

## **Zero emission solution for the Toyota Landcruiser used in underground mining**

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The Toyota Landcruiser 70 Series is the most used light vehicle in mining. The heavy duty frame and powertrain have proven to survive the longest in these rough environments and the basic design makes the Landcruiser the ideal base for special build conversions needed for the different trades inside the mines.

However the standard Landcruiser with 1HZ diesel engine cannot meet the Euro 5 (Euro 6 next year) or Tier 4 emission standards. Health safety and clean air are a big part of the challenges faced in underground mining and for this it is obvious that the days are just about over for the diesel powered Landcruiser.

With the above in mind and the feedback about the operational costs we received from customers we developed the Tembo 4x4 e-LV, the zero emissions Toyota Landcruiser.



A Li-Ion battery pack is stored in the engine compartment in place of the diesel engine and the electrical motor (PSM-Permanent Magnet Synchronous Motor) replaces the gearbox and connects direct to the original Landcruiser transfer box. An ECU (electronic control unit) controls the system and takes care of the energy and charging management, recuperation (brake energy recovery), safety management (high-voltage safety disconnection) and offers diagnostics via Bluetooth smartphone application.



The Tembo 4x4 e-LV electrical Landcruiser is very capable and the standard 28-37kWh battery pack offers 80-100km range, depending on the required range we can offer less or more battery capacity.

The underground miners will recognize and benefit direct from the most important advantage, no toxic emissions, less noise generation and less vehicle heat load in deep mines.

The electrical conversion not only offers Zero emissions and increased performance but also generates huge savings on the operational costs. The higher reliability of the electrical components make that less maintenance is required and therefore less downtime will occur. The biggest savings can be made on the energy bill while the energy costs needed to provide clean and fresh air into the mine and to ventilate the exhaust gasses and heat out will be considerably lower when only electrical powered equipment is used. More savings can be made the deeper the mine is.

With this electrical conversion the Toyota Landcruiser 70 Series is ready for the future in underground mining and contributes in a greener, cleaner and better place to work.

