of virtual reality in safety training.

Good afternoon, distinguished guests. I represent Gammon Building Construction Limited and the construction site of the Housing Authority at the Area 54 in Tuen Mun.

I hope to share some architectural and design experience with you all. I would like to show gratitude to HA and OSHC for giving the opportunities to Gammon Building Construction Limited

to share three ideas on design and construction.

The cornerstone of Gammon Building Construction Limited's safety culture is the Swiss Cheese Model.

We lay the foundation for safety and all development based on this theory.

We have four layers of cheese, first one is design and engineering, second one is considerations of materials and mechanics.

The third one is the construction procedures and the last one is the safety awareness.

As management staff, I also hope to manage at the sources.

Reducing the risk of accidents through design, materials and mechanical equipment is the most effective approach.

Today I would like to share three ideas on design with you.

The first one is the automatic interlock guarding for bar bending machine.

Recently the industry noted that there were different seriousness of accidents no matter the worker is a novice or experienced.

For example, the finger is trapped. Which part did the problem occur?

We found out that worker's fingers need to touch the rotating part of the machine directly when operating the bar bending machine.

It's been the case for a long time.

Regarding this aspect,

we install a shield on the rotating part and connecting with a pedal.

When they press the pedal for operation, the machine cannot be operated if the guard is not closed.

It will not hinder the construction progress and the hands of the worker don't need to touch the rotating part. It is safe.

OSHC and the MTR have also supported this approach,

the cost is also quite cheap,

it only involves some minor changes to the circuit board.

The direction of development in the future will focus on large machinery.

Creating a safer construction environment for the workers is the direction of our research.

The second idea that I am going to share is using radio frequency identification system (RFID)

to strengthen the fatal zone alarm system.

Gammon Building Construction Limited mainly uses a red fence

to identify the fatal zone,

this needs to be implemented consistently.

Sometimes, workers may enter the fatal zone leading to accidents.

Therefore, we designed a simple radio frequency identification (RFID) technology system.

First, we posted the RFID tag on the worker's safety helmets, and installed the radio frequency identification system (RFID) sensor at the blind spot area of the mobile machines.

When the worker approaches the mobile machine, the sensor would trigger an alarm.

The RFID fatal zone alarm system offers protection :

When the CCTV of the mobile plant is out of order.

the alarm system can alert the operator that a worker has entered the fatal zone.

Radio frequency identification (RFID) technology can also achieve the followings:

By connecting it to the computer system,

more information can be collected, including the name of the worker, which trade of worker he is, time and frequency of trespassing to the restricted area, then analyze the data.

Which trade of workers, who and why do they always need to enter the restricted area?

Are there any needs in terms of construction?

The management staff has to make corresponding follow-up actions or regard that as personal behaviour issues of the individual worker.

All aspects of information can help the management staff make effective follow-up action.

The third idea is the use of virtual reality in safety training.

Virtual reality is common in video games, but it started late in terms of construction.

Why do we need to apply virtual reality technology?

Owing to a large number of new employees joining the construction industry, they are not familiar with the individual specifications and work environment.

Using virtual reality technology can let new employees understand the places that they need to pay attention to in the working environment, especially on individual construction sites.

The workers can have a personal experience, not theoretical but real.

We let workers experience the potential dangers of the site

by applying virtual reality technology in the following environments.

For example, by simulating electric shock, you can feel the vibration.

Simulating the fall from high altitude can achieve visually falling effect.

Simulating machine toppling accidents, we let workers pay attention to the plant operation.

Simulating the overlapping of works area let the workers know that they are in the fatal zones.

The sharing finishes here.

The following part is the audience answering the questions asked by the speaker.

Thank you, Mr. Lee, please ask the audience a question.

Please pay attention,

the difficulty of this question is normal.

I just mentioned that Gammon Building Construction Limited is based on the Swiss Cheese Model.

How many pieces of the Swiss Cheese Model?

There is a friend from the industry at the back.

Audience is answering question

Four layers.

Guest response

All right, we have four layers. Congratulations.

Disclaimer

Safe Work· Zero Incident

Site Safety Forum 2017 for Works Contracts and Property Services Contracts

"Careful design can reduce accidents and ensure smooth and safe execution of works"

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