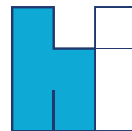





ELECTRO MECHANICAL INNOVATION IN

Rail



Houghton International
Electro mechanical innovation



"Since contract award, Houghton International has delivered the contract as agreed, mobilising within the agreed time period and supplying the product as per the agreed schedule to a high quality."

Phil Gray

Fleet Engineer, HST & Loco, GWR.

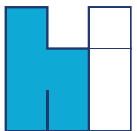
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Electro mechanical innovation

Rail

Houghton International improves the performance of electro mechanical assets around the world. We use our technical expertise to work with customers to solve their problems offering a high-quality monitoring, maintenance, repair and life extension service for motors, generators, pumps and all electrical rotating equipment.

We work collaboratively with the rail industry to improve performance and reliability by solving complex engineering problems and extending the life of electro mechanical assets across the whole train.

More than a standard overhaul, as standard...

Houghton International's, RISAS-approved, rail division specialises in the repair, maintenance and life extension of electro mechanical assets into the UK and global markets, including AC and DC traction motors, alternators, generators and motor alternator sets.

With over 30 years' multi industry experience in electro mechanical engineering, we provide:

- AC and DC traction motor repair and overhaul
– using our HiTRAX™ insulating system designed for optimum performance in rail operating conditions
- MA sets test and repair – comprehensively tested with our unique HiTRANS™ patented transient dynamic test process which simulates full load conditions
- High Speed Train alternator, DC line inductor, fan units, pumps and other auxiliary equipment and heavy repairs
- In depot services including visual inspection and fault finding in situ, static testing of equipment and commutator profiling
- Consultancy services; engineering and technical support, development projects and training

We work collaboratively with ROSCOs, TOCs, FOCs and bogie overhaulers to improve reliability and reduce costs by solving complex engineering problems and extending the life of electro mechanical assets across the whole train.

Experienced in both long-term volume overhaul contacts and one off casualty repairs, we utilise our well established supply chain, fully equipped rail facility and multi skilled staff to mobilise effectively and deliver in line with customer requirements.

Having worked extensively on passenger vehicles both under ground and over ground, light rail, trams and freight vehicles, we have a range of experience including one off engineering projects, specification reviews, design projects and training.

We are the UK's only train traction motor repairer with the capability to rewind and vacuum pressure impregnate (VPI) both epoxy and silicone resins and our AC motor test rig can dynamically test all AC railway traction motor specifications. Utilising rotor bar crack detection equipment and automated TIG welding and undercutting



KEY INFORMATION

- RISAS-approved and independently audited quality systems
- Long term volume contracts and casualty repairs
- Well established, fully equipped, dedicated rail facility
- All refurbishment work undertaken in house
- In situ diagnosis and range of in depot site services

equipment our quality processes are second to none. Furthermore, all traction coils are manufactured and tested in house, in our dedicated coil facility, ensuring full control over quality and delivery.

Specialising in the maintenance of both new and aging assets, we also work with OEMs to support the introduction of new vehicles into the market. Providing troubleshooting, installation support, in situ condition monitoring and ongoing maintenance across the network.

Get in touch to find out more about how we can support reliability and safety targets to improve public performance measure (PPM) whilst reducing the life cycle cost of your assets to increase ROI.



Our services

AC/DC Traction Motors

Offering a broad scope of repair and overhaul services for AC/DC traction motors, our cradle to grave OEM manufacturing and life cycle management service provides the entire range of original motors to the OEM's specification, with options to provide life-cycle or in-warranty service and maintenance.

Our pioneering HiTRAX™ life extending insulation system was specifically designed for use in the rail industry, addressing the unique conditions of moisture ingress and significant temperature variation that contribute to the deterioration of a traction motors dielectric integrity. Units running with our HiTRAX™ insulation solution have been running without a single failure across the UK rail system for almost 17 years.

New Motors

Specialising in the maintenance of both new and aging assets, we also work with OEMs to support the introduction of new vehicles into the market. Providing troubleshooting, installation support, in situ condition monitoring and ongoing maintenance across the network.

We are an authorised service partner in the UK and Ireland for Traktionssysteme Austria (TSA), a traction motor OEM. Under the exclusive agreement we provide service, maintenance and spare parts for all TSA motors and rotating machines in this region, offering local support and specialist repair services.

Motor Alternator Set Repair

HiTRANS™, our patented transient dynamic motor alternator set test process that electrically simulates full load conditions of any type. It replicates exactly what happens in service, which means that the unit has been tested at full working load before it leaves our facility.

Our repairs are proven to work first time, every time, and to a life expectation in line with the operating life of the train. We believe that we are the first company in the world capable of simulating exactly the electrical load conditions both through the motor alternator set controller and the incoming electrification.



HST Alternator Repair

Houghton International offers an effective alternative to original equipment manufacturers (OEMs) when it comes to high speed train alternator repair, which can reduce costs and lead times. Standard overhauls can be carried out alongside rigorous train alternator testing, involving all components. This includes a full rewind of all components from main stator to auxiliary exciter, using in-house manufactured coils for optimum quality, performance and control.



DC Line Inductor Repair

Our DC line inductor repair services offer both a significant cost saving and substantially reduced lead times compared to buying new. We offer a range of weather proofing and repair options for DC line inductors utilised on rolling stock across the network.

In addition to the weather proofing programme for DC line inductors, TOCs now have the option to repair rather than replace faulty units. This offers both a significant cost saving and substantially reduced lead times against buying new.

Electro Mechanical Site Services

We offer a range of in depot services including visual inspection and fault finding in situ, static testing of equipment and commutator profiling.

With experience of working in train depots around the country, our specialist engineers carry out a range of electrical tests while the traction motor is still connected to the train. Condition monitoring, such as vibration analysis, temperature checks, visual inspections and can also be carried out to identify faults and assist rolling stock engineers in planning maintenance and helping to reduce in service failures.

Engineering Consultancy

Houghton International's expertise has been shared with organisations worldwide. We work with leading companies, across a range of sectors, assisting them to accelerate their development.

Engineering consultancy services include:

- Engineering and technical support
- New product development projects
- Site visits and audits
- Engineering specification review
- Reverse engineering
- Performance upgrade projects
- Equipment specification

Working with Houghton International

We work collaboratively with customers in the rail industry to improve performance and reliability by solving complex engineering problems and extending the life of electro mechanical assets on their trains.

As specialists, we have invested in industry-leading technologies and patented solutions to eliminate failures, improve reliability, increase lifespans, and significantly reduce cost and frequency of maintenance activities.

Innovation drives our business and we are committed to continuous improvement both to internal processes and customer service. We aim to solve our customers problems and add value through innovation.

Quality Assurance

Houghton International operates in sectors where quality procedures and the safety of equipment are critical. As such, we have developed a rigorous quality policy with processes and procedures to ensure that everything we do is of the highest standard.

These policies and procedures are reviewed across all areas of our business on an on-going basis, which reflects our culture of continuous improvement.

We continuously invest in our plants and machinery and the training of our staff to guarantee a high-quality process.

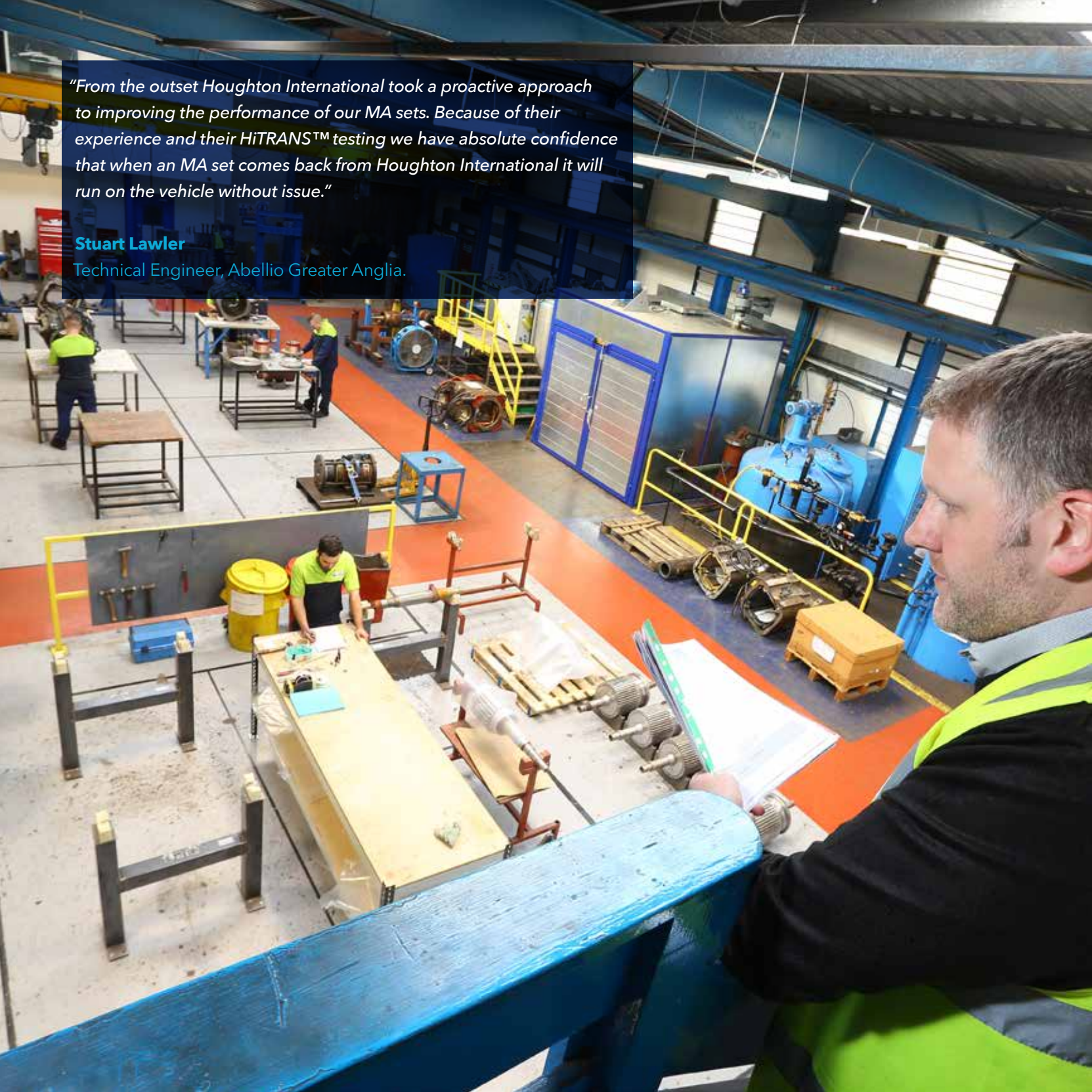
Contact us on +44 (0)191 234 3000 to find out more or visit www.houghton-international.com



"From the outset Houghton International took a proactive approach to improving the performance of our MA sets. Because of their experience and their HiTRANS™ testing we have absolute confidence that when an MA set comes back from Houghton International it will run on the vehicle without issue."

Stuart Lawler

Technical Engineer, Abellio Greater Anglia.



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