Case Study – Value Engineered Repair solution

Executive Summary

An Importer of electrical components found that a bulk delivery of new product contained a wiring fault, which saw a component operating reverse – making it unsaleable. A Value Engineering analysis was undertaken in collaboration with an importer, and his offshore manufacturer, to determine the fastest and most commercially effective solution for both parties.

- **Reduced the Importers delay in reaching the market by 13 weeks**, and allowed a pre-Christmas launch
- **Reduced Manufacturers rectification cost by >$25k**, without compromising quality nor performance
- Reduced the complexity and time for repairs, delivering a significant time saving, by making it viable to complete the work onshore

Solution Integrity checks confirmed there were ***No*** compromises to the quality nor functionality of the Repaired components!

Case Study – Value Engineered Repair solution

Background – An Importer of electrical components found that a bulk delivery of new product contained a wiring fault– resulting in an attached component operating in the wrong direction.

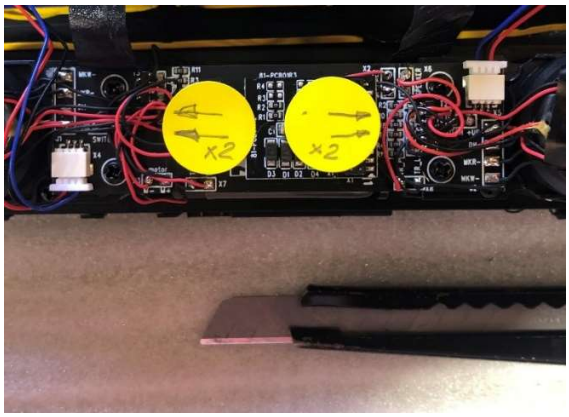
Root Cause was two pairs of 12v DC supply wiring had been reversed during production This made the products unsaleable, and caused cashflow and storage challenges for the importer, plus shipping and re-work costs for the manufacturer

Initial Solution – Local trials found that "conventional" Rectification required a 7 step process;

1. Unbox each unit
2. Remove the casing to access the wiring
3. Manually de-solder 2 pairs of wires from the Circuit Board
4. Re-solder* each of the 4 wires into its correct positions on the Circuit Board
5. Test, for operation and correct direction
6. Refit each casing
7. Repackage each unit

*Soldering the very fine wire, to small pads on a crowded main Circuit Board, required specialist equipment, and skilled labour – with a risk of faulty Solder joints requiring further re-work.

Initial solution - Repeatable cycle time; ***11 min and 50 Sec*** per unit



Value Engineered Solution – Collaboration with the client and his supplier explored alternatives, with Value Engineering proving successful in identifying a more (cost and time) effective solution.

An *Accessory* Circuit Board is included as part of the Main Circuit Board design, and it is attached via a removable connector. Producing and then retrofitting a special batch of "Reverse Direction" Accessory Circuit Boards (coloured Green below), with two circuit tracks re-routed to reverse the direction of operation – corrected the direction of operation, to eliminate the problem.

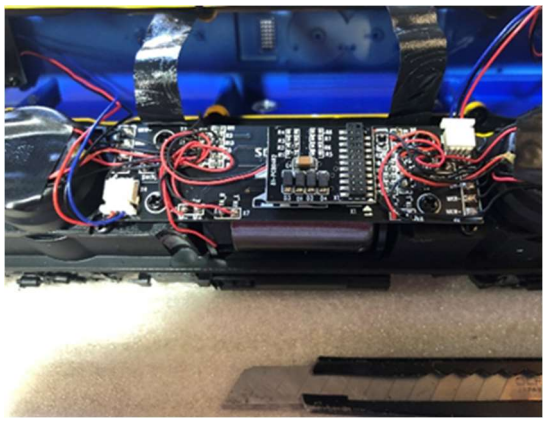
Trials proved that the most complex steps (3 & 4) in the Initial solution could be replaced by a simple Remove & Replace step. This saved significant time, and reduced both the error Risk, and the requirement for specialist skills and equipment!

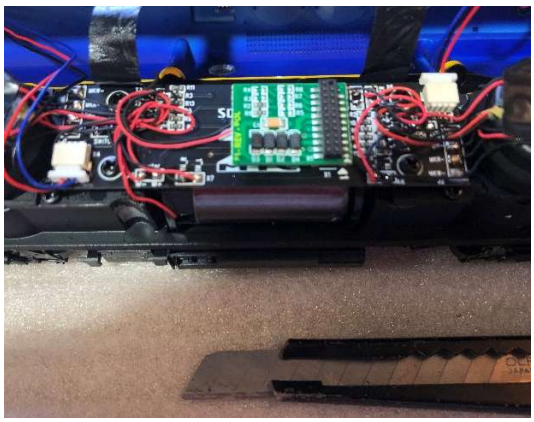
Value Engineered solution - Repeatable cycle time; ***4 min 45 sec = A >59% reduction!***

The "Reverse Direction" Accessory Circuit Board is small and very simple, so it proved and economical (and fast) for the manufacturer to produce. A satchel-sized package was cheap to courier to Australia, and it arrived quickly – so rectification could begin onshore.

Work was done locally to swap-in the replacement "Reverse Direction" Accessory Circuit Boards. Swapping components, as opposed to re-soldering, allowed the testing step (5) to be reduce Testing from 100% to 20%, with *Zero* failures detected.

The net rectification cost and time were both significantly reduced through adopting the Value Engineered solution. The timesaving allowed the importer to release his product to the market in late 2023 – to take advantage of Christmas demand.





Benefits – The Value Engineered solution provided a number of benefits for the client;

Key Benefit

- **Reduced the Delay Time by 13 weeks** for the Importer, allowing saleable product to be launched into the market – in time for pre-Christmas sales!

Time Benefits

- **Reduced repair Cycle-time** made a local repair option *(cost)* viable
- **Eliminated lost time** to return faulty products to China for rework, await a production slot in the manufacturers factory, and await re-delivery after repair
- **No interruption** to the production schedule within the manufacturers Chinese plant

Cost Benefits

- **Reduced the Manufacturers net rectification cost by >$25k**
- **Unskilled Labour (Labour cost)** - Eliminated the requirement to sourcing and schedule Specialist labour, through use of unskilled labour - at a reduced rate
- **Eliminated bulk Shipping cost** – 10 pallets of stock no longer required containerisation, transfers and sea-freight to China - and back
- **Negligible Component Cost** to manufacture the "Reverse Direction" Accessory Circuit Board solution, and courier one-way

Quality Benefits

- **Quality was assured**, as the original wiring remained intact, with *Zero* Soldering required

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