

Project A6: Optimising Rail Maintenance Techniques

Partners:

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Mechanical & Systems Engineering

Researchers:

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Adhesion – Leaf films:

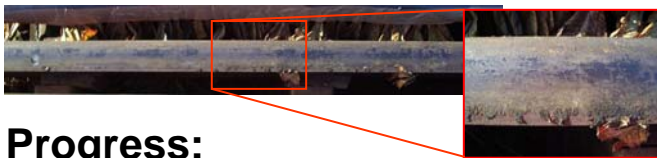
Leaves falling onto rails and run over by trains can form low adhesion leaf films. These cause operational difficulties resulting in delays to trains and have safety implications.



Novel Aspects:

On track creation of leaf films.

Testing of rail head leaf film treatments under controlled and repeatable conditions.



Progress:

Working with DeltaRail, testing of a series of rail head treatments has been completed.

Test method developed to compare effectiveness of different chemical treatments.

Acidity or alkalinity (pH) of treatment shown to be significant.

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Modelling of Rail Grinding:

- Mathematical modelling of crack growth by shear in rails with natural wear and grinding included.
- Aiming to model the optimum grinding frequency and depth for maximum rail life or minimum whole life rail cost.

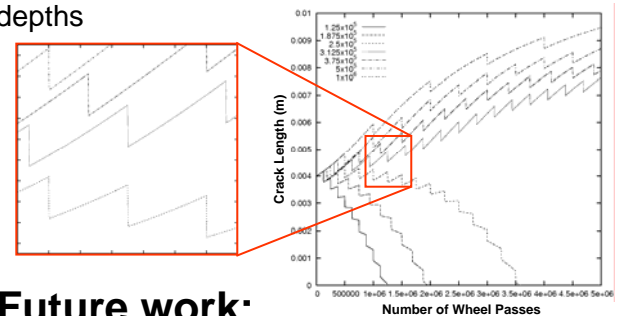
Novel Aspects:

Determining the effects of grinding on crack length including:

- Ability to use vehicle dynamics data to model different locations.
- Modelling of various grinding strategies to determine effect on controlling crack length.

Progress:

Initial modelling of single location and vehicle type with various grinding frequencies and depths



Future work:

Modelling of rail vehicle sequences representative of traffic patterns.

Model cost of rail grinding, maintenance and replacement to optimise grinding for minimum whole life rail costs.