

愛的呼喚
Calling with LOVE

團隊背景 Background of the Team

	團隊名稱 Team Name	又一圈 One More Circle
	成立日期 Date of Formation	2014年11月 November 2014
	業務單位 Business Unit	協興建築集團 Hip Hing Group
	部門促進員 Team Facilitator	李國威 Herman Lee
	隊長 Team Leader	梁翠萍 Yanney Leung
	團隊 Team Members	陳冠輝 陳柱焜 黃潤安 蕭世焜 劉錦珊 葉文春 柯倩衡 許建忠 梁穎雯 陳國偉 Andrew Chan Chris Chan Tom Wong Tony Siu Kathleen Lau Derrick Yip Eunis Or KC Hui Mandy Leung Mike Chan

背景 Background

現時很多建築項目均採用建築工地升降機（工人籠）來運載建築工人穿梭上落建築中樓層，減少步行樓梯，以提高工作效率。過去數十年，工人如欲乘搭工人籠，要到最近樓層的閘門外按下電鈴按鈕，召喚並等候服務。而電鈴設置於最底層的閘門外，工人籠操作員聽到鈴聲便會駕駛工人籠，由最上層逐層搜尋至下層，接載等候者，最後又返回並停泊於底層。

Builders' lifts (temporary passenger lifts) are usually adopted in building construction site for vertical transportation of workers to increase efficiency. Call buttons of the temporary passenger lift are set near the temporary lift doors in selected levels of the building under construction. The temporary passenger lift car usually parks on the ground level when standy. When worker presses the call button on high level, the signal bell installed on ground level will ring. The lift operator will drive the lift car to the highest level and move to lower levels to search and pick up the waiting passenger.

問題成因 Cause of the Problem

- 工地噪音大，工人籠操作員未必聽到鈴聲。
- 工人籠操作員聽到鈴聲便會駕駛工人籠從上而下逐層站搜尋/接載等候者，工人耗用長時間等候工人籠，情況於繁忙時間（上/下班及午膳）特別嚴重。
- 工地時有發生工人因輪候時間太長大發雷霆繼而怒罵操作員，致同僚之間產生磨擦。公司投放資源的本意為提升工作效率及工作環境質素，卻帶出一些負面效果。
- Temporary passenger lift operator sometimes cannot recognize the bell's ring due to the background noise.
- Temporary passenger lift operator needs to search the waiting passengers floor by floor. Thus, a long waiting period is required especially during the peak hours (ie. lunch hours, on-duty time and off-duty time).
- Conflict between waiting passengers and the temporary lift operator often occurs.

解決方法 Solution

利用了「思維衝擊法」和「魚骨分析圖」，以「人（人員）、機（設備）、物（物資）、法（方法）、環（環境）」五大範疇分析問題的根本；再使用「TRIZ」的「矛盾矩陣表」，透過對應「系統特徵參數」找出兩條「創意發明原理」：

- 拋棄與再生原理
- 預先行動原理

憑著這兩條「創意發明原理」得出以下解決方案：

- 摒棄數十年行業慣用的傳統方法（以電鈴傳送訊號）
- 設計全新工人籠召喚系統協助操作員預先得知召喚樓層及上/落需要，盡快駕駛工人籠前往接載及減省多餘行程

標準化/全面推行：

- 善用內部資源，公司內部人員自行設計安裝召喚器及接駁電線，省卻外判人手安裝成本
- 統一安裝方法，適用於全公司各工地工人籠，設定為工人籠標準配套
- 召喚器操作容易，操作員只需接受簡單培訓

Use the QC tools 'Brainstorming' and 'Fishbone Diagram' to identify the root causes of the problems in areas of 'People', 'Machine', 'Materials', 'Method' and 'Environment'. When the root causes are identified, 2 inventive principles are obtained based on contradiction table of the tool "TRIZ":

- Rejecting and Regenerating
- Prior Action

Solutions are obtained based on these 2 inventive principles:

- Disposal of the traditional bell signal system for lift calling
- Re-design of a new lift calling system to enable lift operator to have a prior notice on the locations and requests of passengers to shorten the travelling or searching time

Standardization and Implementation:

- Use internal resources and arrange in-house qualified technicians to develop and install the new lift car calling system to save costs of subcontracting
- Standardize installation method for company-wide adoption
- New calling system is user friendly, only simple training for the lift operator is required

成果及效益 Achievement & Benefit

有形得益

- 工時 - 每人每日節省30%輪候時間；即15分鐘
- 工資 - 相等於每人每日港幣\$27.8工資
- 電能 - 每部工人籠可節省7%電能
- 零件 - 於縮短上落距離/次數，有效減低機件損耗
- 工人籠召喚系統於各工地使用，每年可節省開支\$14,086,000

無形得益

- 減少二氧化碳排放
- 放棄使用電鈴對改善環境亦有幫助，減低噪音污染
- 節省輪候時間，有助工人準時出外用膳，爭取時間休息
- 節省輪候時間能舒緩等候者心情，同僚關係亦能隨著工作環境而得以改善
- 提升員工士氣，促進生產力，有助減低延誤工期機會
- 提升公司信譽，加強議價能力及競爭力

Tangible Benefits

- Working hours – save 30% of waiting time of each worker per day (ie. 15 min)
- Salary – save \$27.8/day for each worker
- Electricity – save 7% of electricity consumption per lift
- Maintenance – reduce lift maintenance due to shorten distance travelled
- Total cost saving of \$14,086,000 per year

Intangible Benefits

- Carbon emission to the environment is reduced
- Reduce noise pollution due to the abolishing of the bell signal system
- Save lift waiting time and enable workers to have more time for lunch and rest
- Improve worker's interrelationship due to less conflict
- Boost the team spirit and productivity; and reduce the risk of delay in completion of the works
- Enhance the image and competitiveness of the company

