rapidrail

Further Enhancing A Systematic Transportation Network

Public transportation is seen as a crucial part of a nation's economic and human capital distribution as well as a key determinant in environmental issues. It is also considered as an aspect to reduce the amount of cars on roads and provide opportunities for effective interaction within a community.

Most importantly, a systematic public transportation provides access to employment, community resources, and medical care. Effective public transportation also enhances safety and security within a nation and roots a hassle-free community.

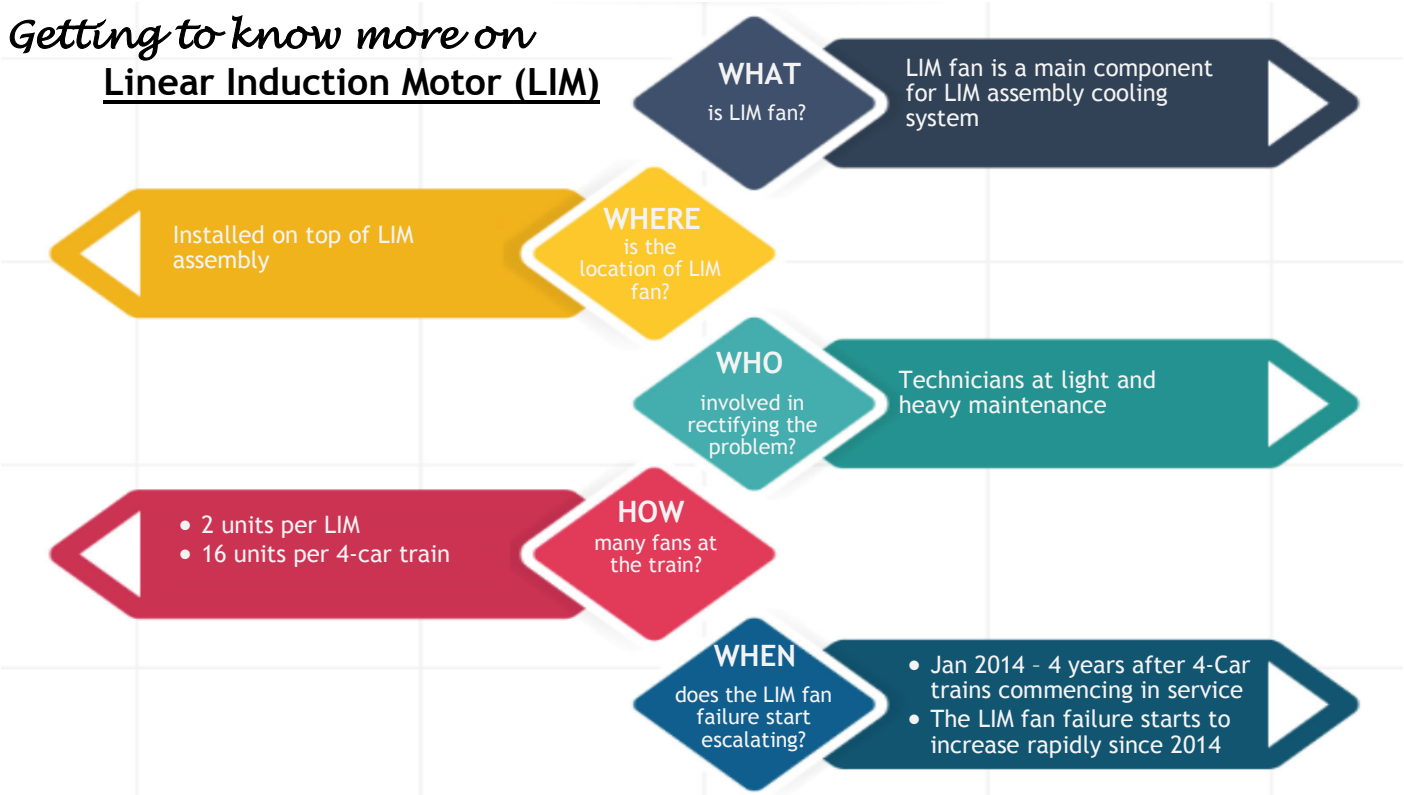
Additionally, it also moulds a more independent nation and reflects on a country's development. Such expansion of efficient public transportation is also believed to provide a quality life to fellow citizens and at the same time boost the tourism industry.

Rapid Rail Sdn. Bhd. which was established in 1998 is one of nation's biggest public transportation providers. This entity began its operations in 2002 and has become one of Klang Valley's significant public transport providers. The rail network services offered by Rapid Rail Sdn. Bhd. contain four light metro lines that cover Ampang, Sri Petaling, Kelana Jaya, Monorail Line, and the Sungai Buloh-Kajang Line.

This entity is known to have the world's second-largest fully automated driverless metro double track system that records a length of 46.4 kilometres with 37 stations. It is estimated that about 185,696 passengers travel on this line of network in a day.

Rapid Rail is known for its efficiency and excellent services as it covers the major areas in its operations. It is vital to understand that such comprehensive services require constant research and development as well as investments to accelerate services. Therefore, to attain such great heights, Rapid Rail has considered numerous ways of improvements and overcome tactful challenges in the works of being the best.

Getting to know more on
Linear Induction Motor (LIM)



In the process of sustaining its reputation and services to the public, Rapid Rail identified a few aspects that require improvement and an enhanced quality service. However, in 2013 the 'service disruption' issue that came to surface on social media brought the team at Rapid Rail together in rectifying the issue. This entity focused on providing a quality service for the fellow passengers and hence, they were esteemed to expedite this issue as soon as they could.

Innovation and Creative Circle (ICC) is known among various industry players for solving issues and bringing the respective organisation towards an overall betterment. Rapid Rail knew that ICC would be a great approach to overcome the issues that stood in the way of achieving quality excellence.

Therefore, they formed an ingenious team that knew the significance of ICC in overcoming the challenges towards quality services. In 2015, six employees came forward, forming a group to specifically solve the issues involving 'service disruption'. This team was exhilarated in doing their best and ensuring that Rapid Rail remains as the number one choice among the Klang Valley community.

Three major aspects that they focused on were failure trending, cost implication, and most importantly, service disruption. These issues actually led them to the Linear Induction Motor (LIM) failure which was known to be a major factor in all the issues. To explain further, the LIM fan is known as the main component of the LIM assembly cooling system which is usually installed on the LIM assembly. There are usually two units of fans per LIM fan assembly that brings about a total of 16 units per 4-Car train.

Additionally, the study revealed that the LIM fan failure has been happening since 2014, which led to a more critical approach for a solution. On top of that, the LIM fan is an important component in the LIM assembly which is involved in the cooling system. The team then set targets toward a reduction of LIM fan failure cases from 30 cases to 23 cases between July 2015 and December 2015, as it seemed to be a practical approach.

Following that, the team utilised the Fishbone Method and Root Cause Analysis and further identified that the lack of balance at the bearing/ resistance of the LIM fan rose to a major cause of the defect. The team members then brainstormed and moved on to the next step to identify the root of the LIM fan failure using the Fishbone Analysis and Root Cause Analysis as the tools in the ICC project.

The results indicated that there were three main causes: faulty bearing, unbalanced fan, and faulty motor. Thence, the team members further discussed possible solutions in order to resolve those issues. At first, there were nine possible solutions suggested by the team.

Upon consideration of factors such as cost, duration to resolve the issue, workforce potential, as well as the available tools and equipment, the team chose to improve the faulty motor which would solve the problem of the LIM fan failure and hence achieve the target of reducing the number of failure cases to 23 cases. The team made a wise decision in this ICC project, of which the solution on work performance was impactful.

Resolving the faulty motor of the LIM fan

Usually, the LIM Fan Functional Test would be conducted in order to identify problems related to the faulty motor, prior to executing any solutions. This test takes up 3 man-hours which involves at least 8 processes that need to be carried out before the train operates as usual.

In order to speed up this test, the team members agreed to design and develop a test jig / test rig for the LIM Fan Functional Test. All these designs and development are done in-house (self-fabrication & use of available resources) which only cost RM1,800.

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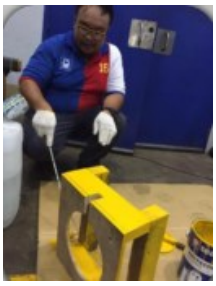

This new jig is used for the functionality test on the existing LIM fan and only requires 0.5 hours with at least 3 processes. With this test, problematic LIM fans are sent to the suppliers for an external rewinding exercise. The suppliers are selected based on those who have provided an excellent workmanship for rewinding works. Furthermore, a visit to their workshop reveals that they have all required machineries and equipment to complete the job.

This rewinding process was completed sooner than scheduled because only 89 units from a total of 560 units of LIM fans went through the rewinding process. The next process in this project is analysing test findings and results, as well as the Final Evaluation and Implementation. This project went on as scheduled, beginning in June 2015 and ending in January 2016.

At the same time, the period of September 2015 - March 2016 was assigned for the process of the LIM fan post-installation monitoring programme for 560 units. The monitoring process was seen imperative as some defective fans required re-balancing.

For the purpose of standardisation in work processes, several open sessions were carried out for the workers involved with an aim to distribute information on the newly developed test jig, test procedures, and safety requirements.

A new manual / SOP on repair and maintenance, an Integrated Schematic manual, a test procedure checklist, and a functionality test checklist were developed for all workers for references purposes.

All these changes are available for employees to refer to at the technical bulletin and the company website. This is seen as an effective platform for information sharing and knowledge gain as well as providing a standardisation in disseminating information.

ICC and its changes

ICC managed to reduce the total 'service disruption' to 20 cases in April 2016. This achievement brought laurels to the team as they were close in meeting the earlier targeted number which was 23 cases. In fact, as of December 2017, the number of total 'service disruption' due to LIM Failure has been further reduced to 15 cases. This continuous improvement and performance brought Rapid Rail back on track as the number of breakdown declined from 4 to 1 on a monthly basis.

Not only that, one of Rapid Rail's major successes recorded a total saving of RM1,386, 555.50 through this project. Rapid Rail would have spent an amount of RM1,597,639 for new LIM Fans if the ICC Project was not a success.

Only two solutions were required to solve the faulty motor issue, namely develop a new test jig/test rig for the LIM Fan Functional Test and conduct an external rewinding exercise. Rapid Rail spent RM211,083.50 for the exercise and managed to save a huge amount in terms of costing.

On top of all these, lesser issues related to 'service disruption' gained more trust among its stakeholders. Rapid Rail also recorded environmental-friendly measures in which they managed to reduce industrial wastes through the usage of refurbished parts. In fact, Rapid Rail reused the LIM fans with a bit of modification and recycled the materials used during the test jig.

There were also other indirect improvements that came along with the success of this project. Rapid Rail managed to provide a stress-free service to its commuters with a drastic decrease in 'service disruption'.

Again, many passengers used the social media to express their opinions on the quality of service provided by Rapid Rail. Alongside these achievements, this initiative successfully enhanced teamwork among their members and moulded their technical skills.

In fact, this project which came under a target period made them mentally stronger in facing challenges. This project was also able to boost their soft skills like self-confidence, presentation skills, and other significant skills that play a vital role in career development.

Rapid Rail looks forward to providing quality services to fellow citizens and also a comprehensive transportation for the development of the nation. This ICC project has successfully eliminated the 'service disruption' issues and accelerated efficiency at Rapid Rail.

The employees at Rapid Rail are not only motivated by the success of this project but are also aspired to provide their best in ensuring quality at work for an overall betterment of Rapid Rail. These initiatives led Rapid Rail in winning the Team Excellence Award 2016 by the MPC and paved a pathway in achieving more success for the entity in the near future.