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Corporate Overview

➢ Business
  ❑ Listed on London AIM Market
  ❑ Major shareholders (Vale Mining and BNDES)
  ❑ Design, Development, Qualification and Manufacturing of high speed permanent magnet machines and power electronics, from kW to multi MW and from 3,600 rpm to 160,000 rpm
  ❑ 40+ years of experience and located in the North East England
  ❑ Global company with successful project execution in UK, USA, Canada, Netherlands, Turkey, Brazil, Middle East and Malaysia
  ❑ Complete turnkey support - design, manufacturing to Installation and through life support of products

➢ Markets

Transport    Industrial    Energy    Defence
Transportation Sector Overview

Fleet Owners
- Porterbrook
- First
- Angel Trains

Support in Business Case for Fleet Modernisation and Overhaul

Fleet Operator
- c2c
- Southeastern
- London Midland
- Arriva
- Cross Country
- Chiltern Railways
- Greater Anglia
- Northern
- Southern
- First
- Virgin Trains
- East Midlands Trains

Supply and ongoing repair support for APU, BCs, at seat and catering converters

Train Builders
- Bombardier Transportation
- Hitachi Inspire the Next
- Alstom
- Nippon Sharyo
- Kawasaki

Design and Supply of APUs for new build as well refurbished trains. Through life support to include upgrades, overhauls and repair support

Fleet Modernisation and Overhaul Firms
- Wabtec Rail Limited
- Unipart Rail
- Arriva Traincare
- Rail Services

Design and Supply of APUs and Supply of ‘at seat’ and catering Power Supply
MRO History and Pedigree

#1 choice for customer’s MRO Needs

Credibility through performance

30 years experience in Rolling Stock MRO

PROPRIETARY
Portfolio of Key Clients
Summary of Services

1. HVAC Repairs (Compressors, Inverters & Power Supply)
2. Upgrade and support of Lighting Ballasts
3. Repair, upgrade or replacement of PLCs
4. Repair, upgrade or replacement of PLCs
5. AC-AC | DC-DC | DC-AC | repair, upgrade or replacement
6. Alternators, AVR PCBs, LVPS repair, upgrade or replacement
7. Repair and Support for Door Control Power Electronics

- Air Conditioning
- Lighting
- Control & Switchgear
- Aux power
- Door Control
- Battery Raft
- Data
- APU
# Maintenance, Repair & Overhaul Capabilities

## Challenges

- Improve reliability of power electronics equipment
- Improve fleet availability
- Reduce component replacement early in its life
- Optimised maintenance regime
- Maintain adequate spare parts
- Improve safety of installed equipment
- Availability of skilled resources

## TPS Offer

- Diagnostic health check service
- Continuous Maintenance
- Advisory services on preventative maintenance throughout product life cycle
- Condition monitoring of units
- RAMS Support

- Highly skilled engineers
- Long term Service agreements available – Bronze, Silver, Gold
- Local after sales and engineering support
- Next day repairs through excess stock
- Standard repair cost guarantee
- Part exchange or rental stock

- In-depth knowledge of Network Rail, UK and International Rail Standards
- Strong project management team focused on quality and delivery
- Expertise in replacing legacy applications – e.g. Motor Alternator Replacement

## Overhaul

- Develop business case required for overhaul cost vs benefit
- Identify a solution that will
  - Fit existing footprint
  - Be lighter
  - Adhere to stringent safety case requirement
- Improve lead time to delivery of new product
- Ensure quality and cost targets are met
Infrastructure

- 55,000 ft² Facility to support Manufacturing and Repairs
- Standard Practice Measures
  - 5S
  - Straight Through Rate (First Time Right)
  - OTIF (On Time In Full)
  - Kaizen Improvement Teams
- Core Capability for Manufacturing and Repair
  - Experienced Work Force
    - 40 years in Power Electronics & Electrical Machine Assembly
    - Heavy Component Material Handling (5 Tonnes)
  - Rail business to be certified to IRIS in the near future
- High Reliability Testing
  - 100% Full functional test prior to product release
  - Thermal Cycle Chamber: -40 to +120° C
  - HASS - Hot Box burn in
- Supply Chain & Distribution
  - Strategy to match volume and need of the customer
    - Specialist arrangements exist for Fabrications, Metalwork, PCBA, Electromagnetic and power devices.
    - World wide secure shipping from the Gateshead premises by land, sea or air.
Key Differentiators

Faster Turnaround
Reliable Repair / Upgrades
Obsolescence Management
Highly skilled engineers / technicians
Long term framework Contracts
Dedicated site for design, manufacturing and testing
3rd Party/ Turnkey Support

Why TPS
Selection of Auxiliary Power Projects

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<th>At seat power supply - Various UK fleets</th>
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<td>DC Input Voltage 750V DC</td>
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<tr>
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<td>DC Output Power 10kW</td>
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