

**Hong Kong Housing Authority**

**Site Safety Forum 2015 for  
Works Contracts and Property Services  
Contracts**

**Enhancement of Process Control  
Learning from Safety Incidents**

**15 July 2015**

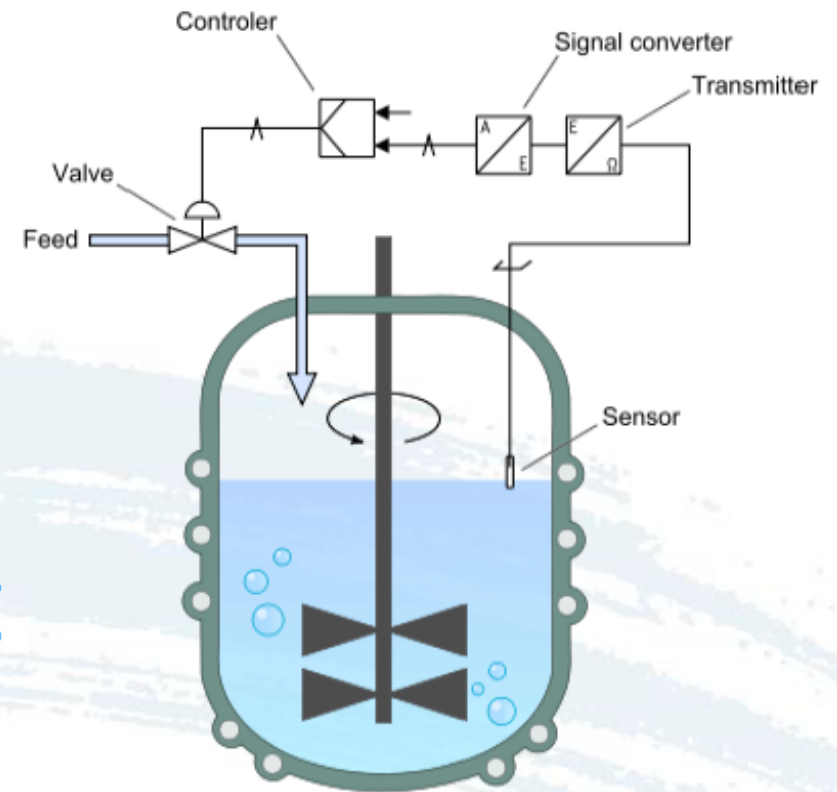
**Speaker : C Y Yeung**

# Enhancement of Process Control

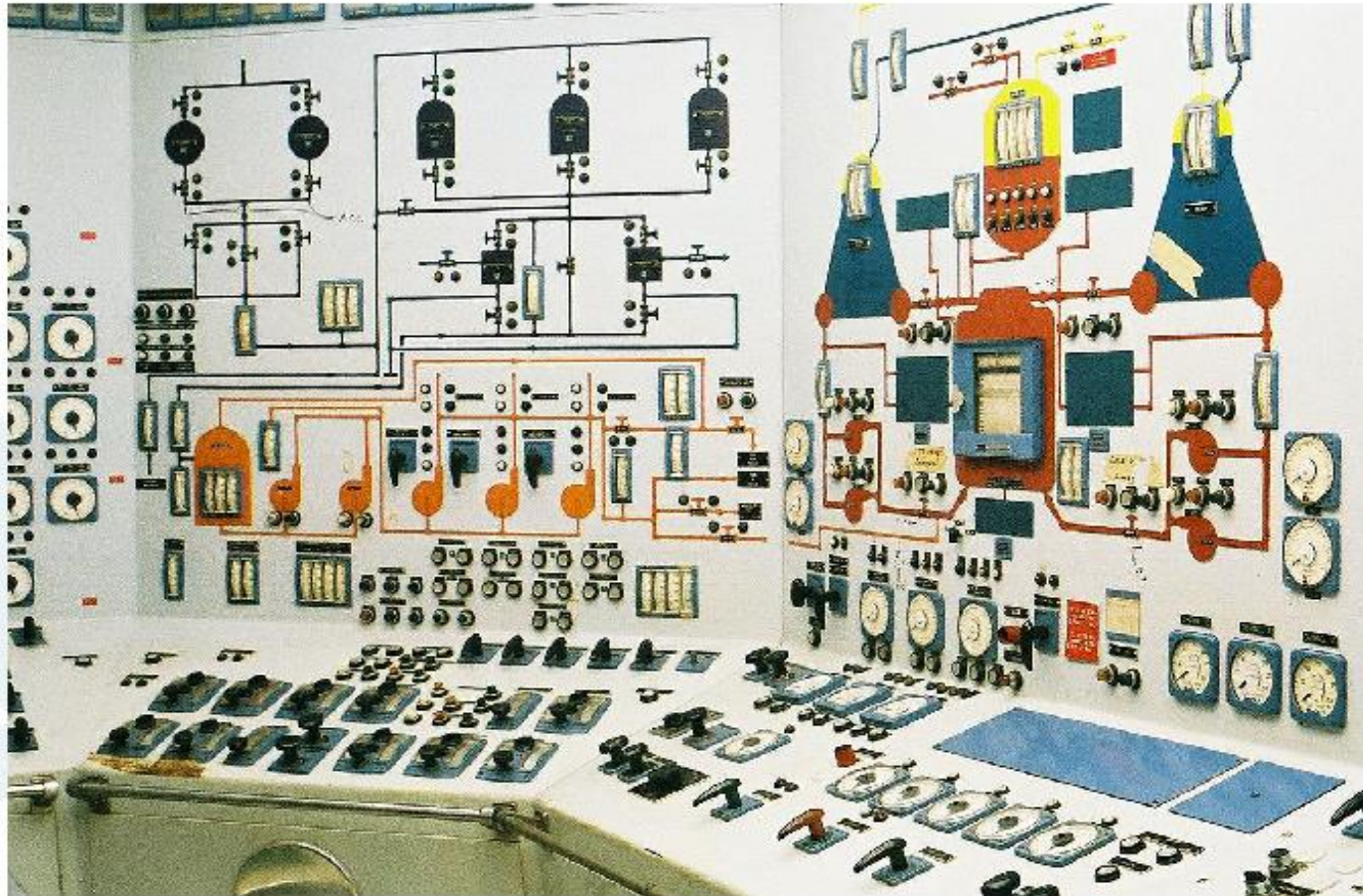
## Process Control Programme

工序控制計劃

過程控制程式 / 程序



# Enhancement of Process Control



# Enhancement of Process Control

## Safe System of Work for Lifting Operation



- should be established and documented
- should be prepared and endorsed by the owner / contractor with advice of the competent person, Safety Officer and relevant personnel
- should be effectively communicated to all parties concerned
- risk assessment
- planning of the operation



# Enhancement of Process Control

- selection, provision and use of a suitable crane and equipment
- maintenance, examination and testing of the crane and equipment
- the provision of a log-book for the competent examiner/competent person/mechanic to enter the details of testing, examination, inspection, maintenance/repair works which have been carried out for the crane



# Enhancement of Process Control

- the provision of properly trained and competent personnel who have been made aware of their relevant responsibilities under the Sections 6A & 6B of the F&IUO
- adequate supervision by properly trained and competent personnel
- observing for any unsafe conditions such as adverse weather conditions that may arise during operation



# Enhancement of Process Control



- ensuring that all necessary test and examination certificates and other documents are available
- preventing unauthorized movement or use of a crane at all times
- the safety of other persons who may be affected by the lifting operation
- the contingency plan providing procedures to be followed in case of emergency situation

# Enhancement of Process Control

## Control of the Lifting Operation

To ensure the implementation of the safety system of work, a responsible person should be appointed by the owner to have overall control of the lifting operation. This appointed person should:

- be fully conversant with crane operation and crane maintenance
- have adequate practical experience in mechanical engineering
- Be familiar with hazards, limitations and precautions associated with crane operation



# Enhancement of Process Control

- have properly trained in the safe use of mobile cranes including the theory of crane operation
- be familiar with the provisions of the LALGR and the contents in this code (CoP for Safe Use of Mobile Crane)
- ensure the safe system of work is fully understood by the personnel associated with the lifting operation
- be capable of performing inspections on mobile cranes and tests in accordance with the manufacturer's instructions

# Learning from Safety Incidents

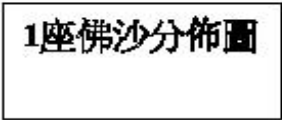


# Learning from Safety Incidents



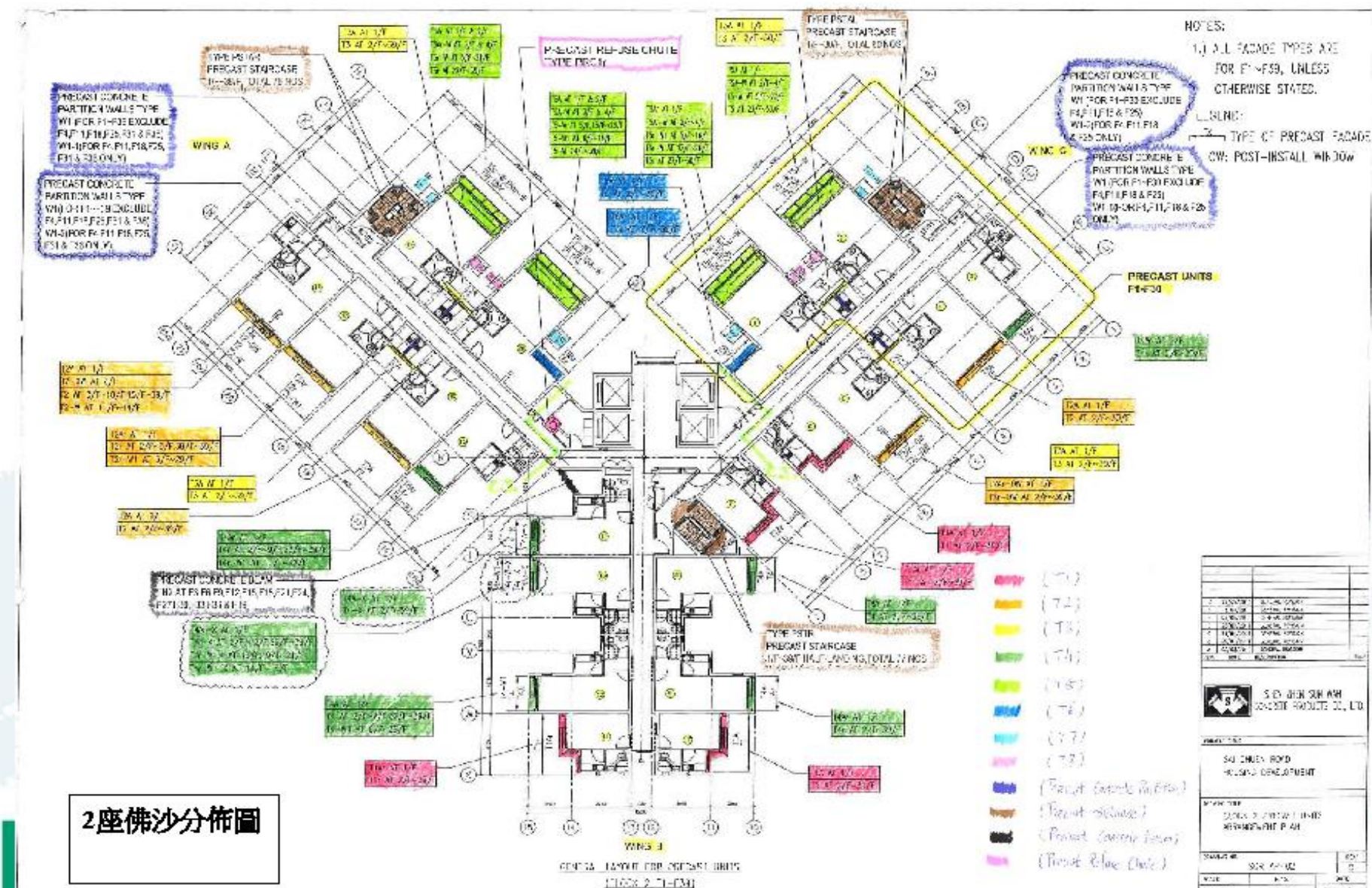


## Learning from Safety Incidents





## Learning from Safety Incidents



2座佛沙分佈圖



# Learning from Safety Incidents

## Stacking of Precast Concrete Façade Properly and Securely



# Learning from Safety Incidents





# Learning from Safety Incidents



比原設計  
15mm 深  
19mm





# Learning from Safety Incidents



Site Inspection Report  
 Date: 10/10/2018  
 Location: [illegible]  
 Inspector: [illegible]  
 Project: [illegible]  
 Description: [illegible]  
 Findings: [illegible]  
 Recommendations: [illegible]

Item	Location	Remarks	Priority
1. Defect	Beam 101	Crack in concrete	High
2. Defect	Beam 102	Crack in concrete	High
3. Defect	Beam 103	Crack in concrete	High
4. Defect	Beam 104	Crack in concrete	High
5. Defect	Beam 105	Crack in concrete	High
6. Defect	Beam 106	Crack in concrete	High
7. Defect	Beam 107	Crack in concrete	High
8. Defect	Beam 108	Crack in concrete	High
9. Defect	Beam 109	Crack in concrete	High
10. Defect	Beam 110	Crack in concrete	High

Remarks: [illegible]  
 Action: [illegible]  
 Date: [illegible]  
 Signature: [illegible]



Non-destructive Test at  
 6-month intervals  
 Liquid Penetrant Inspection  
 液體滲透劑檢驗



# Learning from Safety Incidents



**Tower Crane Hoisting  
Rope Broken**

**Hoisted Load  
(Concrete Skip)  
Fallen Down**





# Learning from Safety Incidents

It is noticed that the hoisting rope which was a brand new one with 1000 meters in length and Ø 20mm was installed a week before the incident



## Discussions:

1. brand new
2. improperly fitting hoisting rope (workmanship)
3. defective hoisting rope (quality)
4. hoisting rope damaged beforehand in operation
5. defective pulley block on tower crane
6. not compliance with the tower crane manual



# Learning from Safety Incidents



The broken end of the hoisting rope scatted on the working floor

Three hundred something meters hoisting rope cut and scrapped





# Learning from Safety Incidents

## Pulley Block on Tower Crane



## Discrepancies between Chinese and English Tower Crane Manual

部件名称	型号(或代号)	技术参数	质量 (千克)
电动机	YZPB(R)355M-8	功率 P=110kW 转速 n=740r/min	1780
减速机	B3HH13-C	传动比 i=22.4	2380
卷筒	150LVF40.02	底径 D=8100mm 最大容绳量(7层) 1000m	2030
钢丝绳	35WX7-20-1960	直径 d=26mm L=1000m 最小破断拉力 Fbr=302.6kN	1768
制动器	YP3-3000-710X30-11B-RLH 380V/50Hz	额定制动力矩 10800N.m 推动器型号: Ed 3000-60	350
	LMD76 (4把)	叉紧力 160 kN	85
		液压站型号 40BWZA.03B	105
起升机构	150LVF40.01	额定单绳拉力 F=40000N 额定单绳线速度(第5层时) v=130m/min	11957

Name	Model(or digit)	Parameter	Weight (kg)
Electrical motor	YZPBF355M-8	Activity P=110kW revolution n=740r/min	1780
Reducer	B3HH13-C	Transmission ratio i=22.4	2380
Cylinder	150LVF40.02	Base diameter D=8100mm Rope ultimate (5 layer) 550m	2030
Steel rope	35WX7-20-1960	Diameter Dd=26mm L=660m Mini break force Fbr=417kN	1768
Brake	YP3-3000-710X30-11B-RLH 380V/50Hz	Standard brake moment: 12000N.m Model: Ed 3000-60	350
	LMD76	4把	85
		Pumping plant 40BWZA.03B	105
Hoist mechanism	150LVF40.01	Standard single rope force F=40000N Standard linear velocity(5 <sup>th</sup> layer) v=130m/min	11957

# Learning from Safety Incidents



## Discrepancies between Chinese and English Tower Crane Manual

部件名称	型号(或代号)	技术数据	质量 (千克)
电动机	YZPB(F)355M-8	功率 P=110kW 转速 n=740r/min	1780
减速机	B3HH13-C	传动比 i=22.4	2380
卷筒	150LVF40.02	底径 D=Ø1100mm 最大容绳量(7层) 1000m	2030
钢丝绳	35WX7-20-1960	直径 d=20mm L=1000m 最小破断拉力 F <sub>br</sub> 302.6kN	1768
制动器	YP3-3000-710X30-III -RL II 380V/50Hz	额定制动力矩 10500N.m 推动器型号: Ed 3000-60	350
	LMD76 (4把)	夹紧力 160 kN	85
		液压站型号 40BWZA.03B	105
起升机构	150LVF40.00	额定单绳拉力 F=40000N 额定单绳线速度(第 5 层时) v=130m/min	11957

Name	Model(or digit)	Parameter	Weight (kg)
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Cylinder	150LVF40.02	Base diameter D= Ø 950mm Rope ultimate (5 layer) 560m	2030
Steel rope	35WX7-20-1960	Diameter DØ=22mm L=660m Mini break force F <sub>br</sub> =417kN	1768
Brake	YP3-3000-710X30-II B-RJ.H 380V/50Hz	Standard brake moment 12000N.m Model: Ed 3000-60	350
		4把	85
	LMD76	Pumping plant 40BWZA.03B	105
Hoist mechanism	150LVF40.00	Standard single rope force F=40000N Standard linear velocity(5 <sup>th</sup> layer) v=130m/min	11957

~ END ~  
**Thank You!**



## Q & A

剛才提及就起重裝置 (Lifting Beam) 進行的無損測試 (non-destructive test) 是那種方法？

答案：液體滲透劑檢驗 (liquid penetrant inspection)

剛才提及就起重裝置 (Lifting Beam) 建議進行的無損測試 (non-destructive test) 應相隔多少個月進行一次？

答案：六個月