

Thank you, everyone!

In March this year, I joined a trip to Korea organised by the OSHC.

And I can recognize some of the tour members sitting here.

I will try to share with you

a short presentation of ten minutes.

And I hope that you can learn some safety practice in Korea from this speech.

This is just a simple overview.

We have visited Korea Occupational Safety & Health Agency (KOSHA).

Some basic economic background of Korea will then be introduced ,

as well as some statistics of accidents,

and the safety and health management system in Korea.

We visited the construction of a tunnel and a suspension bridge,

and visited the headquarters of Samsung in Seoul,

and have some 3D and 4D experience in the safety innovation school of Goldstar.

In 1987, the Korea Occupational Safety & Health Agency Act was announced.

And in the same year, the Korea Occupational Safety & Health Agency was established,

in order to protect workers' safety, life and health.

It is a non-profit-making organisation.

to prevent disaster.

the budget in 2013

is \$372 million US dollars,

most of which are from Industrial Accident Compensation and Prevention Fund.

Currently, the population of Korea is 50 million,

with working population of 25 million.

Look at the bottom figure,

there are 2.7 million construction workers.

Here, the figure shall be 4,

when the worker is absent from work for 4 days or more,

they would count it as an accident .

So, in the statistics of the year 2013,

The accident rate is 0.92%,

which amounted to 25% of the overall industrial accident rate.

While in the fatality rate of industrial accident,

the fatality rate in construction amounted to about 50%.

33% of the accidents on construction site in 2013,

one third of the accidents occurred on sites and half of the fatal accidents are related to falling from height,

and the second is electric shock.

The construction industry in Korea is facing with some difficulties,

Just same as Hong Kong,

such as high mobility, small companies, migrant workers,

Aging and women workers

These are the difficulties we are facing.

So how about the whole safety organisation system there?

Their government is just like our Labour Department, which works out policies and regulations.

In respect of public operation, it depends on the Korea Occupational Safety & Health Agency (KOSHA),

which is funded by the Industrial Accident Compensation and Prevention Fund.

It is responsible for training, R&D, inspection and certification, as well as research.

In respect of private sector, there are officers of Registered OSH Related Organisations

to assist the KOSHA with the investigation work.

The role of KOSHA,

is to provide consultation, testing, training, promotion of safety culture,

is just like the combination of the Labour Department, Construction Industry Council and the OSHC of Hong Kong.

and they follow 18001.

In Hong Kong and Europe, it is OHSAS18001,

while in Korea, it is called KOHSAS18001,

and it is also carried out according to the principle of "Plan, Do, Check, Act".

Korea OSHA has built a system called KOHSAS18001 certification,

and it is for voluntary participation.

If contractors want to bid for some projects,

they cannot tender without this certification.

Those participated companies

did perform better than other companies,

The accident rate of 0.92 mentioned just now is in percentage,

and the rate of those participated companies is as low as 0.19.

Because these companies are of certain scale, more systematic, and the accident rate is significantly lower.

It takes one year for the process of this certification,

with validity of 3 years.

The performance of the company will be reviewed every year,

and after 3 years, renewal inspection would be carried out every 3 years,

For the certification.

Let's have a look at their safety regulations.

They have a plan called hazard and risk prevention plan,

aiming at 5 major risky construction processes,

such as excavation work deeper than 10 meters,

or construction work higher than 31 meters,

or bridge construction

with span over 50 meters,

or dam & tunnel construction, and all of these are required to carry out this hazard and risk prevention plan.

In addition,

the Bureau of OSH will conduct inspection,  
and after inspection,  
you may be required to make some improvements,  
or order the employers to take some improvement measures.

So what's the target?

Workplaces with higher-than-average accident rate,  
and workplaces with significantly poor work environment,  
especially the workplaces with 2 or more fatal accidents per year,  
and they will focus on those workplaces.

In addition, they also have regulations aiming at human resources.

The designers shall be responsible for the structure and structural safety,  
and the contractors shall carry out and implement safety control plan,  
while the supervisors in charge of supervising the works of the construction sites shall  
check

whether the safety control plan is well implemented.

And there are major points to share with you,  
in regard to the strategy of construction accident prevention.

When it comes to responsibility,  
all of them will participate in the law reform,

The developers have absolute influence on construction process,  
and shall be held responsible for construction disaster prevention .

In addition, they also encourage the contractors to  
implement occupational health and safety activities.

In order to raise the employers' safety consciousness,

Provide education,  
which has a budget,

approximately 750 million Korean Won.

And the second strategy is to  
promote KOHSAS18001 certification into practice.

It is expected that the company will be able to obtain the certification.

The third is to check the scale of the construction;

for construction site of petty size,

it shall be provided with financial support;

for small size companies,

it shall be provided technical support;

for medium size companies,

it shall be focus on large accident prevention;

For large size company,

as mentioned before,

it shall be implemented with the hazard and risk prevention plan

The fourth strategy is re-introduce the Hazard and Risk Prevention Plan

the contractors shall provide a risk assessment and a review for risk investigation,

and shall submit the plan to a public corporation for evaluation,

such as KOSHA as mentioned,

and if the result of the evaluation is passed,  
then it is acceptable,  
and the result of the evaluation shall also be submitted to the local Labourgovernment  
office,  
and in case of anything found inappropriate or the result is failed,  
it shall be sent back to the contractor  
for reconsideration,  
and the result will also be notified to the licensing or approval agency,  
and the project may be stopped,  
so any construction activity will be suspended.

It can be seen that the company accomplishing the hazard and risk prevention plan  
has an obviously lower accident rate,  
which is 0.32%;  
while the rate of other companies and the whole industry is 0.92%.

Here is another measure,  
for the medium and small construction sites,  
there are financial supports  
to assist them in the funding for the installation of system scaffolding,  
to replace some steel scaffolding,  
because they have noticed that there are relatively more accidents of falling from  
height,  
and if the scaffold can be improved,  
then we can see:

when constructing a system scaffolding with toe board or working platform,  
it is only allowed to construct the upper floor after the lower floor is completed,  
which can lower the risk of falling from height,  
Medium and small construction sites also have some preventive measures of their  
own,  
for example, they will employ retired but experienced construction personnel  
to oversee the hazard and risk prevention programs on construction site,  
and they will also employ private safety companies to  
assist in the inspection of some small construction sites,  
and such measures can also relieve the human resource problem of KOSHA.

Now let's look at

our visit to a tunnel

SK Engineering & Construction

is a big company

Of course they have implemented the hazard and risk prevention plan, because  
tunnels are designed in the project

The construction could not started until

KOSHA had checked their construction work plan

The tunnel construction started in 2009, and is nearly completed

It has a length of 6.1 kilometers

among the length

some bridge and also some roads are included

On the day when we visited the tunnel, every visitor was required to wear personal protective equipment

This one is used to wrap the trousers end so that no dust could enter into the trousers

This is the entrance

There is a tunnel on the left and right sides

Then we entered.

These are the photos taken before excavation works commenced

as they had been aware of risk of flooding

soil collapse, gas explosion

or falling stone

or even overrun by vehicles

In Hong Kong, some accidents of hitting passengers by vehicles occurred during road works

especially tunnel works

Let me show you some photos

The works are to be finished, and the tunnel will soon be completed

what measures did they take?

For example, they have carbon monoxide measurement apparatus

emergency exits and emergency telephone were provided

You can see from the left hand side

Some shelters from falling stone

some water spraying facilities were provided to reduce dust

Some electric wires were marked with labels

and also some warning signals

so that the workers could be woken up

in case they fell asleep inside the tunnel

Besides, we also visited a suspension bridge

This is the longest suspension bridge now in South Korea

It has a length of over 1000 meters

It connects the two sides of Ulsan Harbour

and it will be the third longest single span suspension bridge

It belongs to a Build-Transfer-Operate Project

It's going to be completed next year.

They will also conduct risk assessment

It is worried that the workers may be bumped by

the vehicles, especially the heavy duty vehicles

a warning system is provided.

In addition, there is colour code for lifting gears.

How about the situation of working at height?

A catwalk system is designed.

All the workers are equipped with full-body harnesses

During work at height, the harness can be hung to the rails

These are their full-body harnesses  
Wind speed detector are provided.  
These are some models we visited in the office  
They adopt some barges to transport the components of bridge  
when arriving the lifting position  
the components are lifted to the bridge with hangers.  
Till now, two main cables have been completed.  
You can see that some roads, bridges and tunnel are basically in their shape  
This is a main cable  
Tramway support has been put in place  
together with another main cable  
a support is formed  
it can be used to hang longitudinal beams  
Under the rail of cable car, there is a working platform  
From the other angle  
we can see steel mesh is laid under the catwalk  
it is laid all the way  
and the workers are working under it  
We also visited the headquarters of Samsung in Seoul  
I have several slides to share with you  
They promote the Integrated management system  
covering Quality, Safety and Environment  
I'd like to play show this slide  
If the company promotes safety first  
and the workers are asked to have the safety slogan painted  
can safety first be realized?  
let's think  
they also want to promote a Proactive Leadership Behaviour system  
to promote a safety system  
Depends on a leader  
and it's very important  
Then who are included in their safety training scheme?  
managers, engineers, designers, frontline workers are all included.  
They have found that the accidents decreased gradually  
And for a better result  
A good leader is required  
Next, we went to another place  
Safety Innovation School of Goldstar Research Institute  
It is a school invested by a Korean construction company in 2006  
And it is the first school among its kind  
It is a 3D classroom  
There are joysticks for controlling games  
And 3D glasses are provided for watching movies  
4-day training is provided

in order to change the safety mindset through personal experience  
We were also invited to visit there  
They are asked to learn about  
First-aid measures  
And toys are provided for such purpose  
How to carry out the training?  
They showed to us.  
An automated external defibrillator  
is used  
It's a machine  
that help to rescue workers with heart trouble  
They allowed us to try on  
full-body safety harness  
And let us have such experience  
I didn't try it on  
Some team members  
also tried on  
the chest safety harness  
Of course, it is not acceptable nowadays  
It is not a full-body safety harness  
How will one feel  
if he falls down suddenly from height?  
Certainly, this is a simulated action of falling down  
Falling down to the ground won't happen  
But we had another experience  
We did feel that  
the board we stood  
opened and fell down suddenly  
Fortunately, we fell down into the ball pool  
Is there any feeling of falling down freely?  
According to our experience  
There is feeling of falling down freely.  
In fact, similar accidents often occurred.  
Moving machines fatally struck worker.  
There is moving machine that hit our team members  
Of course protective cushion was provided  
And a working platform  
inclined suddenly  
Allowing us to feel  
The instability of the working platform when it collapsed suddenly  
We also experienced  
extinguishing fire  
A room was full of smoke  
Simulating a place on fire

We couldn't see how we could escape  
But we had such experience,  
visited several places  
and have some observations  
The KOSHA launched a safety management system  
Before commencement of works, a hazard and risk prevention plan should be made  
and approved. And the owners are required to be responsible for safety management  
of construction sites  
Quality, Safety and Environment  
are in fact an Integrated Management system  
To promote it, a safety leader is indispensable.  
Safety training should be conducted from top management to the frontline staff  
Covering the development of whole course of safety  
First, we start from the environment  
Then implement management system  
And finally we focus on human behaviour  
For human errors  
Let's see how to make improvement  
It is mentioned in many industries  
That 80% of accidents are caused by human factor  
Let's discuss  
For example, in the aspect of machinery  
How can the equipment detect approaching people?  
Warning signal may be triggered  
Full-body safety harness  
Is the only permitted type of safety belt  
We should do well in this aspect.  
Whether automated external defibrillator will be used  
And whether it can help the aged workers  
Let's look at the last slide  
One professor ever told us  
Good management depends on team work  
And the ability of a team,  
in fact most of time,  
doesn't depend on neither its strength  
nor the strongest person  
Instead, it is controlled by the weakest point  
It is the Law of Minimum  
raised out by a German chemist.  
Thanks to you all.