

ICC : Leading towards Efficiency in Services

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PLUS Malaysia Berhad (PLUS) is the largest toll expressway operator in Malaysia as well as in South East Asia. The organisation is involved in the construction and management of 987 kilometres of expressways throughout the country. The eight major expressways operated by PLUS are North-South Expressway, New Klang Valley Expressway, Federal Highway Route 2, Seremban-Port Dickson Highway, North-South Expressway Central Link, Malaysian-Singapore Second Link, Butterworth-Kulim Expressway and Penang Bridge. On average, a total of 1.6 million vehicles use PLUS highways every day to reach to their destinations.

With the support from 4,400 employees, PLUS has continuously made substantial efforts to maintain a high degree of sustainability in their operations and service. All employees are enthusiastic to provide the best outcome to the organisation. PLUS Corporate Values of Passion for Success, Integrity, Caring, Trustworthy, Teamwork, Sincerity and Financial Prudence keep their employees together.

PLUS also emphasises on three crucial elements which are market place, community and environment that act as a platform in delivering its services. This is to ensure that the facilities provided by PLUS are always in its best condition for the safety of road users while minimising environmental impact to the society.

The integration of ICC in PLUS

The importance of well-maintained highways to the economic and social development has made PLUS committed to provide the best services to businesses and local communities. This is in line with PLUS's mission of 'Providing Efficient and Safe Expressway Network that Enhances Quality of Life'. Therefore,



ongoing efforts to improve services are vital for PLUS. This is to ensure PLUS strides for recognition as one of the world's leading brands for sustainability in keeping highways safe and serviceable. Due to that, the top management has always been involved in bringing the employees together to provide the best services for a continuous improvement. In addition to that, the management has always been a pillar as they believe such involvement benefits the organisation.

Consequently, they encourage their employees to contribute ideas through Innovation Creative Circle (ICC). It is believed that ICC is able to act as catalyst to reduce the cost of operating, improving customer satisfaction, increasing productivity and profit. ICC gives the space for employees to generate ideas on solutions for problems that they face in daily operations.

Vandalism in street lightings

In 2013, a team comprising six members known as Ranger 506 used ICC tool to identify problems at workplace. They identified twelve areas of improvement using the Specific, Measureable, Achievable, Relevant and Time (SMART) approach. However, the missing of maintenance service door for street lighting was verified as the highest contributing factor for maintenance cost. Consequently, 80 maintenance service doors amounting to a total of

RM15,200 were missing at Gelang Patah Interchange. Furthermore, the street lighting failure delays the maintenance routine tasks and leads to difficulties for road users. Hence, Ranger 506 had decided to solve these issues which were expected to reduce electrical cable vandalism and illegal tapping of electricity supply. Solving this issue will also reduce wastages in time in relation to work process and cost of maintenance and electricity. Actions towards these issues are expected to enhance PLUS's reputation.

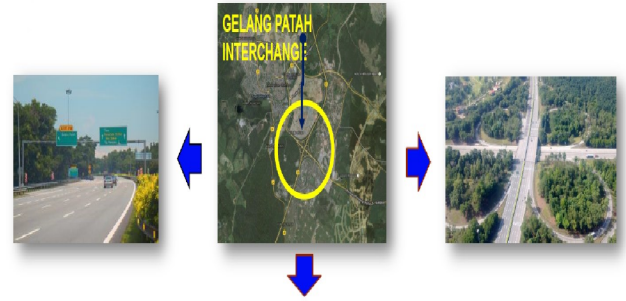
ICC tools to unlock potential solutions for the problem

Maintenance service door is the metal plate that covers internal electrical fitting (fuse, cable and termination box) which is attached to the street lighting. There are five types of street lightings namely, LED street lighting pole, street lighting pole, compound lighting pole (type A and type B) and highmast pole.

Ranger 506 team had set up a target of reducing maintenance cost by 70 percent which is in line with the Key Performance Indicator (KPI) of PLUS Operation Division.

This division is committed in the reduction of vandalism of electrical and electronic parts that are categorised under the cost minimisation initiatives. For this, the Ishikawa Fishbone analysis was used to identify root causes contributed by man, method, machinery and environment. The team listed 15 root causes and finally identified four essential causes. To start with, the maintenance service doors were easily opened, street lightings were located at open areas and dark areas and the service door screws on the maintenance service doors were not well tightened. The team conducted a survey to further strengthen the findings of Ishikawa Fishbone analysis.

The results from the survey and Pareto analysis revealed that 87.5 percent of respondents agreed that these four root causes were the main contributors to the problem of the missing maintenance service door. Brainstorming sessions were constantly conducted to come up with solutions. The advantages and disadvantages were tabled out to allow members to analyse the solutions and make prudent decisions.



Gelang Patah Interchange is the access road to Johor's attractive places.



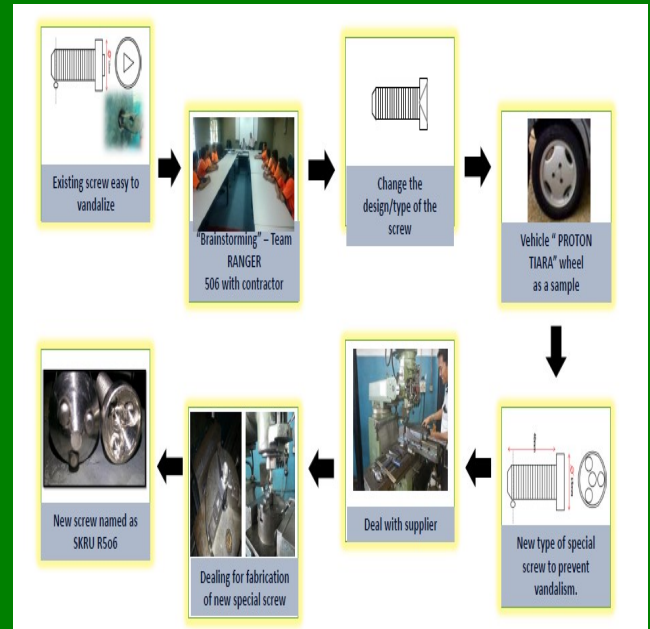
Five types of street lightings (from left to right) : LED street lighting pole, street lighting pole, compound lighting pole (type A and type B) and highmast pole.



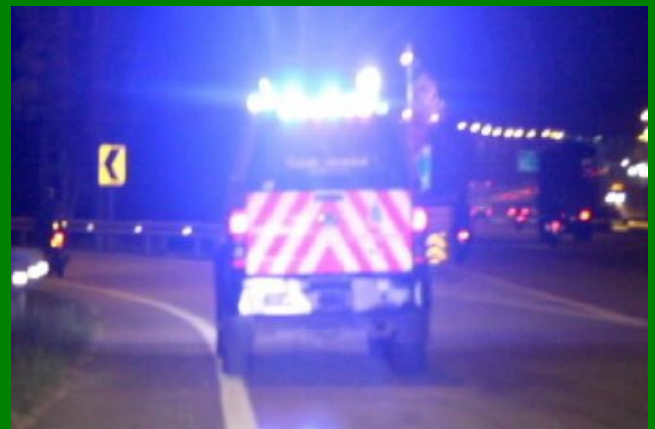
Example of maintenance service doors.

The table below shows detailed information of the root causes, proposed solution and the actions taken.

Root Cause	Proposed Solution	Action Taken
Maintenance service doors are easily opened	The screws should be replaced with new screws to increase difficulty in opening.	<ul style="list-style-type: none"> The team has improved the old screws and recreated new ones which are now called as R5o6 screw. The design of the screw is able to prevent vandalism. The design of R5o6 screw disables opening using pliers.
Street lightings located at open areas	PLUS Ronda to put up the 'Police Beacon' during the 24 hours patrolling.	<ul style="list-style-type: none"> Impose issuance of work instruction in putting up beacon at "Hot Spot". PLUSRonda is exposed on the new procedure of patrolling.
Street lightings located at dark areas	PLUS Ronda to install 'spot-light' during night patrolling	<ul style="list-style-type: none"> Impose issuance of work instruction to switch on 'spot-light' at 'Hot Spot' areas. PLUSRonda is exposed on the new procedure of patrolling. The installation of 'spot lights' is expected to ease the monitoring process of any suspicious incidents.
Screws on the maintenance service doors were not well tightened	The supervisors from the sub-contractor are to inspect every lantern pole.	<ul style="list-style-type: none"> An introduction of a new work instruction to all the sub and main contractors on the utilisation of inspection checklist form. Brief sub and main contractors. All contractors are to fill out the form. The supervisors of the sub contractors are responsible in re-checking the entire lighting pole after the routine maintenance. Main contractors to verify and submit inspection report to Electrical and Electronic Unit for further verification.



The process flow of recreating R5o6 screw that increases difficulty in opening.



Utilisation of 'Police Beacon' during night patrolling.



Install 'spot light' at 'hot spot' areas.

Fortunately, the PLUS management strongly supported all the proposed solutions as it was clear that it is for the betterment of the organisation. The implementation of the solutions was introduced and the related staff supported the improvement. The main and sub contractors also played a big role in the improvement process.

Analysis of ICC project in PLUS

The implementation of the ICC project on PLUS has brought tremendous changes in the reduction of the maintenance and operations cost. The installation of R5o6 screws on 2103 street lightings saves a total amount of RM336,480 annually. The screw which cost RM190 earlier only costs RM30 now. Furthermore, there are no complaints on malfunctioned street lightings. PLUS has also achieved a zero-rate vandalism. These implementations have also reduced the work time of contractors in the maintenance of street lightings.

It was an added value to PLUS when Ranger 5o6 had introduced the screw at the Malaysian Highways Authority exhibition which was participated by other highway concession organisations. Based on the positive feedback, PLUS is in the process of patenting it. Hence, the initiatives through ICC have succeeded in providing a safe journey to all road users and making PLUS an organisation of excellence.

Matrix before and after ICC project:

Description	Before	After
Cost of maintaining street lightings along the Gelang Patah Interchange highway (RM)	399,570	63,090
Cost saving using R5o6 screws along the Gelang Patah Interchange highway (RM)	0	336,480
Number of customer complaints	7	0
Number of vandalism cases of street lighting	80	0

