



四十五年齊臻善 創新蛻變展佳績

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臻善圈 決賽隊伍 提案摘要

PROJECT SUMMARIES OF WIT FINALISTS



精靈圈 Signalling Circle

設計模擬訓練工具幫助新同事熟習屯馬綫波口控制系統的操作 Designing a Training Simulation Kit to Familiarise Newly-joined Staff with the Operations of TML Point Controlling System

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問題剖析

- 屯馬綫路軌道岔上有許多轉轍器，其連鎖電路十分複雜，新入職同事較難於短時間內去理解其運作原理。
- 由於信號系統承建商沒有設計及生產該類轉轍器連鎖電路作培訓之用，新同事只能於實際運作中的設備進行實習。在此情況下稍有不慎，可能會造成設備故障，引致行車延誤。
- 基於上述原因，新同事未有太多機會能進行實習，較難完全掌握到此類轉轍器的維修技巧；當遇到真實的設備故障時，難以及時修復，可能嚴重影響行車服務。

改善方法

- 圈員利用對連鎖電路的深入認識，設計及製作了「屯馬綫道岔轉轍器控制系統模擬操作訓練模型」。該模型仿照現時系統的運作原理，可讓新同事模擬各種故障模式。
- 有了這個模擬操作訓練模型，再配合資深同事的悉心指導，新同事便可以避免於運作中的設備進行學習，避免行車延誤事件發生。
- 這模擬訓練工具為新加入同事快速鞏固訓練基礎，讓他們日後遇到真實故障時可專業而快速地處理。

總結成果

有形得益

- 提案有助迅速而有效地提升新入職同事維修轉轍器電路故障的信心和能力。
- 在得到充足的訓練和實習後，無論是新入職或資深同事，都能於設備發生故障時更快地找出原因並作用適當的處理，有助減少行車延誤和對乘客的影響，亦能直接減少公司的損失(包括金錢上或聲譽上)。
- 以每宗涉及轉轍器事故導致的延誤時間而粗略估計，提案每年可能為公司避免數以百萬的金錢損失。

無形得益

- 圈員藉著自行設計和開發的工具為工作帶來改善，不但幫助了新舊同事對信號系統的熟習，亦提升了信號維修團隊整體的協作和士氣。
- 圈員靈活變通、共同協作、勇於嘗試，最終找到最佳方案；在過程中他們不斷自我提升，大大增進了對信號系統操作原理的知識和認知。
- 提案體現了公司高效創新的文化，同時也提高港鐵信號系統的可靠及安全性。
- 可將提案成果分享給港鐵學院，藉以教導有志加入鐵路行業的年輕人，為香港鐵路的未來培訓專才。



Problem Analysis

- There are many railway switches on the track of the Tuen Ma Line, and their interlocking circuits are convoluted, making it difficult for new colleagues to understand their operation principles within a short period of time.
- As the contractor for the signalling system has not designed and produced interlocking circuits of the railway switches for training purpose, the only hands-on experience that the new colleagues can have is on the actual equipment in operation. Under such circumstances, any mistake may cause equipment failure, resulting in Train service delays.
- Due to the above reasons, new colleagues do not have many opportunities for practical training, making it more difficult for them to fully grasp the maintenance skills of this type of railway switches. When encountering a real equipment failure, they are less likely to fix the error in time, which may seriously affect the train service.



Improvement Methods

- Our team members designed and produced a "Tuen Ma Line Point Machine System Simulation Training Operation Tool" by utilizing their in-depth knowledge of the interlocking circuits. It is modeled after the existing system and allows new colleagues to simulate various failure situations.
- With the help of this simulation training model and the guidance of experienced colleagues, new colleagues can avoid learning from the equipment in operation and prevent Train service delays.
- This simulation training tool quickly consolidates the foundation for new colleagues so that they can handle real faults professionally and quickly in the future.



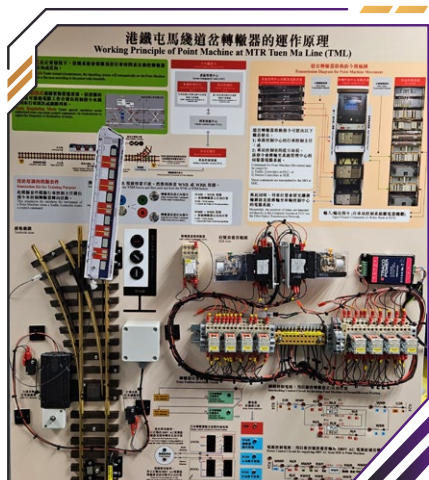
Summary of Achievements

Tangible Benefits

- This proposal helps to build the confidence and enhance ability of new colleagues quickly and effectively in repairing faulty point switch circuits.
- With adequate training and practice, both new and experienced colleagues will be able to identify the cause of the equipment failure quickly and deal with it appropriately, which will help to minimize delays and the impact on passengers, directly reducing the company's losses (including monetary or reputational).
- From a rough estimate of the amount of delay caused by each incident involving switches, the proposal could potentially prevent millions of dollars in monetary losses for the company each year.

Intangible Benefits

- The tools designed and developed by Signalling Circle have brought about improvements to the work. Not only does it help new and existing colleagues to familiarize themselves with the signalling system, but it also boosts the collaboration and morale of the signalling maintenance team.
- Circle members were flexible, collaborative, and experimentative to find the best solution. During the process, they continued to self-improve and greatly enhanced their knowledge and understanding of the operation principles of the signalling system.
- The proposal demonstrates the company's culture of efficiency and innovation, and at the same time improves the reliability and safety of the MTR signalling system.
- The product of the proposal can be shared with the MTR Academy to educate young people who wish to join the railroad industry, training professionals for the future of Hong Kong's railroads.



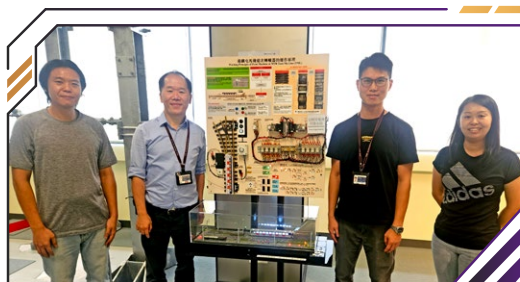
圈員自行設計和開發的「屯馬綫波口控制系統模擬訓練操作工具」。

The "Tuen Ma Line Point Machine System Simulation Training Operation Tool" designed and developed by the Circle members.



圈員為了提高培訓成效，更自家設計了「屯馬綫路軌維修工程——工地保護措施模型」，讓新同事更容易明白鐵路工作的安全性。

To enhance the training effectiveness, Circle members even designed their own "Tuen Ma Line Track Maintenance Works - Site Protection arrangement Model" to make it easier for new colleagues to understand the safety of railway work.



圈員憑藉對工作的熱誠，複製了多套相同的訓練工具，更捐贈了一套給港鐵學院作培訓之用。

With their passion for their work, the Circle members replicated several sets of the same training tools and even donated a set to the MTR Academy for training purposes.