Cover slide

Hello. I'm Steve Dunn, with Gy Harness, a co-founder of Potential Energy Group with our product Rail Power. Our aim is improved reliability at reduced operating costs for rail asset managers.

I have been Head of Materials at an SME securing over £1.8 million of funding delivering patented technology. We scaled up the process, and the technology was licenced to a third party.

Gy is a rail infrastructure engineer who worked with SMEs to provide access to Network Rail enabling new IoT device development.

We have achieved success and recognition that has led to investment in PEG.

The Problem

In 23-24 over £900m was spent maintaining Network Rail's infrastructure, with 16,500 lost passenger hours. Deaths of rail workers have led to reduced line side working with trains running.

The 2026 Railway and Guided Transport Systems Regulations update is expected to further restrict line side access. Pressures on operating costs and embracing IoT with high-performance analytics combine to drive increased need and interest in remote monitoring.

Our solution

This presents a timely opportunity for Rail Power to address rail industry infrastructure management concerns. We combine breakthrough materials engineering with machine learning delivering a low power sensor for rail analytics.

Taking vibration from the rail, we forecast failure. Importantly we recognise failure much earlier than current systems and uniquely identify the failure mechanism at play.

We not only warn of degradation in health but simultaneously determine the cause of change. Rail Power is passive, learns and provides unprecedented insights into track health.

By adopting predictive models McKinsey estimates a 10 to 30% reduction in rail infrastructure maintenance costs. Deloitte show a 30-50% reduction in downtime and 40-70% reduction in cost of emergency repairs.

By adopting on track analytics, it is forecast that Network Rail could save £400 to £600m a year with a 2 year ROI.

Route to market

We are testing prototype Rail Power devices in collaboration with, Nexus, a light rail provider. We will run analytics on real world data to verify laboratory results against those from the live environment.

This enables validation across 3 protocols: signal capture, processing and transmission. After analysis, we will take lessons learned to collaborate with PCB designers, experts in logic coding and manufacturers to develop a robust plan for scale up.

In 2026, we plan to exhibit at a trade show launching Rail Power and extend our collaborations. We aim to secure funding pushing our technology past TRL6 over the next 18 months. A highly topical EU call is open.

We are looking for partners, within rail and tram operators to enable further pilot collaborations or collaborate on EU or Innovate funding.