

Gobotix Vehicle Underside Examination System

Routine train inspection and maintenance is a continuous activity ensuring equipment is maintained to an acceptable safety standard. Preventing failure of expensive major components (engines, gearboxes, wheel sets, axle bearings) and safely maximising their service life is key to an efficient railway.

Many components are best monitored in near service conditions (train moving & fresh from service) rather than stationary in the depot (and cooled down). This cannot be done by humans.

The RSSB managed Innovation Competitions we have developed links with skilled technology companies such as Gobotix. This is a rapidly growing micro company have proved themselves to be serial innovators capable deploying new engineering technology within the rail industry.

The Gobotix solution is continuous automatic inspection based on hyperspectral imaging and computer vision algorithms. Specialist cameras, lights and software are used to detect

faults and anomalies such as overheating components, damaged equipment and leaks of certain fluids.

The data patterns learned by the system are used to identify anomalies. The anomaly is reported to maintenance engineers through the user interface. As the system gathers more data, the need for routine service inspections by maintenance staff reduces since the diagnosis becomes more specific.

The innovation development was done in partnership with rail operator Chiltern Railways. This link up with industry supports rapid product development and optimisation using real world results. As a result, Gobotix are in discussions with a rail industry supplier to move towards a production model.



In use within Chiltern Railways depot.



Thermal image of the train underside, showing the operating temperature of difficult to access components.

Potential Customers

Rolling stock operators and maintainers who need to spot and prevent component failure before it becomes critical. Additional applications in other industries for under vehicle inspection.

Key Benefits

- Condition monitoring of difficult to access key components whilst in their in-service state.
- Use of machine learning technology to spot patterns and trends.
- Non-invasive inspection

SET Wheel Motor Technology

Rolling Stock have depended on the conicity of its wheelsets to provide an ability to steer a train around bends. On tight radius bends or at slow speeds the conicity based steering reaches its limit and the train no longer smoothly runs around the curve. Instead the trains forces through the wheels attack the rail causing wear and increase Rolling Contact Fatigue (RCF).

Through the support of the RSSB Innovation team and its managed competitions they have been able to bring together rail research (Huddersfield University) and a small company called SET together to demonstrate a disruptive solution to this problem.

The solution was to create independently driven wheels with the bogie set



Potential Customers

Rolling stock manufactures

Key Benefits

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Innovation Broker Service

The demand to achieve high operational performance in the challenging railway environment means it is very difficult to keep up to date with new technological developments and other solutions. Frequently, it is these developments and solutions which could most help your organisation overcome those business challenges and reach that next level of performance. The use of Innovation brokers can solve this paradox, as they provide a bridge between busy operators with critical challenges and the suppliers and start-ups with ground breaking solutions.

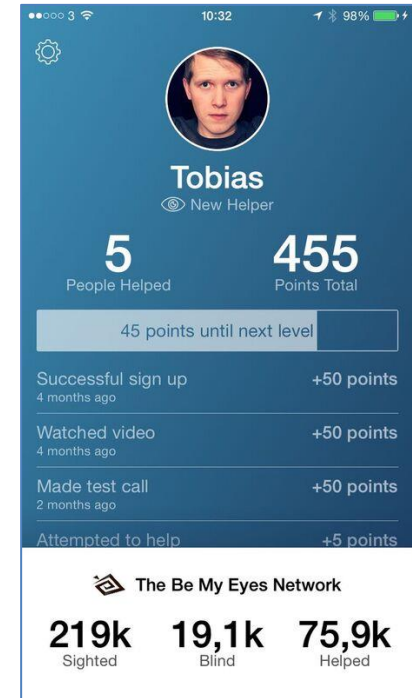
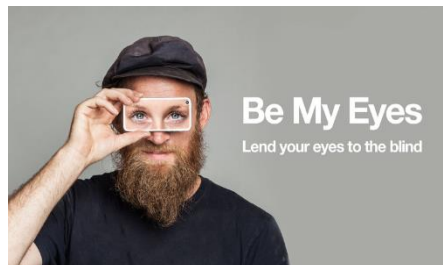
The RSSB Innovation team are offering an Innovation Broker Service. They gather and investigate solutions to target your critical challenges. The team are constantly monitoring new opportunities, trends, patterns and technology. They combine this with significant experience of innovation in rail to select the most suitable solutions. The service can extend to guide new suppliers through the industry, its

processes and even to project manage delivery.

One area which remains a challenge to the industry is accessibility.

Approximately **48 million rail journeys** were made by sight impaired people in past 12 months. By availing of the RSSB Innovation Broker Service you could be linked up with exciting projects such as “Be My Eyes”.

Be My Eyes uses a live video connection between blind or sight impaired customers and sighted operations staff, delivered via their mobile phones. It enables these customers to request assistance from staff to remotely guide and assist them. By using the video feed staff can see the detail of the customers position and surroundings in real-time. The operational staff do not have to be in the same location as the customer.



Potential Customers

TOCs and Station Operators

Key Benefits

- Independence for sight impaired customers using the railway
- Reduces dependence upon station staff
- Can be integrated into a rail companies own customer-facing software.