

Wheel/Rail Condition Monitoring to Support Rolling Stock Maintenance Actions

Mikael Palo and Per-Olof Larsson-Kråik

17th Nordic Seminar on Railway Technology
Tammsvik, 3-4 October 2012

- 1 Introduction
- 2 Measurement Data
- 3 Conclusions
- 4 Future Work

Introduction

Wheel condition

Condition management

- Visual
- Impact load

Condition management

- Visual
- Impact load

Condition monitoring

- Wheel/rail forces
- Wheel profile

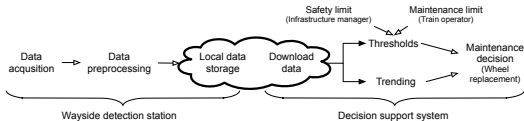
Condition management

- Visual
- Impact load

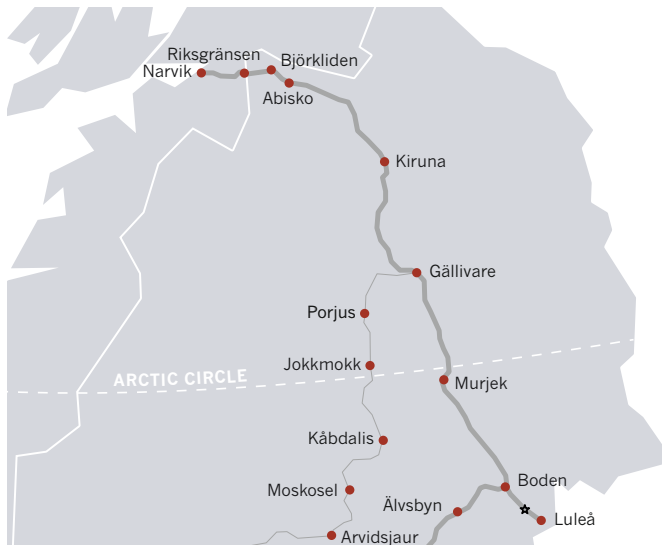
Condition monitoring

- Wheel/rail forces
- Wheel profile

Condition-based maintenance

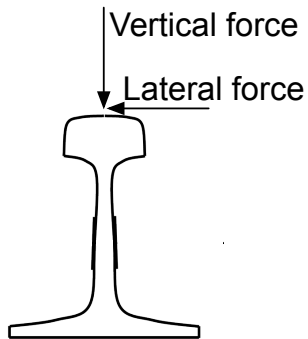
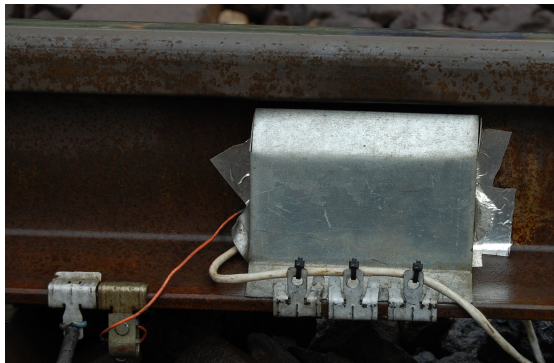


Measurement stations



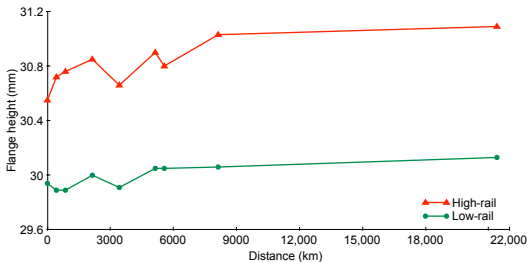
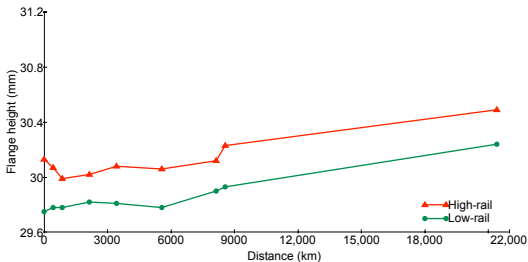
Wheel profile measurements



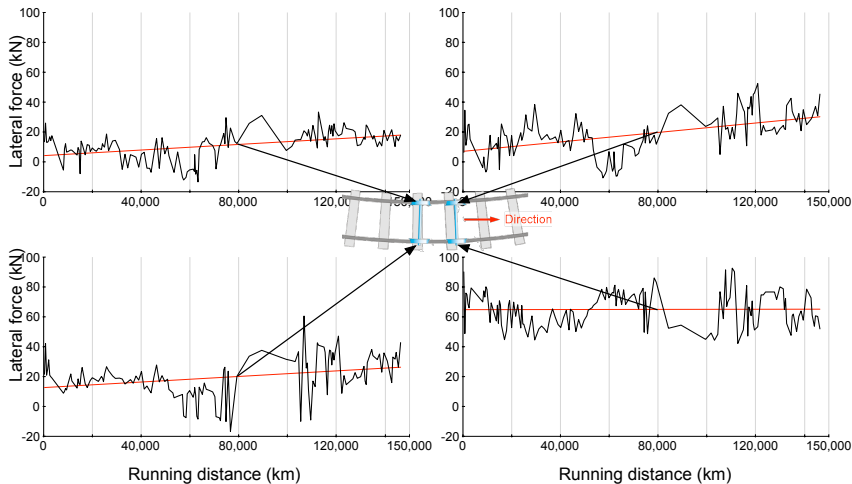


Measurement Data

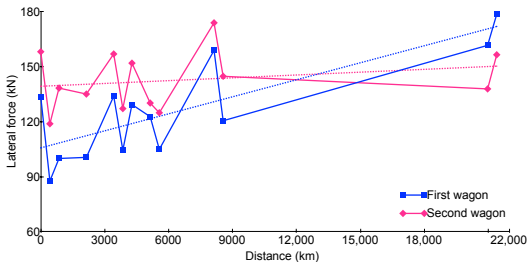
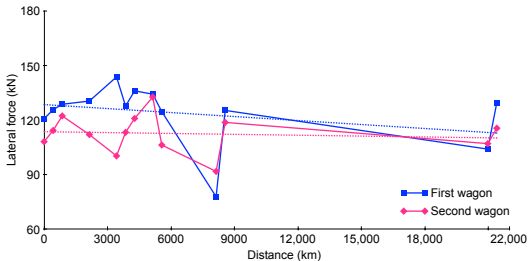
Wheel profile wear data



Wheel/rail force data



Wheel/rail force data



Conclusions

- The four different wheel positions in a bogie show significantly different force signatures
- Automated monitoring systems make it easier when trending large quantities of data
- The trending of profile wear and lateral forces is possible and will help in making informed maintenance decisions

Future Work

Computer simulations

- All data points and maintenance actions will be feed into vehicle simulations done at KTH
- These simulations will validate maintenance strategies and LCC-models

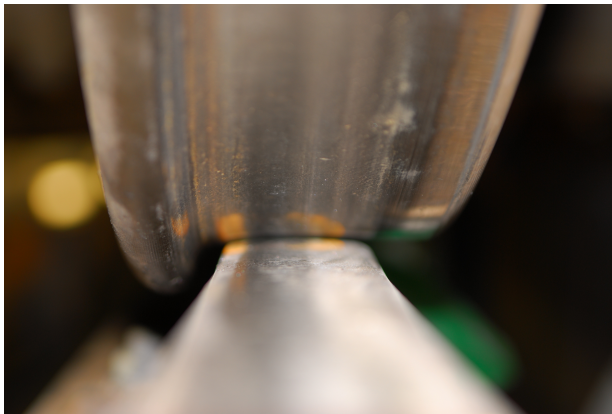
Computer simulations

- All data points and maintenance actions will be feed into vehicle simulations done at KTH
- These simulations will validate maintenance strategies and LCC-models

eMaintenance

- Data from both wheel/rail and wheel profile stations are collected in a common database server
- The combination of these data with set limits and thresholds can trigger work orders for maintenance actions

Thank you for listening!



Are there any questions?