



STATIC CONVERTER MOTOR ALTERNATOR REPLACEMENT

Key Technical Features

- ✓ Underfloor mounted enclosure to fit UK Mk3 Carriage
- ✓ Input filter
- ✓ DC to DC isolation section for input voltage regulation
- ✓ IGBT based 415Vac 28kVA AC inverter
- ✓ Four wire output with neutral connected to car body
- ✓ 110Vdc, 10kW, low voltage power supply
- ✓ Battery temperature sensor input for battery temperature compensation if required
- ✓ Output filters and electronic protection (all outputs)
- ✓ Dead battery start power supply
- ✓ Microprocessor control with fault diagnostics and annunciation
- ✓ Remote condition & fault monitoring
- ✓ Design adaptable for third rail or loco hauled



Key Benefits to Operators and Fleet Owners

- ✓ 15% efficiency improvement in operation compared to a motor alternator
- ✓ Reduced carbon footprint
- ✓ Over 4kW energy saved per journey
- ✓ Reduced through life cost due to no wear and tear by intrinsic characteristics
- ✓ Easy maintenance and installation
- ✓ Overall weight saving
- ✓ Short circuit and overload protection
- ✓ Designed to last a trains life time
- ✓ Full suite of diagnostics software included
- ✓ Proven to be reliable and efficient for over 100,000 hours MTBF



Input Voltage	850 V ac/dc from existing rectifier on the vehicle
Input Voltage Range	750 V ac/dc to 1050 V ac/dc
Input AC frequency	50Hz \pm 0.5Hz
Output Voltage 3phase Inverter	415 Vac \pm 5%
Rated Power	28kVA
Motor Starts	Direct on line (DOL) motor starts can be used
Overload	1.2 times the maximum rated output for 5 seconds
Single Phase Output	2kVA at 240 Vac
Low Voltage DC	110V dc rated at 10kW
Protection	Electronic short-circuit and overload protection
Efficiency	> 93% at full load
Environmental Protection	Magnetic and electronic enclosures rated at IP20 and IP65 respectively
Weight	< 580 Kgs
Dimensions	Shaped to fit under the MKIII carriage, max 2139 (L) x 652 (W) x 597 (H)
Reliability	> 100,000 hrs MTBF
Design Life	30 years
Operating temperature and Humidity	-25 ^o C to +40 ^o C and relative humidity at maximum of 100%
Cooling	Natural convection or naturally cooled
Portable Test Equipment (PTE)	Available – remote condition and fault monitoring

TPS prides itself in offering greener, lighter and efficient power conversion solutions to the Global Rolling Stock Industry. Rail operators and fleet owners in UK are always looking for ways to minimize maintenance costs, increase system efficiency, reduce carbon footprint, improve power density and increase fleet availability and reliability. TPS has developed a unique solution for the ageing UK rolling stock, which provides all the aforementioned benefits at a value added price. Motor Alternator (MA) equipment is currently installed in majority of loco-hauled coaches and trains powered through Thirdrail. This equipment is currently used to service all onboard electronics, HVAC and charge the batteries. Maintaining and running the MA equipment is expensive with costly repairs followed by poor reliability and obsolescence issues, which subsequently increases the train downtime and through life costs.

TPS has successfully designed and replaced existing MA equipment with a static converter for Mk3 Coaches and there are more than 30 units successfully operating in the field. TPS was chosen by the rail operator because of its pedigree within the Global Rail market and niche experience in developing products for bespoke refurbishment projects. Our Static Converter utilises the existing mounting arrangement thereby minimising conversion costs and provides a modern electronic replacement fully compliant with all rolling stock and network rail standards. In addition, connectors featured on all electrical interfaces facilitate rapid replacement of the unit thereby reducing mean time to repair (MTTR) and maintenance costs. The unit also comes with its own diagnostic software suite known as portable test equipment (PTE) which provides real-time and offline monitoring of faults and health of unit. With over 40 years rail pedigree, a team of highly skilled engineers and technicians, and a track record in creating world-class power electronics, why go anywhere else for your motor alternator replacement?

To discuss your project or for any further information please contact our marketing department at marketing@turbopowersystems.com or +44 (0) 0191 482 9288/9251/9278



Turbo Power Systems Ltd

1 Queens Park | Queensway North | Team Valley Trading Estate | Gateshead | NE11 0QD | United Kingdom

T: +44 (0) 191 482 9200 | F: +44 (0) 191 482 9201

E: marketing@turbopowersystems.com | W: www.turbopowersystems.com