



## STATIC CONVERTER – REGIONAL / COMMUTER 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 train's life time
- ✓ Full suite of diagnostics software included
- ✓ Proven to be reliable and efficient



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 ± 0.5Hz
Output Voltage 3phase Inverter	415 Vac ±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)
Design Life	30 years
Operating temperature and Humidity	-25 <sup>0</sup> C to +40 <sup>0</sup> C and relative humidity at maximum of 100%
Cooling	Natural convection or naturally cooled
Portable Test Equipment (PTE)	Available – remote condition and fault monitoring

Motor Alternator (MA) equipment is installed in a majority of loco-hauled coaches and trains powered through Thirdrail. It is 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 which subsequently increases the train downtime and through life costs. Rail operators and fleet owners in UK look for ways to minimize maintenance costs, increase system efficiency, reduce carbon footprint, improve power density and increase fleet availability and reliability. Our Static Converter offers all of this. It utilises the existing mounting arrangement thereby minimising conversion costs and provides a modern electronic replacement, fully compliant with 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.

TPS was chosen by Chiltern Railways to develop a unique solution because of its pedigree within the Global Rail market and niche experience in developing products for bespoke refurbishment projects. The product was successfully developed and there are now more than 30 units operating in mark III coaches throughout the UK. With over 40 year's rail pedigree, a team of highly skilled engineers and technicians, and a track record in creating world-class power electronics, choose TPS for your motor alternator replacement.

We will be happy to discuss your project or enquiries, please contact our marketing department at [marketing@turbopowersystems.com](mailto:marketing@turbopowersystems.com) to get in touch or ring us on +44 (0) 191 482 9288/9251/9278.



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