

HMA ROAD RAIL VEHICLES WITH INSULATED ELEVATED WORK PLATFORM (EWP)

HMA Materials Handling supplies scissor lift EWP trucks for power-line maintenance on Melbourne tram network



HMA Group's Materials Handling Division has supplied 3 off insulated scissor lift elevating work platform (EWP) trucks for maintenance of overhead power lines on the tram network in Melbourne, Victoria.

The new vehicles replace an ageing fleet that had high maintenance costs. "We reviewed the existing fleet of EWP trucks that was to be replaced in conjunction with

the client, including engineering and operational staff, in terms of their preferences and what new features were required. We took this information and, based on our own experience with EWP and road-rail vehicle (RRV) design and the relevant standards, came up with the design. We involved the client during the design process, obtaining input and approval throughout," explains Luke Vidal the General Manager of HMA Materials Handling.

An example of this was the toolbox design for storage of the variety of specialised equipment that the operators required, while remaining within the legal requirements for vehicle mass and weight distribution. Other areas where the client was involved included work lighting, directional signage and access ways where it was important for maintenance crews to have easy and safe access to critical areas to undertake regular inspection and repairs. "The end result was a vehicle that meets the needs of the client, while complying with all of the regulatory requirements for a safe workplace. The major benefit is a common operational platform, making it easy to transfer operators between trucks," adds Luke.



The control system uses interlocks based on the mode of operation selected (road, rail, work, maintenance) to check that the vehicle is in a safe condition before allowing functions such as travel and platform elevation. The hydraulic system has two back-up systems to allow operation in the event of a primary system failure for

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emergency operation of the platform and rail gear.

Load monitoring of the platform ensures that the weight limit is not exceeded for operation and also to prevent overturning, while stabiliser legs can be deployed on uneven ground.

The EWP can be controlled either from the vehicle cab or via a remote control unit. The latter is also able to operate the truck, enabling it to be driven by the operator while on the platform. The project was a concerted effort by the HMA Materials Handling offices in Berkeley Vale and Brisbane over the 18 months that it took to design, build, test and commission the three vehicles.

“The first challenge was coming up with a design that met the client’s operational requirements as well as the Australian standards and regulatory requirements to ensure that the design and vehicle could be registered for use by the local authorities for safe work in terms of weight limits and distribution,” highlights Luke. The second challenge was managing the mechanical, hydraulic, electrical, control system and pneumatic engineering elements and working with numerous suppliers and subcontractors.

The third challenge was the amount of testing that needed to be undertaken to check the functional design that was developed in an effort to cover all possible scenarios. A lot of testing also had to be carried out to meet the regulatory requirements such as twist testing, brake testing, overturning testing and others. “In total we spent over 500 hours on commissioning and testing across the three trucks,” reveals Luke.



HMA Materials Handling designs and supplies a range of scissor lift EWPs for attachment to hi-rail vehicles. The EWPs can either be permanently attached, bolted or attached with twist locks to the tray body. Hi-rail EWPs are supplied complete with electrical control systems with single or multiple control stations. A full range of controls are available from the EWP basket, including: Basket Raise and Lower, Extension Platform (In and Out), Platform Slew, Live Side Isolation, Emergency Lower, Emergency Stop, Hi-Rail Truck Travel (Forward and Reverse), Braking, Engine Control (Stopping and Starting).



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FEATURES AND SPECIFICATIONS

- Base vehicle:** HINO FG1628
- GVM:** 16 000 kg
- Length:** 9 603 mm
- Height with scissor stowed:** 3 287 mm
- Width:** 2 454 mm
- Rail gauge:** Standard
- Drive:** Friction with hydrostatic
- Platform size:** 4 500 mm x 1 400 mm
- Platform load rating:** 500 kg WLL
- Platform rotation:** 360 continuous
- Maximum height:** 6.2 m at platform floor
- Maximum horizontal reach:** 3.4 m from centre of base vehicle
- Insulation acceptance test:** 5 000 V
- Maximum Speed:** 40 kph (5 kph in work mode)



RELEVANT AUSTRALIAN STANDARDS

- AS 1418.1 Cranes, hoists and winches – General Requirements
- AS 1418.10 Cranes, hoists and winches – Mobile elevating work platforms
- AS 3868 Earth-Moving Machinery – Design Guide for Access Systems
- AS 3000 – Electrical Installations
- AS 9001 – Quality Management System
- AS 1554 Structural Steel Welding
- AS 1657 Fixed Platforms & Walkways
- AS 2550 Cranes, hoists and winches – Safe Use
- AS 3990 Mechanical Equipment – Steelwork
- AS 4024.1 Safety of Machinery

- AS 4100 Steel Structures
- AS 4360 Risk Management
- RISSB Standards (Rail Industry Safety and Standards Board)

