**Component Obsolescence in the UK Railway Industry and the Role of Reverse Engineering**

The UK railway industry is a complex system that is deeply integrated with long-established infrastructure and technology. Yet, one of the most significant challenges it faces is component obsolescence. As technology evolves, specific components used in rolling stock, signalling, and other railway systems must be updated or discontinued. This reality presents a difficult conundrum: How do manufacturers support ageing equipment while meeting safety, performance, and regulatory standards? One effective approach is reverse engineering, which has become indispensable in sustaining operations and ensuring reliability.

### **The Growing Issue of Obsolescence**

Component obsolescence is an inevitable consequence of technological progress, and standards like **IEC 62402:2007** are used to manage such incidences to ensure that they are dealt with appropriately and that train service is not interrupted in any way. In the UK railway industry, it often affects magnetic components like chokes, inductors, transformers and other vital elements within the electrical and power systems, which, according to TFL, are second only to auxiliary systems as the main reason for failure. Many of these components were developed decades ago, and original equipment manufacturers (OEMs) may no longer exist or have ceased production of specific parts. This is particularly problematic because railway systems typically have long life cycles, typically 30 years, and support is required beyond what modern commercial off-the-shelf (COTS) product cycles typically accommodate.

Ageing components can lead to several issues. First, sourcing spare parts becomes a logistical nightmare, driving up maintenance costs. Second, reliance on dwindling stocks of obsolete components raises the risk of system failures, which can have serious safety and service implications. As a result, operators and manufacturers must find ways to replicate or replace these components without compromising performance or safety.

### **Reverse Engineering as a Solution**

Reverse engineering offers a pathway to mitigate obsolescence challenges. Engineers can recreate or improve existing designs by deconstructing and analysing existing components. This approach allows manufacturers to produce compatible replacements, often with enhancements to meet contemporary standards. Reverse engineering extends the life of ageing railway systems and contributes to improved energy efficiency, reduced maintenance intervals, and enhanced system reliability.

### **How REO Addresses Component Obsolescence**

REO Train Technologies, a specialist in designing and manufacturing chokes and inductors, has become adept at leveraging reverse engineering to support the railway industry. Recognising the critical role electromagnetic components play in applications like power conditioning and harmonic mitigation, REO has developed robust methodologies to ensure continuity of supply.

REO's approach begins with a comprehensive analysis of the obsolete component, examining its physical and electrical characteristics, often using 3D scanning techniques. Using advanced diagnostic tools and equipment, REO's engineers can measure parameters like inductance, resistance, current and thermal behaviour under load. This data allows them to create a highly accurate replica and often enhance the original design. In many cases, REO can integrate modern materials to meet the up-to-date railway standards like EN 45545-2 / EN 15085 to improve product life and deliver a component that performs better, is lighter, and lasts longer than the original.

### **Supporting the Future of the UK Railway Industry**

REO is celebrating its centenary in 2025, and by embracing reverse engineering and continuously innovating, it will continue to help ensure that critical infrastructure remains operational, safe, and efficient. This commitment to adaptability and excellence addresses the immediate challenges of obsolescence and supports the broader goal of maintaining a sustainable and reliable railway network in the UK.

In an era where infrastructure must balance heritage and modernity, companies like REO play a pivotal role in bridging the gap, ensuring that the wheels of the UK railway industry keep turning efficiently.

**Ends:** 580 words

**Editor’s note:** If you want to ensure you keep up to date with press material, opinion focused blog content and case studies from REO UK, you can visit their news page: <http://www.reo.co.uk/news>

**For further information or Press Enquiries contact:** Steve Hughes or Michelle Gillam

REO (UK) Ltd, Units 2-4 Callow Hill Road, Craven Arms Business Park,

Craven Arms, Shropshire, SY7 8NT
**Telephone:** +44 (0)1588 673411

**Fax:** +44 (0)1588 672718

**www:** http://www.reo.co.uk

**e-mail:** marketing@reo.co.uk

**Twitter:** <https://twitter.com/REO_UK>

**Facebook:** <http://www.facebook.com/pages/REO-UK-Ltd/263330563768795>

**About REO:** REO specialises in providing an extensive array of electronic power controllers and resistive and inductive wound components tailored for industrial use, particularly in demanding environments. As the company expands its footprint in renewable energy technology, ensuring exceptional power quality has become a paramount focus. With manufacturing facilities in Germany, the US, China, and India, REO stands at the forefront of innovation across the globe.