



建業建榮控股有限公司
CHINNEY KIN WING HOLDINGS LIMITED

建築設計安全 (Design for Safety)

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建業建榮控股有限公司



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公司簡介

- 成立於一九九四年；
- 包括：建榮、鑽達及永峰；
- 約700多名員工；
- 從事各類地基工程、鑽探、場地勘探及地盤平整；
- 獲屋宇署、發展局工務科及房屋委員會納入認可專門承造商名冊。



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公司安全核心價值





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如何運用建築設計安全(工序)
加強工地安全

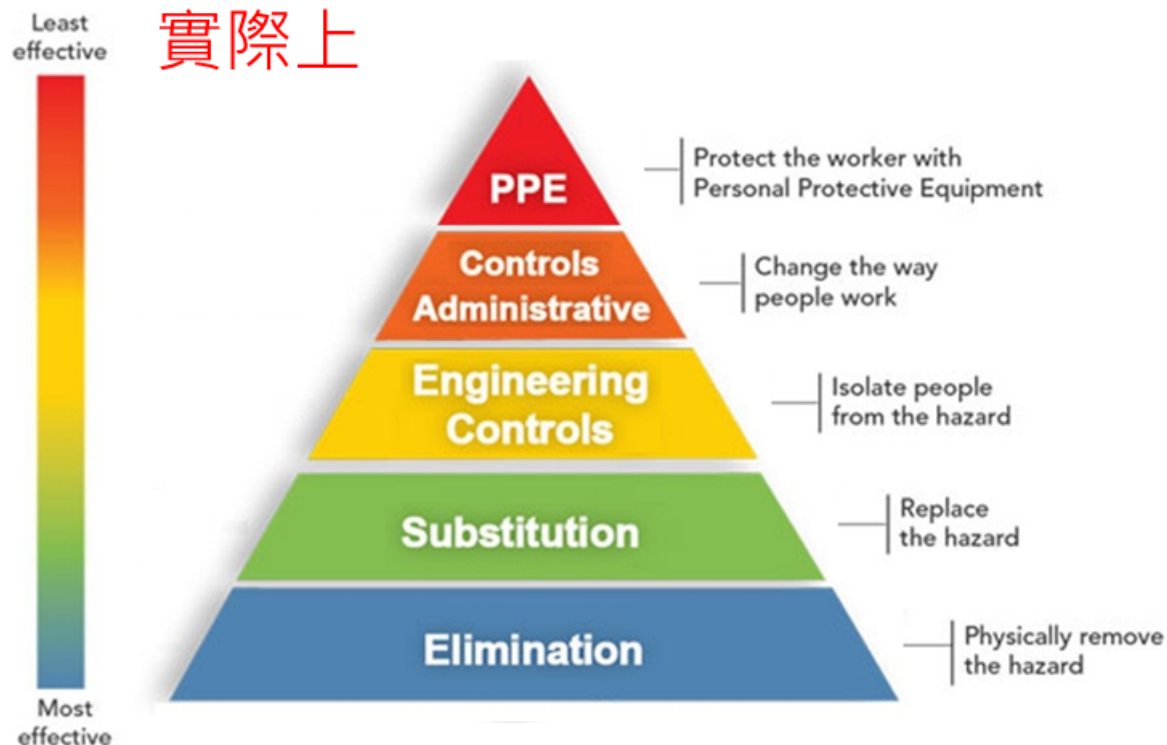
How Design for Safety
(Working Procedure)
Helps to enhance Site Safety



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實際上



1. 個人防護裝備
2. 改善工友工作方式
3. 將人與風險分隔
4. 取代危害
5. 物理上清除危害

Source: <https://www.safetysolutions.co.nz/consulting-old/hazard-identification-services/safety-in-design-facilitation/>



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對象?

For Whom?

一定係用家



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怎樣才是一個好Design for Safety?

1. 安全?
2. 好用?
3. 就手?
4. 或是又就手，又好用，令工友不知不覺做得更安全？

達致“一勞永逸”



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廠商設計



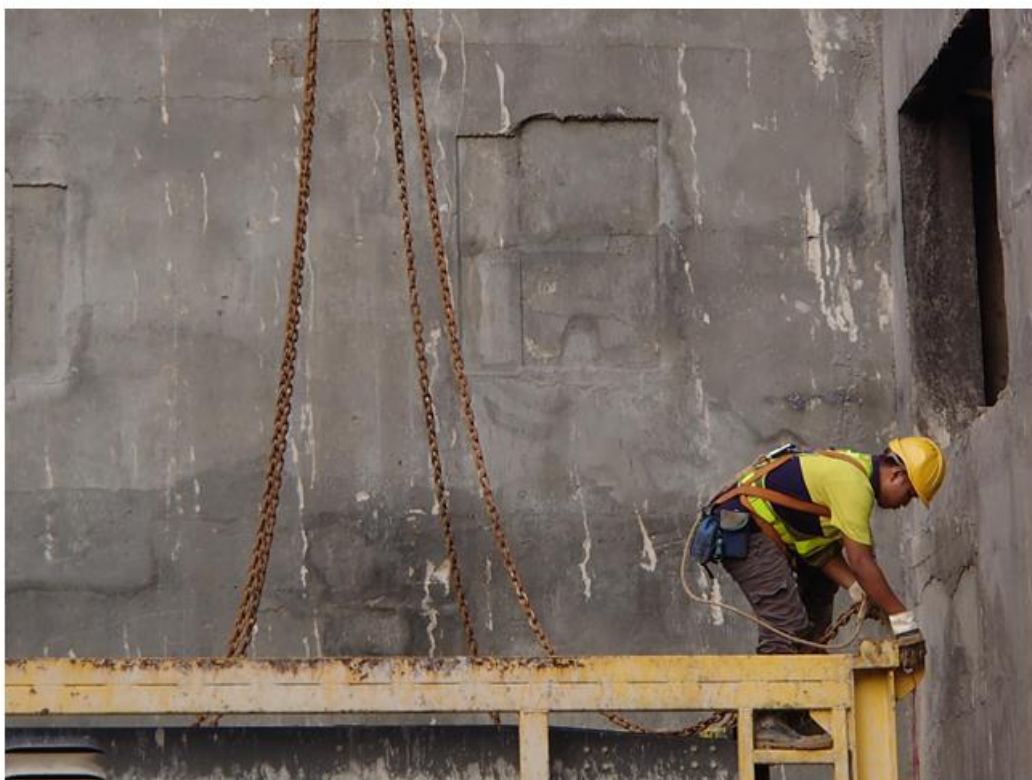
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著安全帶
先好上去



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安全帶扣邊度？
高掛低用？



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Design for Safety
是否“一勞永逸”？



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Design for Safety
是否“一勞永逸”？



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有咩用?



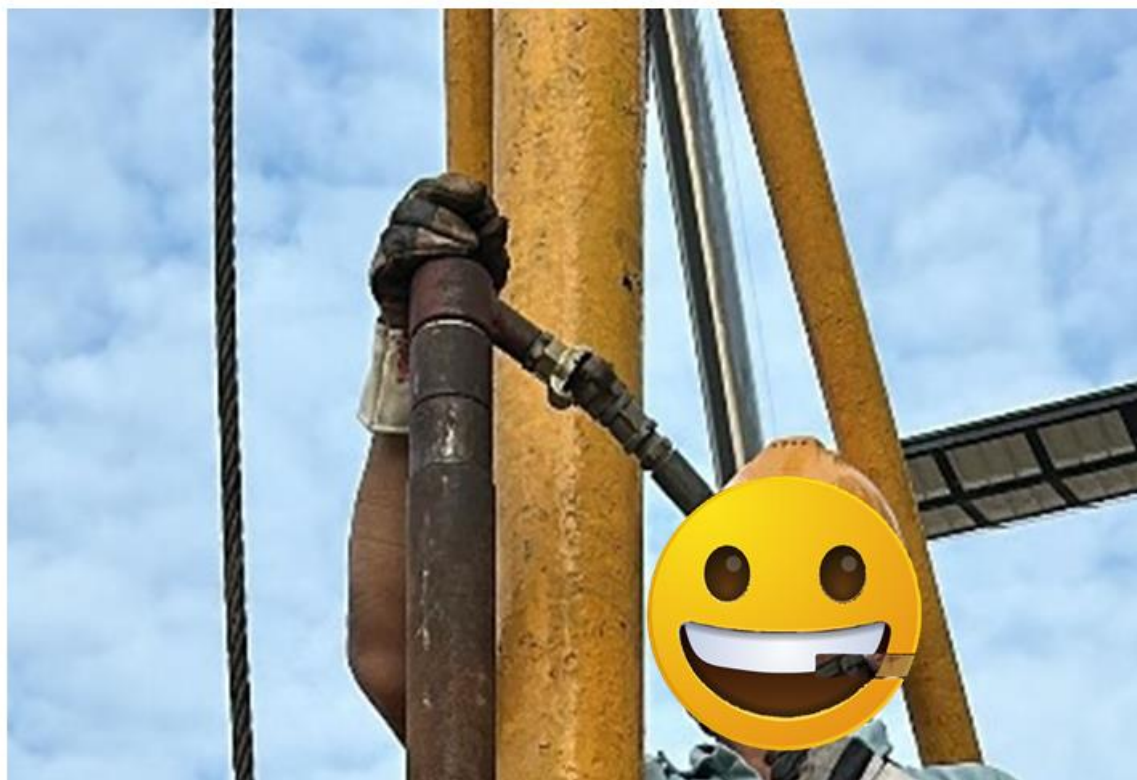
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駁條水喉好簡單啫





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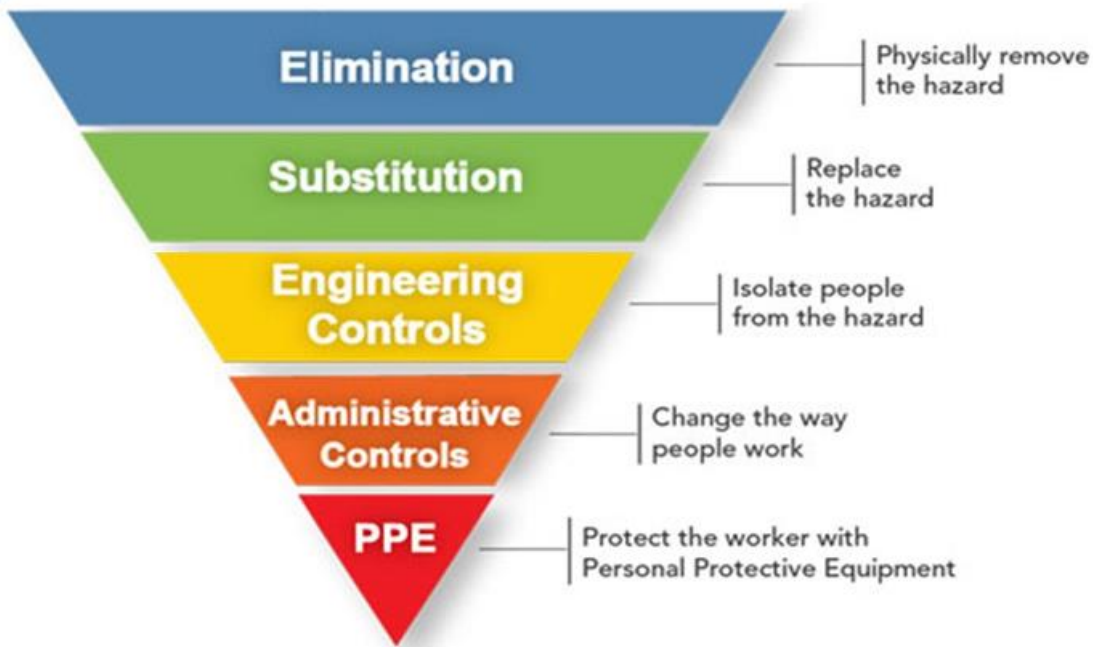
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Most effective



Least effective

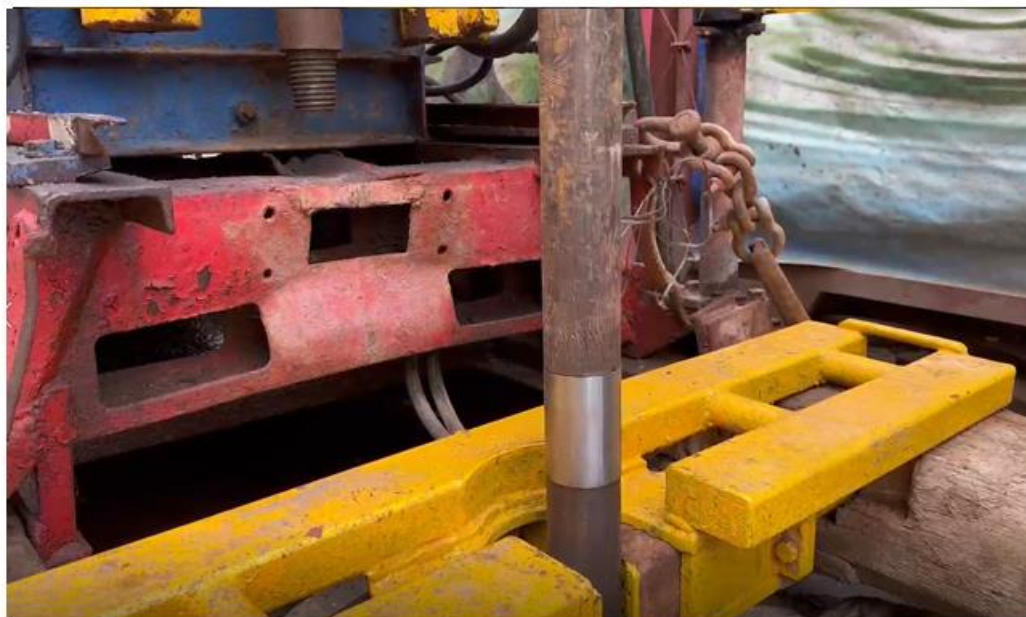


1. 物理上清除危害
2. 取代危害
3. 將人與風險分隔
4. 改善工友工作方式
5. 個人防護裝備

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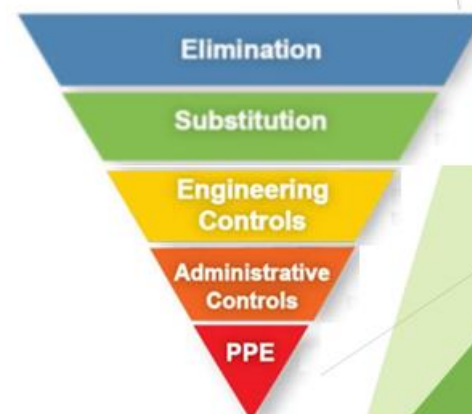
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牙鉗套的演化

1. 物理上清除危害

最好唔使用





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適切培訓

有設備 ≠ 識得用





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提供培訓



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工友行為?





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唔喺插?





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有方法!





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總結

- 優化詳細施工方案/程序
- 接地動態風險評估
- 加強培訓
- 利用科技監管



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祝各位

快樂上班，平安回家!



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最後，再送上一條由我們所拍
攝的微電影－
“承諾”





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Thank you!



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Q and A

This is a clip from the 16 October, 2025 recording of the
Hong Kong Housing Authority
“Site Safety Seminar for Capital Works New Works Contracts”
The speaker on stage is Mr James LAM
Director and General Manager of DrilTech Ground Engineering Limited
His topic is
“Design for Safety (Work Procedure)”

(00:23)

I suddenly thought of a TV drama I had been watching recently
It was about Jin Yong’s martial arts stories
Why did it come to mind?
I would put it this way
What Ms ZHANG shared just now was like the inner discipline
while what I am going to share now
is more about the practical techniques
In other words, principles alone are not enough without techniques
With techniques, we can put the principles into practice
but without the principles, they are only form without substance
I hope that through this session
everyone can apply both the principles and the techniques
and bring them into play at the same time

Let me first briefly introduce my background
I come from a company
called Chinney Kin Wing Holdings Limited
We were established in 1994
The company has three subsidiaries
namely Kin Wing, DrilTech and Everest
As all three companies are specialist contractors
the examples I will share next
are also examples from specialist contractors

We are involved in foundation works, ground investigation
and some site formation works

Our company's core value
is actually printed on our uniforms
which is "Work Happily, Return Home Safely"
This is our core safety value

Now let us move into the main topic
How to apply Design for Safety, especially in work procedure
Here I would like to add one point

Ms ZHANG shared just now
on how to implement Design for Safety at the project level
What I would like to share today
is how to enhance site safety through the work procedure
What do I mean by work procedure?

As I mentioned just now, I am a specialist contractor
so what I will share is our everyday work
You may even think of them as small hands-on site tasks
For these small tasks in our daily work
how they can be done more safely

So today, I am not speaking from the overall project design perspective
Instead, I would like to share with everyone
how we can improve safety in these small work procedures

Ms ZHANG also mentioned just now
the inverted triangle often seen online
which shows how safety can be made more effective
As everyone knows
the least effective measure is Personal Protective Equipment (PPE)

Next is improving workers' work methods,
which is Administrative Controls
then Engineering Controls and Substitution

and finally Elimination

which means removing the hazard completely

I would like to ask everyone

which method do you usually see being used most often?

Do you have a sense of which one we use most often?

Yes, in reality, very often

we use this triangle upside down

The most commonly used measure is PPE

Why do we use personal protective equipment most often?

Because it is the easiest and most accessible option

I can go to a hardware store

and buy a safety helmet, safety lanyard and goggles

Once bought, they can be used immediately

But what exactly is PPE?

I would like to take this opportunity

to explain my own understanding

PPE is often described as a “Last Resort”

In my understanding it is only the final line of defence

Simply put, if even this line of defence fails

your life may genuinely be at risk

So this should actually be used only as the final measure

I also hope everyone can adopt this mindset

Here I have a picture I would like everyone to look at

There is a footbridge and a carriageway here

The other picture is the same

with a footbridge and a carriageway

But in the picture on the left, many people cross the carriageway

instead of using the footbridge

I think everyone understands why

because using the footbridge is more troublesome and less convenient

The picture on the right is similar

But why does no one cross the carriageway there?
Because it is really not convenient to do so
There is a red circle here
and the crossing point is actually within that red circle
If you do not use this crossing point
you have to climb over the railing or use the footbridge
So I think this design is quite good
I am sharing this example deliberately
because there is a bus stop beside the crossing point
In other words, once I get off the bus,
I can cross to the other side immediately
This is only a very small difference
but you can already see whether the design is effective
Sometimes, whether a design is truly effective
depends precisely on these very small details
After all that
who exactly are we designing
these work procedures for?

Yes, it must be the workers
The way we plan our work procedures or develop these arrangements
must start from the workers' perspective in order to be effective
Otherwise, it is like parents reminding their children to study
telling them to work harder and spend more time on revision
and spend less time on their phones or watching television
As adults, we understand that this is for their own good
but children may not see it that way
So when we plan for workers,
we need to think from the users' perspective
From this direction
our target must be the end users
So what defines good Design for Safety?
Is it enough as long as it is safe?

Or should we also focus on user experience and convenience?

Just like the bus stop example

where you can cross to the other side immediately
after getting off the bus

Is being convenient and easy to use enough?

If our Design for Safety

can be practical and user-friendly

so that when workers carry out the task

the safety measures feel like part of the normal workflow

without making the work more difficult or inconvenient

while they provide a permanent solution

then in my view

that is good Design for Safety in practice

Next

I would like to share some examples

This is an air compressor

The manufacturer's original design included a ladder
for workers to climb up

What task did they have to climb up for?

It was at the position marked by the red circle

That position is used for lifting the air compressor

After reviewing this practice

we realised that if workers had to climb up for lifting

it would involve work-at-height or work above ground hazard

So we came up with the idea

as shown in the photo of building a frame

and installing the air compressor inside the frame

Workers can climb up using this ladder

Does this look a little safer?

At least we can see the worker climbing on the outside rather than inside

so if an accident happens, it can be noticed in time

But what is usually our first reaction?

We tell them not to climb up directly

and to use personal protective equipment first

They must put on a safety harness before climbing up

This has always been our usual approach

For work at height, put on a safety harness first

But this photo already shows the problem

The worker climbs onto the frame

where four holes have been provided for attaching the lifting chains

But I really want to ask one question

Since he is properly wearing a safety harness

it must be used together with a lanyard

We have always been taught that

a lanyard must be anchored high and used low

But in this position, is there actually a suitable anchorage point

for him to anchor it high?

In other words, does this safety harness

really remove the hazard of working at height?

I believe the answer is quite obvious

Basically, it does not help much

And this is the simplest approach

As mentioned just now

does simply buying a safety harness and a lanyard

really solve the worker's problem?

We then thought of adding lifting chain attachments to the frame

Please take a look and see if you can guess what they are used for

Does anyone know their purpose just by looking at them?

I have shared this example several times before

and it turns out that people without lifting experience

would not know what these are for

In fact, this method is designed to achieve a lasting solution
For this worker, he no longer needs to climb up
When the crane lowers the hook
he can attach the hook to the lifting chains on the frame from the ground
Once all four lifting chain hooks are attached,
the air compressor can be lifted directly
In this way
the risk of working-at-height can be removed,
achieving the effect of Elimination
We have successfully implemented
the top level of the Hierarchy of Controls triangle
Is it really a lasting solution?

The next machine
is a drilling rig that we commonly use for ground investigation
Here you can see the metal rings indicated by the arrows
I wonder if everyone knows what they are used for
or whether you have seen workers using them

In fact, these metal rings are often used as steps for climbing up
Just like the worker in the picture, what is he climbing up to do?
Because water is needed during drilling
and a water hose must be connected to deliver water into the drill rod
That is why this worker
please note, this is only a staged photo for demonstration
in actual practice, we place great importance on safety
has to climb up to connect the hose
But once he leaves the ground, it becomes work at height
At this point, what answer comes to everyone's mind?
Again, safety harness and safety lanyard
But does that really solve the problem?

In this kind of environment
where exactly can the lanyard be anchored?

And how can it be anchored high and used low?

If we do not want to face this problem,
of course we can simply gloss over it

But what we really need to ask ourselves is
is there truly no way to solve it?

Can we make further improvements?

If you know how this water hose is connected
you will know that there is a joint
commonly known as the “claw coupling” position

This “claw coupling”

has a rubber ring inside the joint that needs to be pressed tight with force

In other words, when the two parts are connected together,
quite a lot of force physical strength is required

But if a worker is climbing at height
it is very difficult to exert force, and the operation is very strenuous

So we thought about this

Can the water hose be extended?

If the water hose is extended, what effect can it bring?

As shown in the picture on the right, after we extended the water hose
the worker can complete the connection on the ground

At the position indicated by the mouse pointer
we changed the original “claw coupling” to a threaded connection

After changing it to a threaded connection,

PTFE tape is applied to secure it

When the water hose is long enough
a person standing on the ground can complete the connection
replacing work at height

So we removed all the metal rings for climbing shown in the left picture
to prevent workers from climbing up in the first place

This is the first point

The second point is that someone will immediately ask

what if the threaded connection becomes worn and leaks?

Do we not need to climb up to repair it?

Our countermeasure is

to prepare sufficient drill rod assemblies in the warehouse

If there is wear and tear, we replace the whole assembly

We do not replace it on site

Instead, we lift away and replace the whole assembly directly

This ensures that workers

only need to make connections on the ground throughout

and we also do not allow them to climb up again to handle those works

This is the method we came up with

This is the kind of thinking

we apply to these small everyday hands-on site tasks

For example, connecting water hoses and climbing up for lifting work

we need to think about

how each work procedure can be carried out more safely

The next example

is also a very common test in our ground investigation works

It is called the Standard Penetration Test

This test is carried out to obtain the blow count

which is the so-called N value

Since I first joined the industry,

experienced workers have been using this traditional method

Please take a look

at how he installs the test hammer and carries out the test

As far as I know

quite a number of experienced workers still use this method today

Clearly, this movement can very easily injure the waist

So what is the solution?

Again, take a moment first and put on a waist support to protect the waist

otherwise it is very easy to strain it
Or check first whether the ground is slippery first
and if it is slippery, do not proceed

These are things we often say
But the question is, can they really be implemented?
Do they really help the workers on the ground?
Will he really check whether the ground is slippery first
before pulling that heavy hammer?
Will he really put on the waist support properly
before installing that heavy hammer?

Everyone knows the answer
As mentioned just now, PPE is actually the least effective method

So we thought about this
must it be done this way?
Later, we developed a bucket-like device
commonly known as the SPT hammer bucket device
It places the heavy hammer directly inside the bucket
Each time it is used, just like this worker
when carrying out the Standard Penetration Test
he only needs to move the whole bucket forward into position

After completion, the heavy hammer
is placed back into the bucket and moved aside
With this arrangement, can we completely eliminate the need
to rely on measures such as wearing a waist support
or checking whether the ground is slippery first?

Everyone can think about this
At present, we have already installed this type of hammer bucket
on several drilling rigs
with the aim of completely removing the physical burden of workers
manually pulling up the heavy hammer

Next, I would like to share
how this inverted triangle can actually be used
Does everyone know why elimination
is placed at the very top of the triangle?
Because it is the most difficult to implement
and requires the most time to plan
The reason is simple
people often choose the easy way rather than the difficult way
The most convenient method is of course to use PPE directly
But since we are all here today
I would like to share a method with you
Do not start with the easiest approach
The first step is to think about Elimination
How do we use Elimination?
Elimination can definitely be used
because the first step I teach everyone
is that when doing any work procedure
first eliminate PPE
In other words, for the inverted triangle just now
the first step is to take away PPE
Do not treat it as your default consideration
but start thinking from the top level instead

First, we remove the least effective level
I hope that if everyone can build this mindset
you will first remove PPE from consideration
and not rely on PPE every time
I hope this method can help everyone

The next example
is a problem we often face in drilling works
Can everyone hear the sound?
When I hear the sound of someone saying “ow”

I know that the worker's hand has been caught
This kind of pinch-point injury is very common in drilling procedure

So we started to think
could this work procedure be improved step by step
using the inverted Hierarchy of Controls triangle?
In fact, we really followed this inverted triangle
and improved it step by step

Now I will share the whole process with everyone
The first step is very simple
If hands may get caught, the first response is to wear gloves
This is a PPE measure
Even if the hand is caught, it can reduce direct injury
But does wearing gloves mean it will not hurt?

I believe it will still hurt, and the worker may still be injured

Next, we tried changing the visual markings
The pipe wrench was originally red
so we sprayed it with different colours as a warning
This was the second approach, Administrative Controls

For example, we reminded workers that
red marks the danger zone, so do not touch it
Blue marks the safe area
and they should only hold the blue part
Can everyone guess whether this worked?
Of course it worked the first few times as the workers still remembered
But after a few days, workers would very likely forget
the difference between red and blue

So later, we thought about
handling it through Engineering Controls
We developed a pipe wrench cover

If workers are willing to use it
they can place the cover over the pipe wrench

You can see that there is a handle on top
If you put this cover over the pipe wrench
and the worker uses it accordingly
then his hand will always hold the handle position
In this way, his hand will always stay above
keeping it away from the pinch point
But in the end, we heard some feedback from the users
that is, the workers

Those familiar with pipe wrench operation will know
that loosening and tightening are movements in opposite directions
In other words, when you loosen it, it is one direction
and when you tighten it, it is the opposite direction
meaning that the pipe wrench
needs to be flipped over frequently during use

So the workers said
Boss, this pipe wrench cover has a good intention
but every time we flip it over, we have to remove it and reinstall it
and then repeat the installation and removal
otherwise the handle will face downward
Sorry, I sometimes bring a sample here
but I did not bring it today
Later, my colleagues thought about it again
and made the bracket of the protective cover adjustable in both
directions

Now, no matter how the pipe wrench is flipped
the handle can always remain facing upward

Next time, if there is an opportunity, I will bring it for everyone to see
I missed it this time, sorry

In the end, a machinery manufacturer came up with a more advanced solution for us
and developed a hydraulic clamp to directly secure the drill rod
replacing the workers' use of a pipe wrench to hold the drill rod just now

However, some workers were still reluctant to use it
If you do not start from the users' perspective
even the most advanced technology will be difficult to put into practice
The workers said, Boss, this hydraulic clamp is not bad
but sometimes it lacks gripping force
If we increase the pressure slightly, we worry it might damage the drill rod

Most importantly, it is too slow
With a traditional pipe wrench,
I can clamp it on and brace it against the timber
and the job is done immediately
But with this one, I still have to press a button
and wait for the hydraulic system to push forward slowly,
which really slows down the work

So some workers would remove the hydraulic clamp
and switch back to the method they found most convenient
These are the very real thoughts of workers

Later, we thought about it further
could we completely do away with the pipe wrench
while still securing the drill rod firmly?

In the end, we thought
since workers would move the hydraulic clamp away
could we make it impossible to remove?
So we built the clamp directly into the chassis of the drilling rig
This is our improved drilling rig
The clamp has already become part of the machine

This way, workers cannot remove it because it is already built in

As you can see

it is now clamping the drill rod

In other words, it can clamp the drill rod directly

so workers no longer need to operate the pipe wrench by hand

This naturally eliminates the risk of hand entrapment

This shows how the clamp holds the drill rod

You can see the yellow clamp at the top, which cannot be removed

because it is already fully fitted into the machine

So if we think according to the inverted Hierarchy of Controls triangle

the first step is to eliminate reliance on PPE

and instead think beyond PPE

step by step, to see what can be done at each level

The example just now is a very good one

After going through a process

in the end, is there actually a chance to achieve elimination?

I believe that if everyone is willing to take a little time to think

and a little time thinking about it

there is a chance that it can be done

Alright, after we have made so many preparations

do the workers actually know how to use them?

And are they willing to use them?

Here I will share another example

Let us return to the air compressor frame mentioned just now

One time, when I went to inspect a site

I saw the frame and found that the four lifting rings were placed on top

Do you know how the workers answered me?

He said, Boss, because when we pass by,

we often hit our heads on them

so we put them on top to avoid hitting our heads

At first, I almost believed it

But if everyone thinks about it carefully

when exactly were those lifting rings placed on top?

In fact, those lifting rings had never been lowered from the beginning

When the frame was first placed on the ground

the workers had already put the four lifting rings on top

otherwise the site would not have appeared in that condition

So was it really because they were afraid of hitting their heads?

Clearly, that was actually just an excuse

It may be because they do not know how to use it

or they do not understand the design

or they are simply used to the old method of climbing up to unhook it

So the four lifting rings and chains were all left on top

Therefore, even if you have a good design

training is still needed

You need to tell workers why and how to use it

At the same time, monitoring is also necessary

Here is another example

Let us look at these electrical plugs

Has everyone noticed the difference between them?

Yes, the colours are different

In fact, different colours represent different voltages

One is 110V and the other is 220V

This itself is a form of Design for Safety

Under normal circumstances,

plugs with different voltages cannot be inserted

If you look closely

you will find that there is a raised part to prevent incorrect insertion

However, in fact, it is not completely impossible to insert it

Why?

Because some people will cut away that raised part for convenience

After cutting it away, an incompatible plug can also be forced in

So even if the manufacturer's design is perfect

if we lack site supervision

then no matter how much we think about it, it is still not enough

Therefore, supervision is absolutely indispensable

We should not assume that having a safety design

means the issue is solved once and for all

A lasting solution is our ultimate goal

and in some work procedures, it can indeed be achieved

But at the same time, we still need to monitor

whether workers are actually following our improved work procedures

To summarise today's sharing

First, we need to optimise construction procedures

For the details just now, we need to think more carefully

In the past, we often relied on verbal reminders

telling workers to be more careful and fasten their safety harness

and put on personal protective equipment before working at height

But the question is, can these requirements really be achieved on site?

For the lanyard of that safety harness

is there really a place where it can be anchored high and used low?

After the worker climbs up, is there actually a suitable anchorage point?

Have these measures truly solved the problem?

Second, we need to carry out practical on-site risk assessment

Very often, when do we submit our risk assessments?

Usually, they are submitted before work starts

I understand that a basic version is needed

But when the work is actually carried out on site

we need to look at it again

just as Chairman Ho of the Construction Industry Council

often reminds us about dynamic risk assessment

When we arrive on site

we must review whether the original risk assessment is still applicable

because sometimes, even a small change on site

may make the original assessment no longer applicable

and many accidents happen under such circumstances

Third, it is not enough to think only by ourselves

This must be supported by education,

training and technological monitoring

Chairman Ho of the Construction Industry Council has also reminded us

that accidents often happen when management is lacking

For example, close to the end of the working day,

on Saturday afternoons, or during Sunday rush work

that is, when management is lacking

If we think about it in reverse

with management in place,

will there be fewer accidents and fewer injuries?

The answer is clearly that there is a chance

Therefore, apart from supporting the Government's implementation of

the Smart Site Safety System (SSSS) on construction sites

our Artificial Intelligence (AI) cameras

are not only used to monitor workers

but also to strengthen management

If management is present

I believe workers will naturally be more careful when working

This is like when everyone plays a claw machine

If there is a CCTV camera above watching you all the time

your behaviour will also become more restrained

Or like drivers

if there is an orange pole ahead, commonly known as a speed camera

I believe that at the moment you pass it, you will naturally slow down

So I hope that everyone on our construction sites
can Work Happily and Return Home Safely
I also hope that today's sharing
can allow everyone to take away some ideas with you
As Ms ZHANG said

I really hope everyone can take away some ideas
and share it with your own colleagues
as well as contractors and friends on site

Finally, last year marked our company's 30th anniversary
so we specially produced a microfilm
Some friends asked me after watching it
what exactly does the ending mean?
In fact, the ending does take some thought to understand

So I would like to suggest
if you are busy now and cannot focus, leave it for later
But when you have some quiet time
spend a few minutes watching the microfilm to the end
because the ending is a little unexpected
and it is worth thinking about carefully
I also highly recommend sharing this microfilm with frontline workers
I can assure you, the story is definitely not boring
That concludes my sharing today

Thank you
Thank you for watching

(30:13)