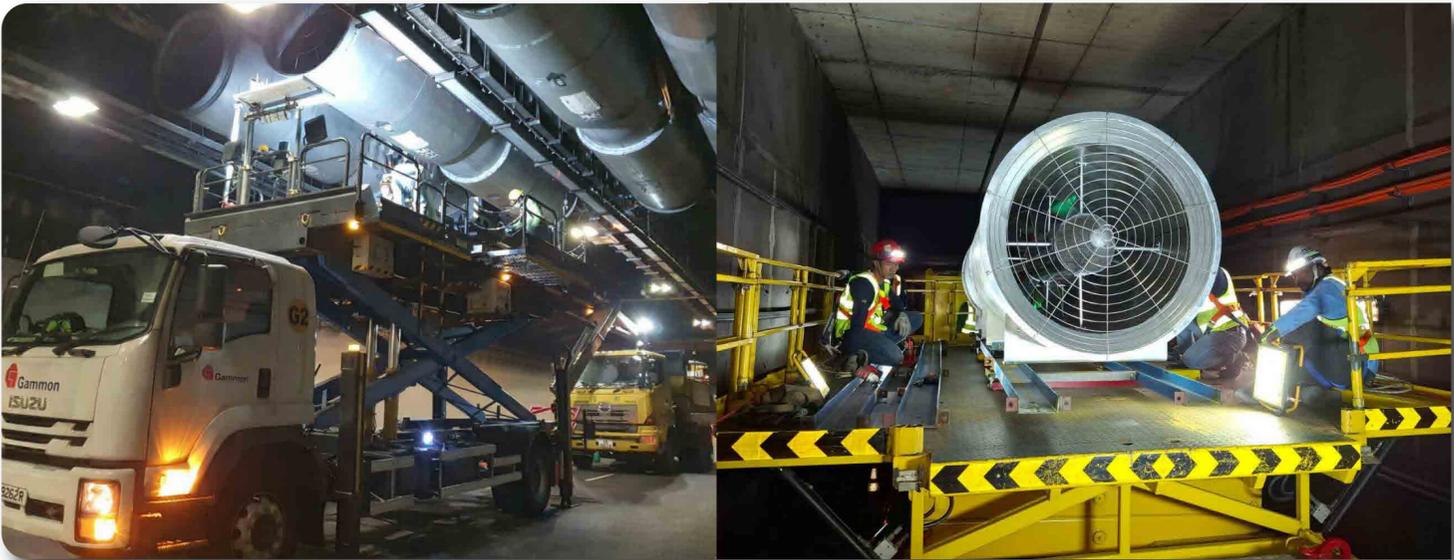


MINISTER'S VALUE-FOR-MONEY ACHIEVEMENT AWARD

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MERIT AWARD

HYDRAULIC PLATFORM FOR TUNNEL JET FAN INSTALLATION AND MAINTENANCE



PROJECT TEAM



Chia Choon Poh	Advisor
Kang Meng Liat	Advisor
Tay Seng Huat	Advisor
Wong Kum Kit	Advisor
Francis Lim	Advisor
Ng Soon Wei Ivon	Team Co-Leader
Ramesh Srivatsa	Team Leader
Abdul Razak Omar	Member
Ng Quee Sin Alex	Member

OVERVIEW

NEED FOR
PROJECT

SOLUTION

IMPACT

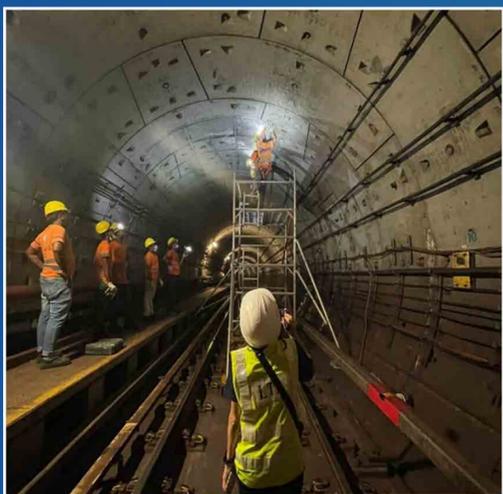
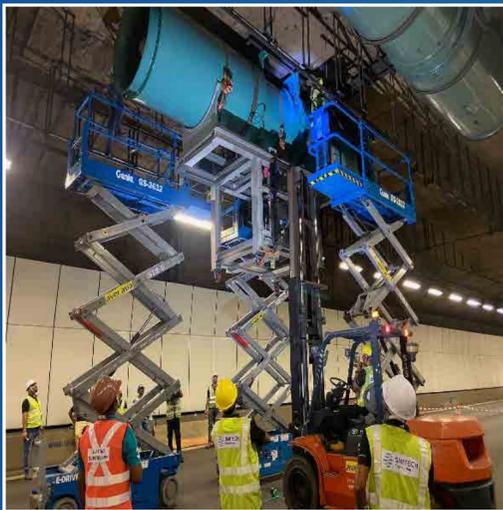
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NEED FOR PROJECT



- Working time was limited to a few engineering hours daily (1:45am to 3:45am) for jet fan replacement works.
- This required multiple road lane closures and adherence to strict safety protocols where all equipment must be cleared from the tunnel before daily road/rail operations.
- Multiple scissors lifts or cherry pickers, scaffolding and temporary I-beam were required for jet fan maintenance and replacement works, which was time-consuming and labour intensive.
- There were also significant safety risks for both workers and road/MRT users.

PROBLEM STATEMENT

Need to replace and maintain the tunnel jet fans in live tunnels in a safe manner constrained by short working hours, logistical and execution challenges.

OVERVIEW

NEED FOR
PROJECT

SOLUTION

IMPACT

MINISTER'S VALUE-FOR-MONEY ACHIEVEMENT AWARD

HYDRAULIC PLATFORM FOR TUNNEL JET FAN INSTALLATION AND MAINTENANCE

SOLUTION



- Produced a custom-designed hydraulic platform mounted on a flat wagon for rail and truck for road.
 - This device used a hydraulic mechanism to raise, lower or position heavy equipment by pressurising hydraulic fluid within the cylinders to generate the force needed to lift the platform together with the fans and workers.
- Significantly safer for workers.
- Required less manpower and equipment.

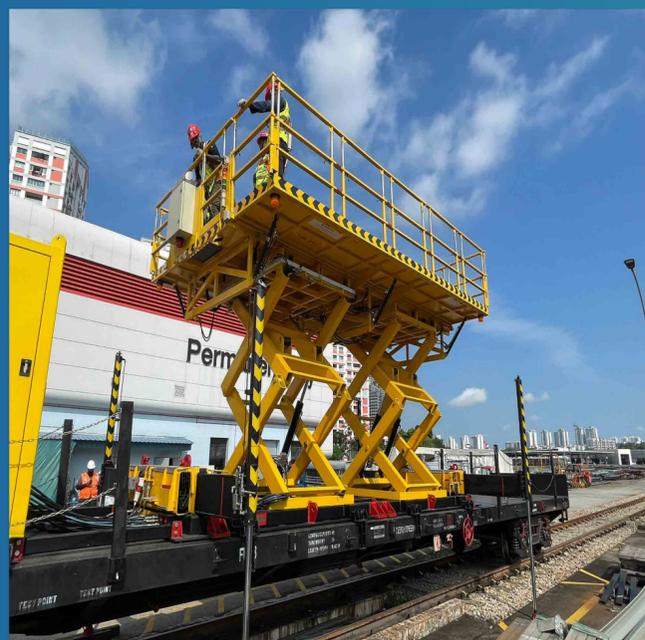
SOLUTION STATEMENT

Developed the hydraulic platform for Tunnel Jet fan installation and maintenance.

MINISTER'S VALUE-FOR-MONEY ACHIEVEMENT AWARD

HYDRAULIC PLATFORM FOR TUNNEL JET FAN INSTALLATION AND MAINTENANCE

IMPACT



- Achieved significant cost savings over project and maintenance phase.
- Achieved time savings of 634 nights greater than the conventional method to replace the fans (during project phase).
- There is potential to be scaled and adapted for other tunnel maintenance tasks and heavy equipment replacement.
- Manpower cost savings: \$0.70 mil annually.
- Time savings: 130 nights, 650 hours annually.

OUTCOME STATEMENT

This is a breakthrough design which enabled efficient replacement of heavy equipment in live tunnels, resulting in substantial cost and time savings.