Advanced Freight Train Simulation

OpenTrack User Group – 8 September 2017
Plateway - Introduction

20 years of Plateway Modelling and Simulation

Plateway’s modelling history (images from Google maps)
So why single train runs in OpenTrack?

- OpenTrack’s single train simulation capability is very detailed for a ‘network simulator’ allowing the input of many train parameters
- Including the ability to adjust the acceleration and velocity to a percentage of the achievable value (The actual driver’s performance)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>OpenTrack</th>
<th>“Specialist” single train simulator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving Style</td>
<td>Input</td>
<td>Output</td>
</tr>
<tr>
<td>Airbrake Performance</td>
<td>Input</td>
<td>Output</td>
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<td>In train forces</td>
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<tr>
<td>Overall Braking Strategy</td>
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<tr>
<td>Line Speed Limits</td>
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<td>Input</td>
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<tr>
<td>Track alignment</td>
<td>Input</td>
<td>Input</td>
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</tbody>
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Recent Improvements

- Lowering of acceleration and braking thresholds to more accurately reflect the train handling skills required.
- Coasting functions.
- Allowing individual wagon characteristics rather than an average mass and curving performance.
- It was also promised to improve the dynamic braking functionality.
Freight Train Handling

- Preservation of momentum over undulating track sections for fuel economy, noise reduction and wear minimisation.
- Controlling in train forces to prevent coupler breakages.
- Maintain train power / dynamic braking demand to within traction system constraints. NB This is speed dependent.
- Plots showing train consist speed, power consumption and gradient profile when trying to align train performance with train handling guide
- The coasting signal functionality was used on OpenTrack to mimic train handling behaviour
Observe the impact of the coasting signal on speed (top plot) and power consumption (middle plot)
Impact of Traction Supply

- OpenTrack alone is not able to tell the full story of the electrical requirement
- OpenPowerNet was able to simulate the electrical requirement with the result graphed in excel
Impact of Traction Supply
Thank you for your attention

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