

FLUID ANALYSIS IN THE RAIL INDUSTRY.

The benefits of moving to a condition based maintenance programme.

Discover how taking a proactive approach to fleet maintenance can save critical costs, while ensuring systems run safely and reliably.

FINNING[®]

TRUSTED BY EXPERTS.



The demands placed on the rail sector

The day-to-day demands placed on the rail industry should not be underestimated. Passenger journeys on the rail network have more than doubled since rail privatisation, from 735 million in 1994/95, to 1.65 billion journeys in 2014/15¹. Meanwhile, the amount of freight moved by rail was recently reported as 22 billion net tonne kilometres.

Whether it's transporting busy commuters at peak times on passenger trains or ensuring essential goods are delivered via load-bearing freight wagons, the pressure on rail services to run on time, without delay, is enormous. As a result, it is important that fleets are operating correctly at all times.

Given the average age of rolling stock in the rail industry in the UK is more than 20 years², it is essential that the condition of vital fluids, such as oil, fuel and coolants, are monitored, to guarantee all components are working as expected. Failure to do this could potentially result in systems falling victim to mechanical problems, or breaking down completely.

The cost of failure is two-fold. Firstly, there is the cost of lost revenue and component replacement. Secondly, the train operating company will be liable to pay fines to Network Rail.

Consequently, many operators try to prevent this by implementing a scheduled maintenance programme. However, this rigid approach to servicing fails to offer a predictive approach to potential maintenance issues, anticipating any problems that could reveal themselves in the future.

Fluid analysis can help operators achieve considerable cost savings by taking a conditions based approach to maintenance, while reducing downtime and improving the service of fleets in the rail industry.

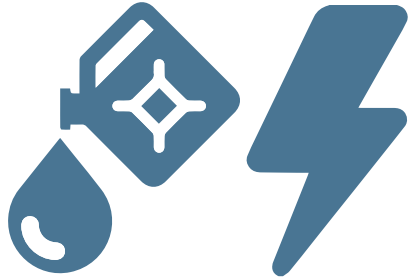


45,000
rail fuel samples
were processed by
Finning in 2015



Electric trains
cost approximately
50%
less to run than diesel-
powered trains, due to
reduced maintenance and
fuel costs





As the industry transitions from diesel power to electric, Finning is already widely used by Train Operating Companies to help monitor drive units and transformers

A fleet of 40 electric trains moved to a condition based monitoring programme could save:

50%
PROCESSING
TIME

30%
REDUCTION
IN OIL COSTS





**Fluid analysis provides visibility
of vital asset performance and component health**

The benefits of fluid analysis

Fluid analysis provides visibility of vital asset performance and component health.

Not only does this improve the reliability and availability operation of rail fleets, but it also helps realise a range of efficiency and cost benefits that can make a big impact on your business.

These include:

- **Reducing maintenance costs**

Servicing equipment when necessary, rather than adhering to a rigid maintenance schedule, considerably reduces total cost of ownership.

- **Minimising the risk of serious accidents**

Identifying potential faults early reduces the risk of vital component failure significantly, which could seriously threaten the safety of passengers and other rail operators.

- **Optimising equipment life**

Protects vital components from unnecessary wear and tear, prolonging equipment life.

- **Scheduling repair and maintenance**

Keep a close eye on the condition of vital equipment and schedule repairs and maintenance at a time convenient to you, avoiding unscheduled downtime.

- **Limiting waste and its environmental impact**

Only changing fluids when they need replacing maximises depot efficiency and reduces the cost of waste.

- **Extending oil life**

Replacing oil based on its condition guarantees maximum value for every litre used and minimises the cost of disposal.

Fluid monitoring

There are five key fluids that are essential to monitor.

1. Oil

Oil sampling should test for metal and water contamination, abrasive wear, viscosity, acidity and cleanliness. This enables the oil drain interval to be optimised and highlights any changes in component condition.

2. Coolants

Around 50% of all engine downtime is due to problems with the cooling system. These issues can then spread to the transmission and hydraulic systems, which are cooled by heat exchangers, potentially leading to engine failure.

3. Transformer Oil

Transformer oil condition monitoring is vital for the efficient operation of electrical equipment. Testing enables issues such as a reduction in dielectric strength to guide diagnostic work.

4. Diesel Fuel

Modern engines demand the highest quality fuel. Efficiency can be seriously compromised by poor or contaminated fuel, which is why a detailed analysis will identify impurities or organic contaminants, such as fungi, yeast or bacteria.

5. Potable and Non-Potable Water

Guidelines from the Rail Delivery Group recommend that on-train and depot water sources should be tested periodically with auditable records kept. Monitoring water quality forms part of a wider water management system.



What does implementing a fluid analysis programme with Finning involve?

- **Samples need to be taken on a regular basis**

Taking a regular sample ensures an accurate picture of performance history and trends can be established. Many modern technologies allow operators to take a 'live' sample, to provide an even more accurate insight as it is taken directly from an operational working part.

- **Results are reported within 24 hours**

Results and recommendations for oil and coolant testing are sent to customers within 24 hours of the sample arriving at our laboratory. If there is an urgent need to feedback on a fluid sample more quickly, Finning can accommodate for this requirement too.

- **Findings are reported via Infotrak**

Sample data can be viewed in real-time with our Infotrak system, an online portal that can be accessed at any time. It provides live, up-to-date analysis of all fluid samples, and features a range of practical recommendations that will help you to take preventative action before any issues arise. Results are also sent out via email.

- **A clear, practical recommendation will be made**

Finning's specialists will be able to identify wear patterns for components, forecast long-term equipment requirements, predict the frequency of problems and optimise the oil drain interval, ensuring valuable recommendations can be made.

Expertise

Finning has a wealth of experience and expertise within the rail industry, testing a staggering 45,000 samples every year for customers within this sector. Featuring a specialist and dedicated team for the rail sector, Finning works closely with rail operators to understand their individual needs and requirements.

The team will advise on which fluids can and should be analysed and make practical, cost-effective and helpful recommendations based on their findings.

The company has also partnered with the National Training Academy for Rail to create an innovative module dedicated to covering what a condition based monitoring strategy entails and the advantages of this approach to fleet maintenance.





About Finning:

Every year, we test 220,000 fluid samples for customers worldwide at our state-of-the-art laboratory in West Yorkshire. Our partners at Leeds University ensure we're delivering the most advanced fluid analysis techniques available on the market.

With nearly 40 years of experience and a team of sector-specific and regional support specialists available, Finning is well positioned to expertly analyse equipment and make recommendations.

For more information, visit www.fluid-analysis.com

References:

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[2] Office of Rail & Road, Rail Infrastructure, Assets & Environment: 2014-15 Annual Statistical Release, 22nd October 2015, p.5.
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