

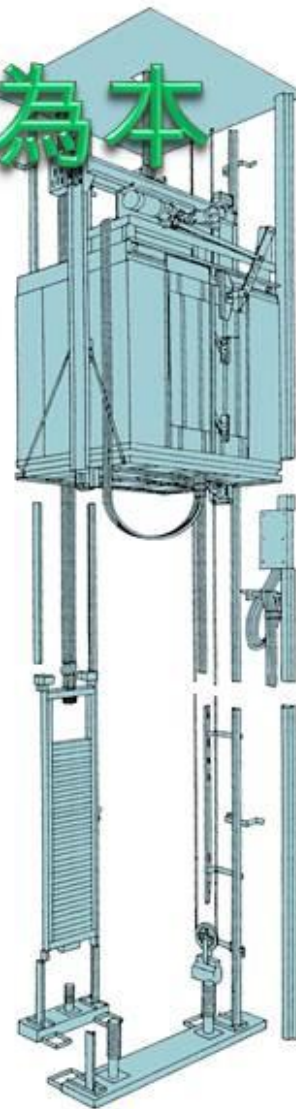
升降機工作安全 – 以人為本

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經理-工業安全

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P.1



內容簡介

- 安全體驗訓練
- 使用導向吊船安裝升降機
- 升降機機頂工作安全
- 升降機機械護罩

安全體驗訓練(1)



目標及成效

- 感受發生意外時的可怕狀況
- 明白各種安全守則背後的原理
- 學習及實習使用各安全設備(正確使用安全帶、防墮器及安全帽)
- 提升工作中的警覺性
- 能夠安全地進行工作

安全體驗訓練(2)

高空墮下



高空墮物



坐在機頂安全帶被拉扯裝置



安全體驗訓練(3)

觸電體驗



夾手體驗



安全鞋體驗



安全體驗訓練(4)

滑倒體驗



模擬真實意外影片



使用導向吊船安裝升降機(1)

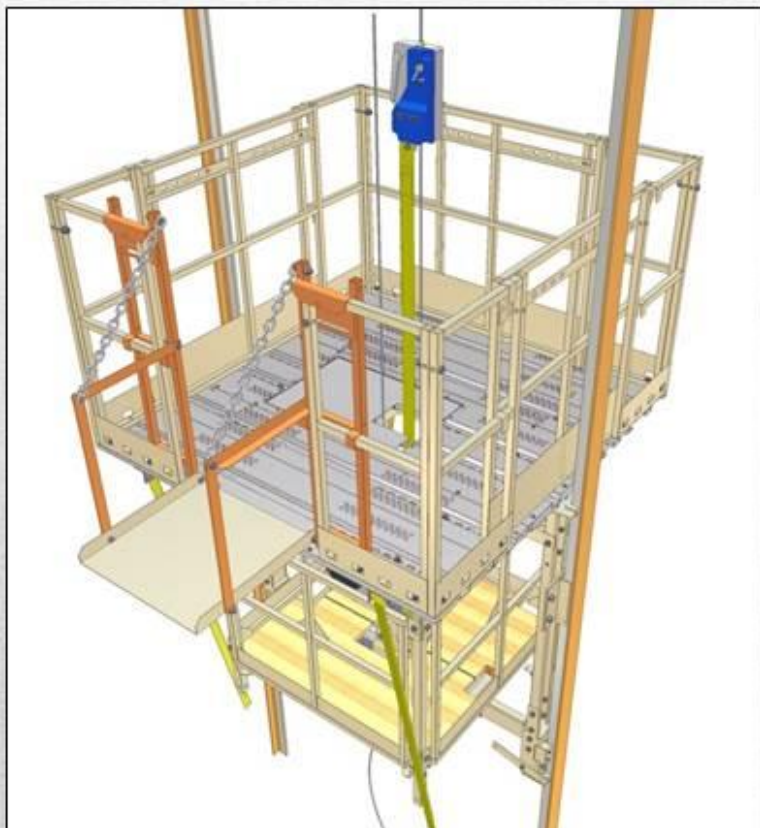
使用棚架安裝升降機的問題

- 高空墮下風險極大
- 不配合安裝工作
- 體力要求大
- 搭棚及拆棚危險性大



使用導向吊船安裝升降機(2)

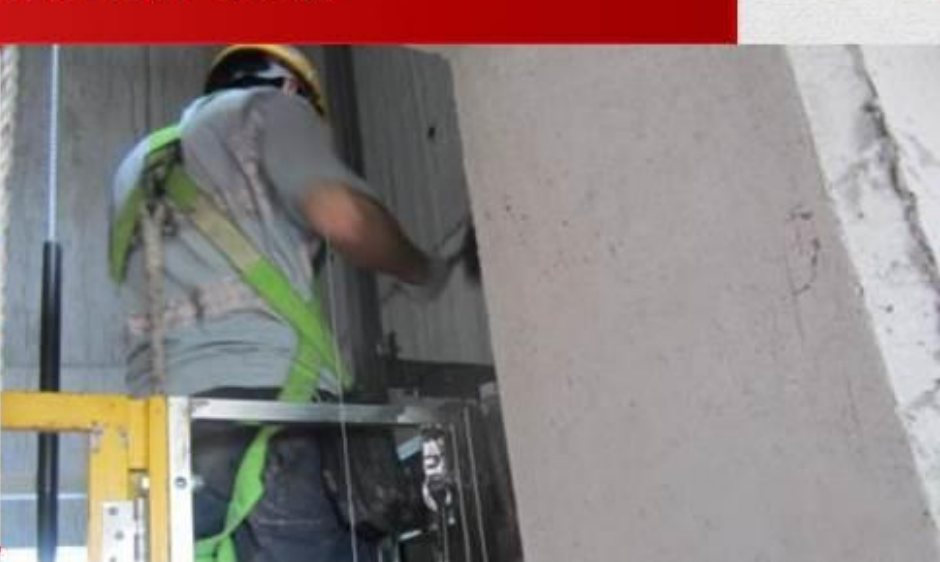
三菱導向吊船基本構造



使用導向吊船安裝升降機(3)



三菱導向吊船的工作環境



使用導向吊船安裝升降機(4)

導向吊船的好處



在2017年, 三菱超過70%的安裝升降機工程使用導向吊船, 並在所有房署升降機工程中使用。

升降機機頂工作安全 (1)

機頂工作主要的危害



人體下墮



被物件夾着



升降機機頂工作安全 (2)

機頂及圍欄的設計



一般機頂及圍欄



配合工友工作需要的
機頂及圍欄

升降機機頂工作安全 (3)

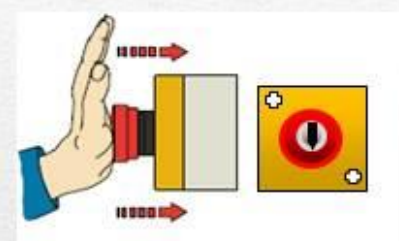
在機頂預防被夾的措施 - 檢查模式（俗稱「手動慢車」）的上鎖裝置



一般上鎖裝置



以人為本的上鎖裝置



將慢車開關匙掣按下，以保持在「鎖定」位置

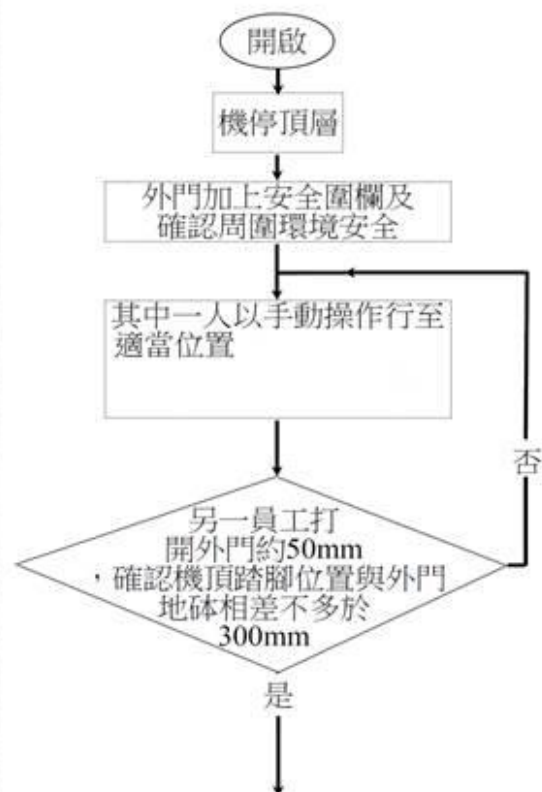


用鎖匙將慢車匙掣開關轉回至「解鎖」位置

升降機機頂工作安全 (4)

在機頂預防被夾的措施 – 進出機頂程序

機頂之作業安全工序
上機頂安全工作程序 (2人或以上)



打開外門，將所有機頂控制掣 (緊急停止掣、
AUTO-HAND (NORMAL/INSPECTION)、
DOOR)全部 OFF，慢車鎖掣上鎖/啟動，並確
認其有效性後再開機頂燈

進入機頂並選定安全位置
及扣上安全帶繩扣 *

與機廂工伴互相呼應及上行至頂平層
工伴步出機廂，同時在機廂入口加上附有
警告標誌的適當圍欄

手動下行至適當位置在外
門地砵不高於 300mm
讓工伴登上機頂工作及扣
上安全帶繩扣 *

依照工作程序
安排進行工作

完

* 機頂無設置合規
格安全圍欄須嚴
格執行

以流程圖方式表達

升降機機頂工作安全 (5)

在機頂預防被夾的措施-機頂工作安全

在機頂工作安全注意事項

- (a) 前題條件：機頂工作嚴禁自動快速控制升降機運行。
- (b) 基本安全注意事項：
 - (i) 機頂工作如需越過合格圍欄必須把安全帶繩扣在合適固定點。
 - (ii) 機頂操作運行只准手動慢速控制升降機運行，一般選用下降方向進行作業。
 - (iii) 機頂操作運行前必須確認控制台各操作制有效。
 - (iv) 升降機無論停機是否短暫均須即刻按下緊急停止掣(紅掣)STOP並確認該緊急停止掣有效。
 - (v) 機頂操作行機應維持「先寸動、後行機」的原則。
 - (vi) 機頂工作必須先行關掉風扇並確認保護罩完整。
 - (vii) 當升降機以手動慢車控制運行時，機頂人員必須注意：
 - 勿讓自己的身體或衣物超出機頂範圍。
 - 勿讓飛器刀、平衡鉞等井道裝置碰傷。
 - 部份樓面較低要在接近頂樓時避免頭部撞向天花。
 - 切勿抓握主纜(特別是2:1循環纜)。
 - (viii) 當機頂與轎廂內人員配合工作時必須以機頂控制運行為主導。
 - (ix) 測試轎廂門開關裝置時工作人員必須預留安全距離以免搖臂移動時碰傷。

- (x) 拆除門頭蓋外門地砵蓋或線槽蓋均必須選擇一安全適合的位置擺放穩當，工作完畢並掛回原位及確認穩固。
- (xi) 工具只可放置在機頂範圍的適當位置，絕不可放置在井道槽鐵上或任何固定於井道內之設備上。
- (xii) 有2人或以上在機頂時，要互相配合，啟動 / 停止及上升 / 下降前均需呼叫知會。
- (xiii) 如機頂踏腳位置與外門地砵相差高度多於300mm，應重新調整機頂高度後才可進入。如不能調整機頂高度，必須請求上級提供合適工具及人員協助，不可獨自進入。
- (xiv) 如要確認升降機是否處於檢查模式(慢車)，必須站於廳廊或機房進行測試。嚴禁處身於機頂上進行測試。
- (xv) 如在廳廊進行測試時，應把緊急掣(紅掣)復位，然後才關上外門，正常情況下升降機應處於停止狀態，並再按下外拎手及留意升降機樓層或上下顯示有沒有上升或下降，以確認升降機是否處於檢查模式。

特定的機頂工作安全指引

升降機機械護罩(1)

升降機機械主要的危害



電梯技工夾斷手指



每年3時許，48歲電梯維修技工吳×與數名同事，於北角道華達321號利達大廈2期23樓天台電梯機房進行維修。吳某持手入籠機維修期間，電梯機內的鋼索突然折斷反彈，吳某右掌其衝，右手無名指尾指被鋼索打中飛脫，傷口血流如注。他痛極呼救，同事見狀嘗試為他止血及報警。救護員到場為他敷以冰敷傷口後返院（左圖），消防員其後關閉電梯機房斷電，再由救護員送院醫治為傷者驗傷（右圖），警未知是否成功取回。

被夾的危害

升降機機械護罩(2)

機械護罩的設計



一般設計



配合人員的設計

多謝

P.18



Here is the footage of
Site Safety Forum 2018 for Works Contracts and Property Services
Contracts
which was held on 3 July 2018
The speaker comes from
Mitsubishi Elevator Hong Kong Company Limited, Manager
Mr. Ly Chi-bach
His topic is "Safety of Lift Works - People Oriented"

(00:27)
Good afternoon
Thank you for inviting our company
On behalf of
Mitsubishi Elevator Hong Kong Company Limited
I would share with you on the safety of lift works
How to prevent accidents by people-oriented culture
Today, I will mainly focus on the following four items
The first is safety experience training
The second is the application of
guided suspended working platform for lift installation
The third is safety work above lift car
The last is protective guard design of lift machine

What is the safety experience training?
Look at this picture, it is our training center
established in August 2016
Our goal or outcome is
to let employees "remember the experience"
Through the training, we hope the trainees or employees
could experience the terrible outcome of accidents
and they could understand
the principles behind the various safety rules
For the maintenance or installation of lifts

there are many guidelines for our compliance
Why are there so many guidelines?
We could share through this training
Also through the class
I believe many of you have attended classes before
What have you learned from the class?
Could you remember the content?
We hope through this training
staff could apply and practise
all kinds of knowledge taught in training
We definitely want to achieve
as we would aim at people-oriented
the most important thing
is the awareness of the people
that is, to enhance work awareness
Finally, to achieve our goal
achieving work safely on site

Owing to time constraint
let me share briefly our experience
We have seven experience trainings
The first was shown in this picture, falling from height
To review those precedent cases
most falling from height involved climbing ladders
Therefore we simulated the situation
Let colleagues experience falling
when climbing ladders in a safe situation
Let them understand a few points
Not only on the importance of using safety harness
but also awareness on climbing ladder
which is three-points contact
Secondly, this was another experience training
of falling objects from height
Unfortunately
unlike the situation in mainland China

that I saw similar sharing
from the “Green Cross” of OSHC
They let a colleague stand underneath
and objects were thrown to him to let him experience
being struck by falling objects
Our company is comparatively conservative
We chose to follow that in Japan
This safety experience
was also similar to the reference
from our mother company
We couldn't do it on a real person
The photo might be small
We would find a ceramic bowl to represent a human head
Threw something down
Everyone could feel the impact when the bowl broke
and let everyone know whether the bursting
could be avoided by wearing a helmet
It simulated the feeling of falling objects from height

In the third experience
we would sit on the top of the lift car
let the safety harness pull the body unexpectedly
Let the workers
experience what would probably happen
If they didn't follow the rules or they had misbehaviour
the feeling of being pulled suddenly was terrible
The next one was simple
which was electric shock experience
This was an electric shock machine
Shouldn't you able to
expect the experience of this machine?
Moreover, this was a hand-clamping machine
We couldn't put our hands into it
So we put in a chopstick instead
to let colleagues feel the feeling of breaking fingers

by using chopsticks

We often say that safety shoes are useful

However, how does it function?

This installation let us experience the difference of having safety shoes and no safety shoes

There was actually no fatal case related to this matter

The most popular type of accidents was slipping or tripping over

We had a slipping machine for colleagues to understand the feeling of slipping

These seven experiences were far from sufficient

Our headquarters would produce a video to simulate the fatal and serious accidents in the lift industry happened in the past to share with all of our workers

as a summary

This was the safety experience training

In the coming session

I will quickly explain the application of guided suspended working platform for lift installation

Traditionally, we use scaffolding

What is the risk of using scaffolding?

As shown in the list here, they include falling from height incompatible with the work, high physical demand and the risk during the erection and dismantling of scaffolding

This is the working environment by the application of guided suspended working platform

This is the design that our company adopts

You may note the environment is very different from that of scaffolding

What are the benefits?

The most important thing is shown in the middle

It is safer and people-oriented as mentioned

Because our work mainly involves working vertically
The work in the entire lift shaft
is continuously up and down
If we use scaffolding
as per the requirements of the Labour Department
We need to erect access planks and
working platform at each location
before the commencement of works
The time spent on the erection of
the access planks and working platform is significant
and affect the work progress
That's why we adopt the guided suspended
working platform in the lift works
with higher efficiency
Most importantly, it is welcome by our workers
It was introduced by us
until now we found out the problem
If we do not use the guided suspended
working platform to install the lift
Many experienced workers refuse to work
and say "I can't accept this work, Mr. LEE"
I can't work without the guided suspended working platform
I would no longer climb the scaffolding
Why?
It is because it involves less strength requirement
and environmentally friendly
In 2017, over 70% of our lift works
has adopted the guided suspended working platform
Many thanks to the support of the Housing Department
In all modernization works of lifts
our company has applied
guided suspended working platform
Is 70% significant? It's not
Our goal is to use 100%
using guided suspended working platform

We need the continuous support from all sectors

What are the hazards

regarding the safety of the lift car top?

They include falling of person or being trapped by objects

To prevent falling of person is simple

by providing fencing and toe boards

This is a general design of the fencing and toe boards

as shown in the picture on the left

For people-oriented

We understand the need during work

as shown in the picture on my left-hand side

the fencing on the lift top

provides an ideal working environment

Avoid being trapped

The main reason for being trapped is that

the lift movement is not under our control

The lift should be controlled by the worker

who is working on the lift top

How can we accomplish this purpose?

We turn the lift into inspection mode

It is also mentioned

in the guidelines of the Labour Department that

it is necessary to ensure that

the lifts are in inspection mode

before the commencement of work

Therefore the industry is required to install a locking device

on manual operation switch

However our company consider this as just a lock

It would be locked when some checkers were present

and would not be locked when not

So we have designed an interlocking design

In addition to the slow operation mode

you need to activate the key button

before the lift could enter the slow operation mode

That is, the key button must be activated
The purpose of key button is to take away the key
The key shouldn't be held by
the workers on the lift car top
so as to make sure that the machine
is in the slow operation mode before working
This is our people-oriented requirement
We have simplified numerous guidelines
and Codes of Practice by a flow chart
to make it easier for colleagues to follow
There are also some specific guidelines
such as rules for working on the lift car top
Every company will have their own guidelines
No need to elaborate here

Finally, the main hazards of lift machinery
are trapping or pinching of hands in these photos
Very simple

The Labour Department always reminds
of using protective guards to prevent trapping
Look at these general designs with a covering guard
Like a lion being imprisoned in a cage
However the nature of our work is lift maintenance
That means, we need to remove the guard
Although the lift machine room has been locked
You cannot enter easily
To facilitate our workers to
carry out their work conveniently, efficiently and safely
our company has modified the design of protective guard
so that no tools are required for
installation or dismantling of the guards
The dismantling is gradually done part by parts
with handles and warning signs
so as to facilitate the progress of works
Thank you

Thank you, Mr. LEE

Do you have any question?

I have one question

What are the benefits of
applying guided suspended working platform?

Please

To gain more acceptance from the workers

Correct

Thank you

Thank you for watching

(11:05)