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Steventon Bridge: Intelligent Rule Breaking using Dynamic FEA Techniques

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Talk Contents

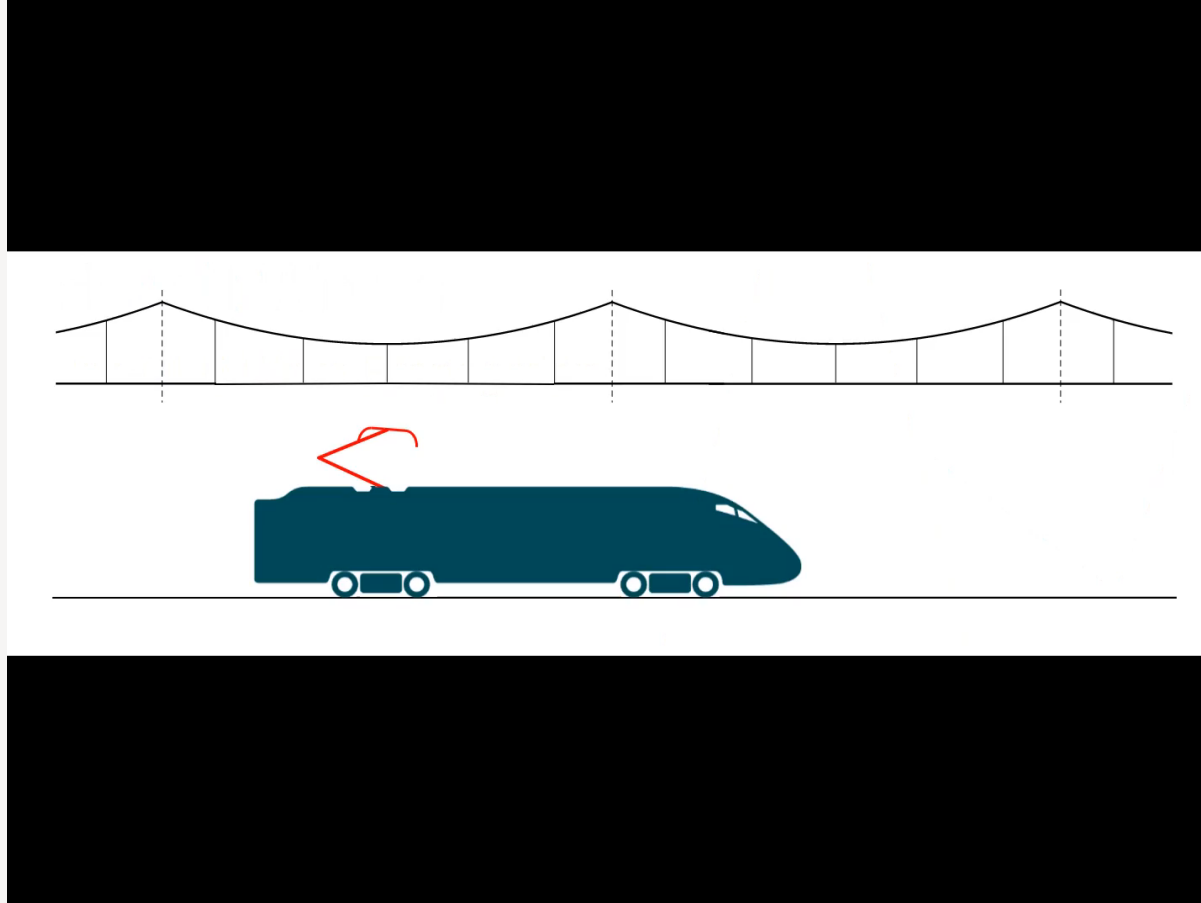
- › Setting the scene – OLE performance and gradients
- › The Steventon dilemma
- › Atkins and D-RSS
- › Challenges in Modelling Steventon
- › D-RSS predictions at Steventon
- › Real-world testing
- › The outcome for Steventon
- › Wider implications for electrification cost reduction



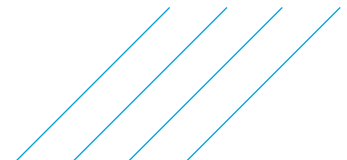
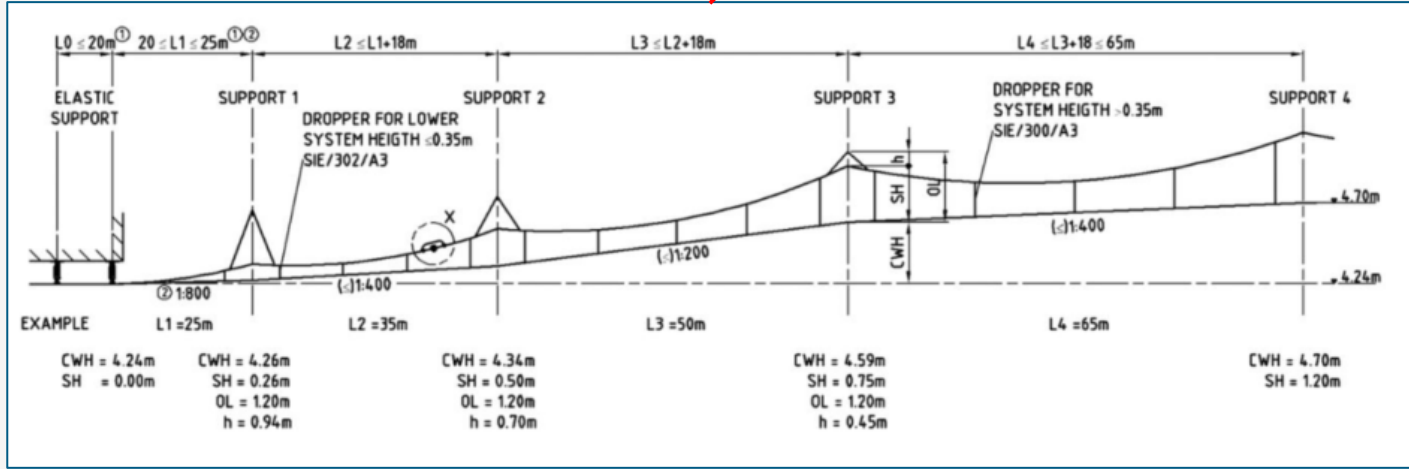
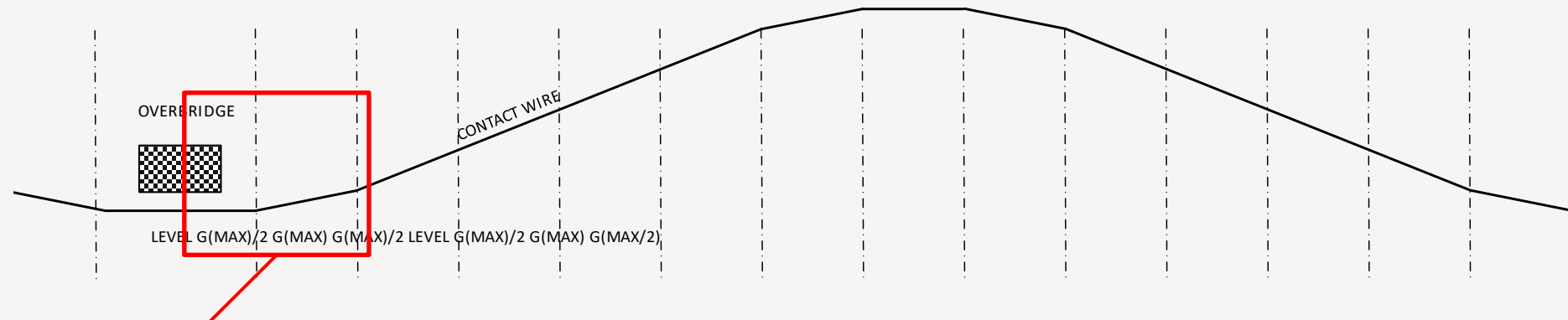
Setting the Scene: OLE Performance



Setting the Scene: OLE Performance



Setting the Scene: OLE Gradients



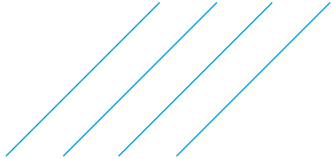
The Steventon Dilemma



ATKINS

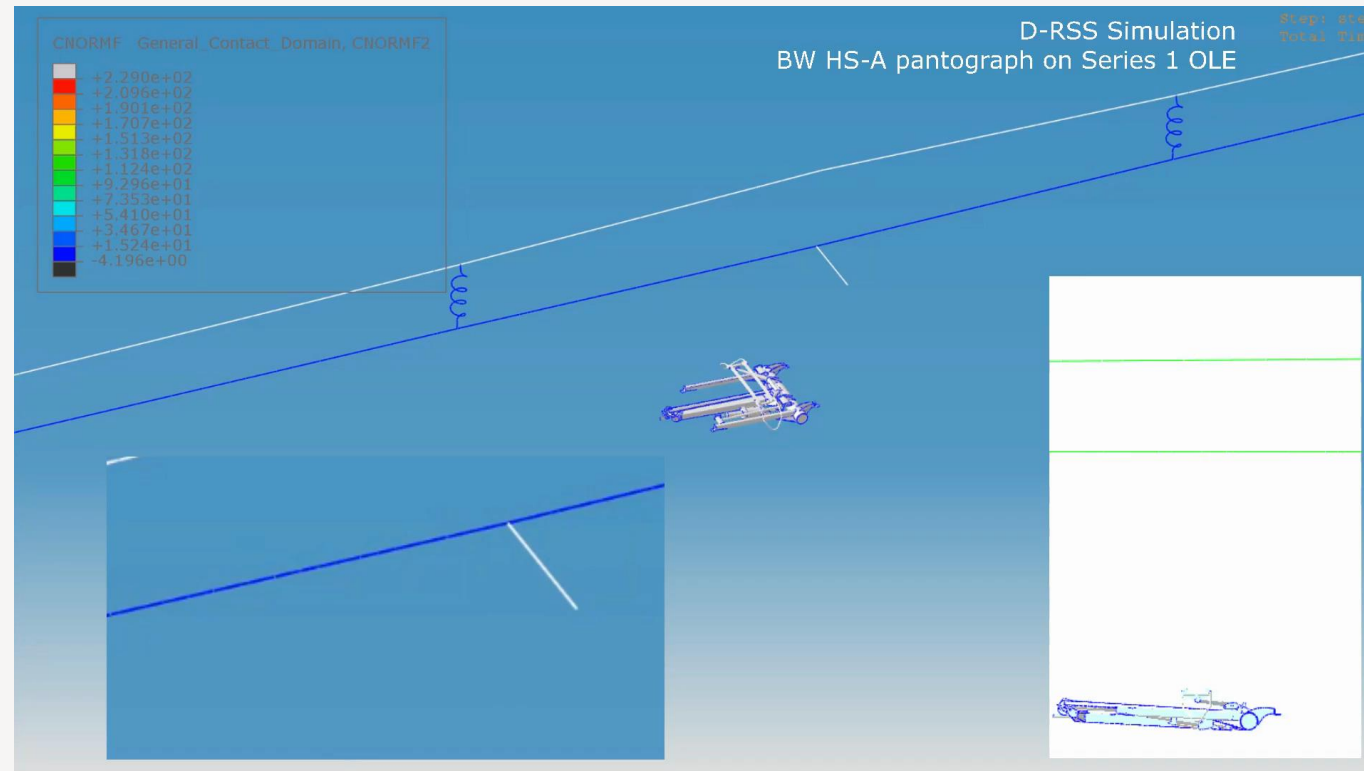
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Steventon Bridge: Intelligent Rule Breaking using Dynamic FEA Techniques

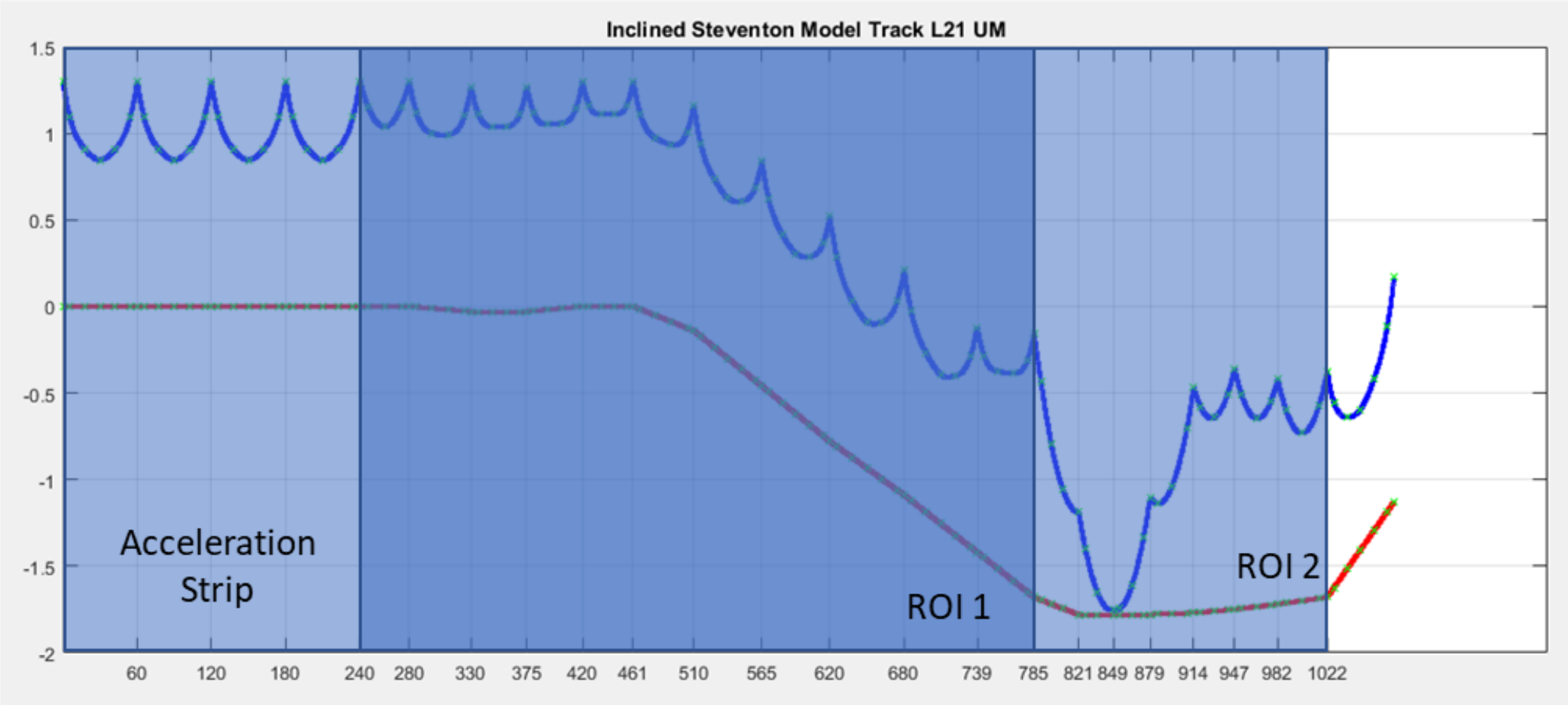




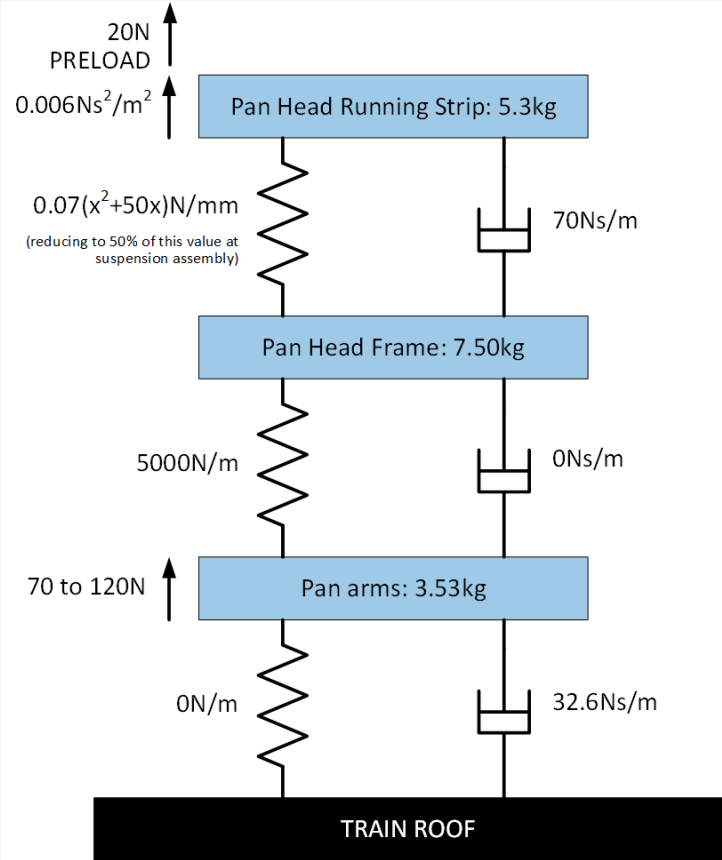
Atkins and D-RSS



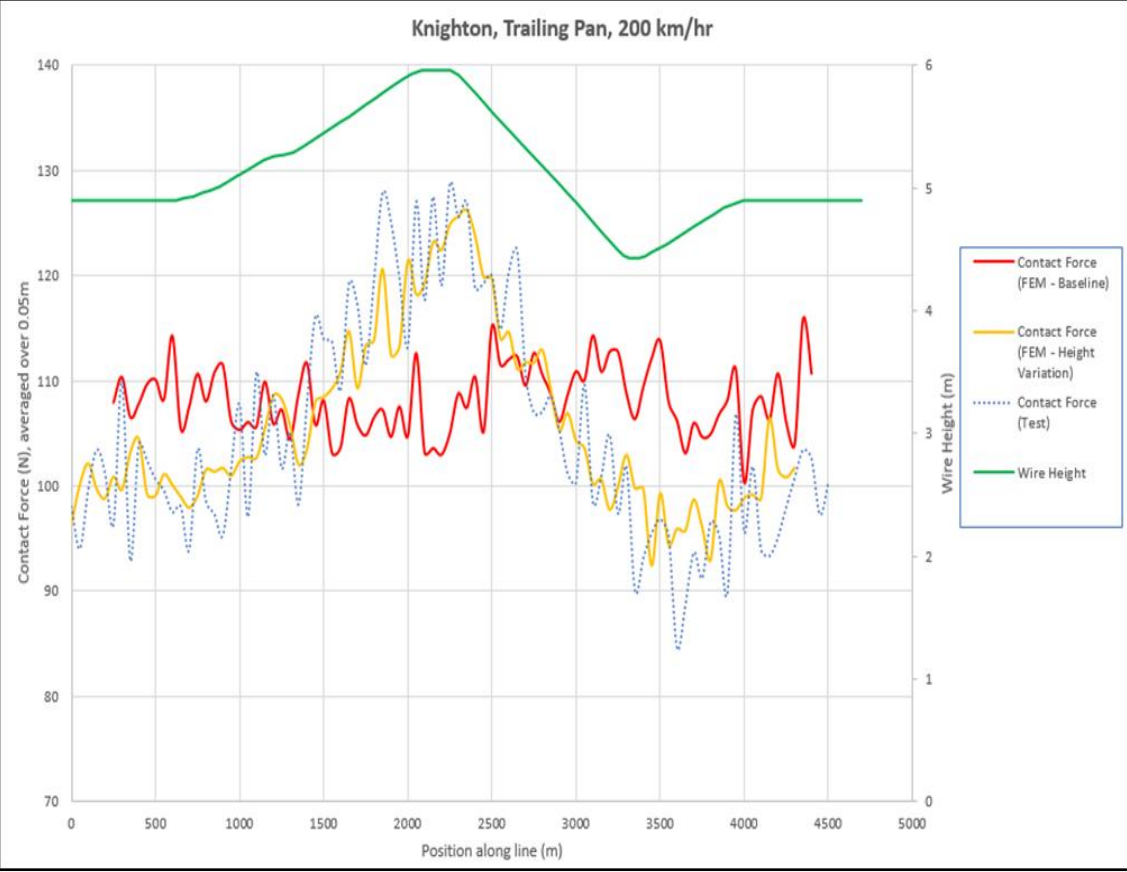
Challenges in Modelling Steventon



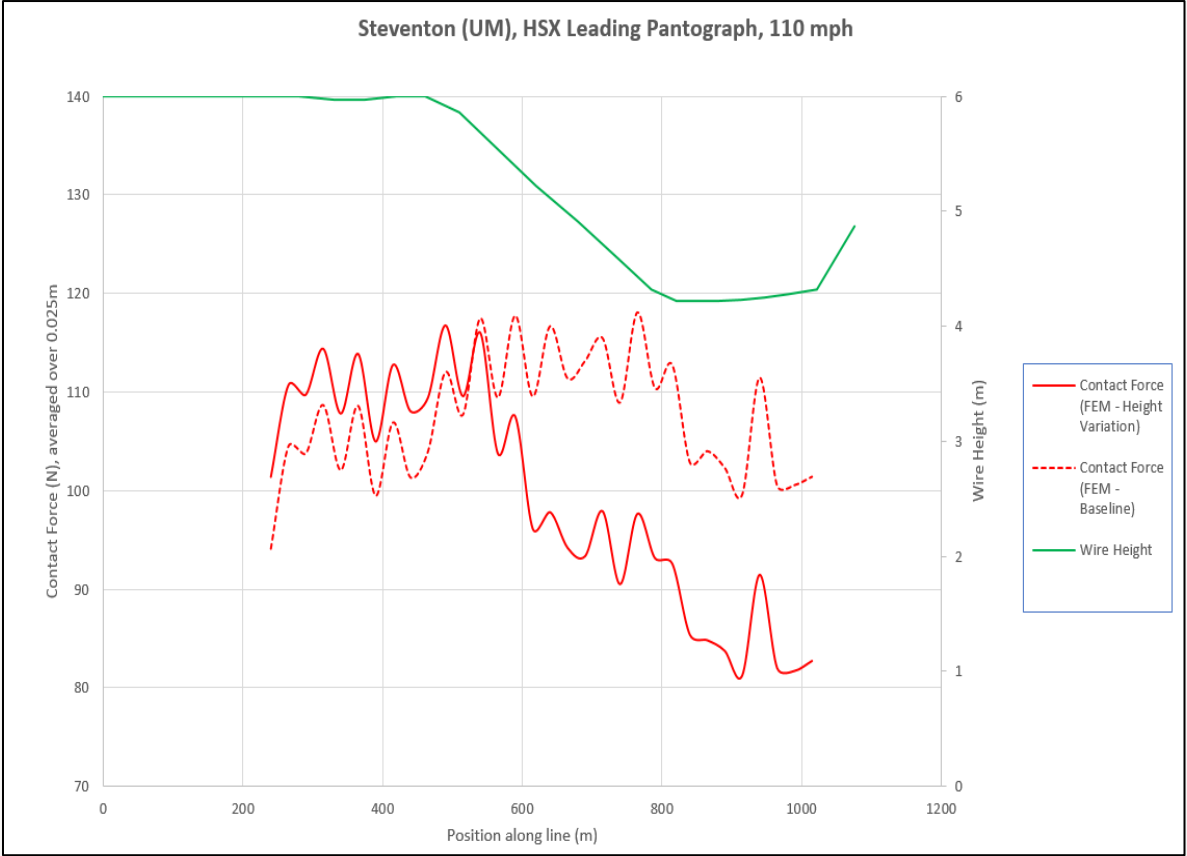
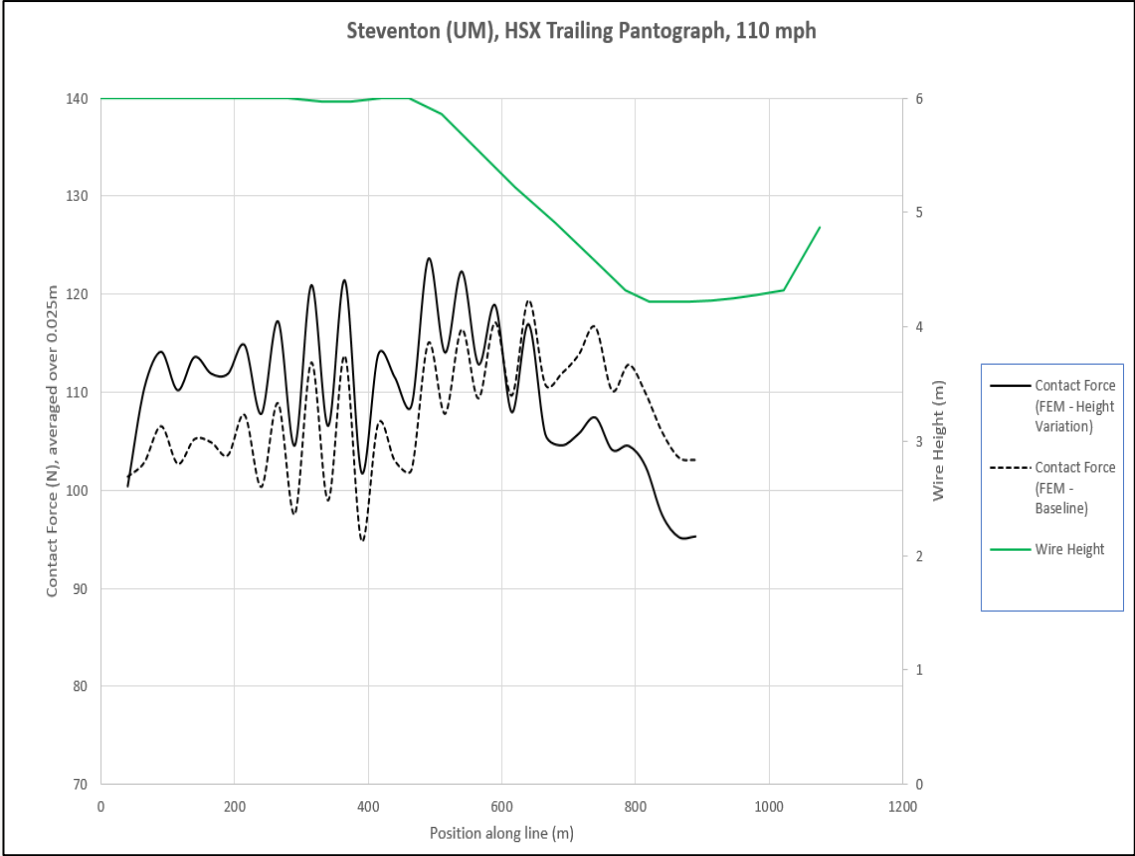
Pantographs: Lumped Mass Model Limitations



Knighton Refined

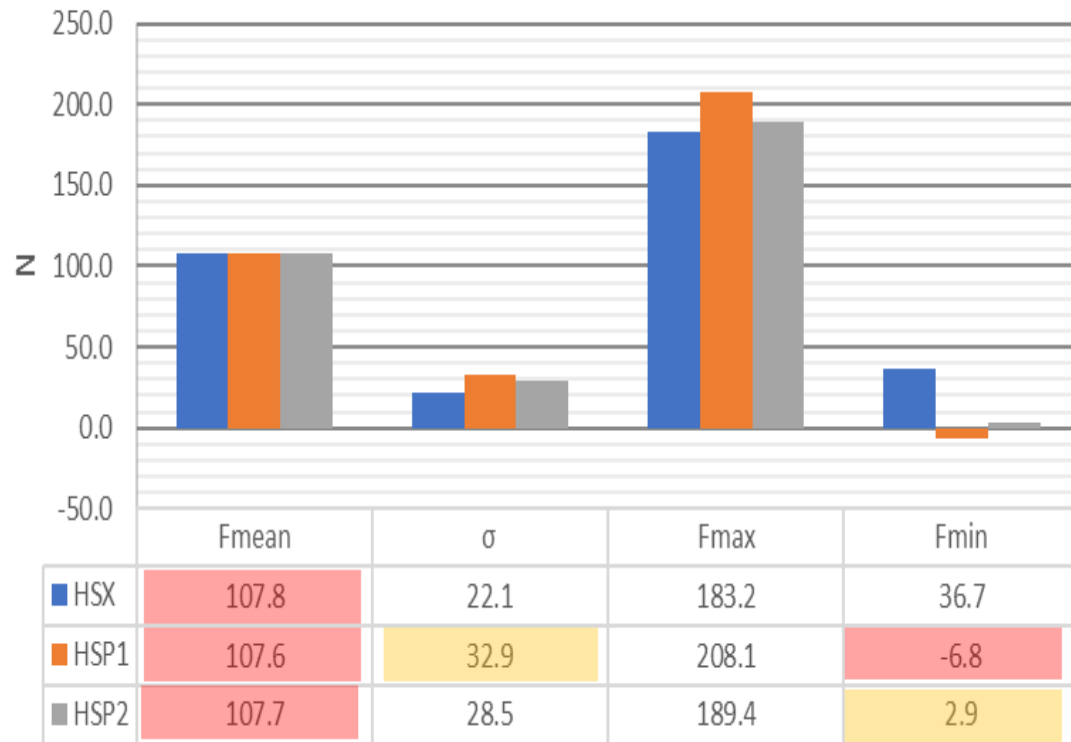


Steventon – First Results

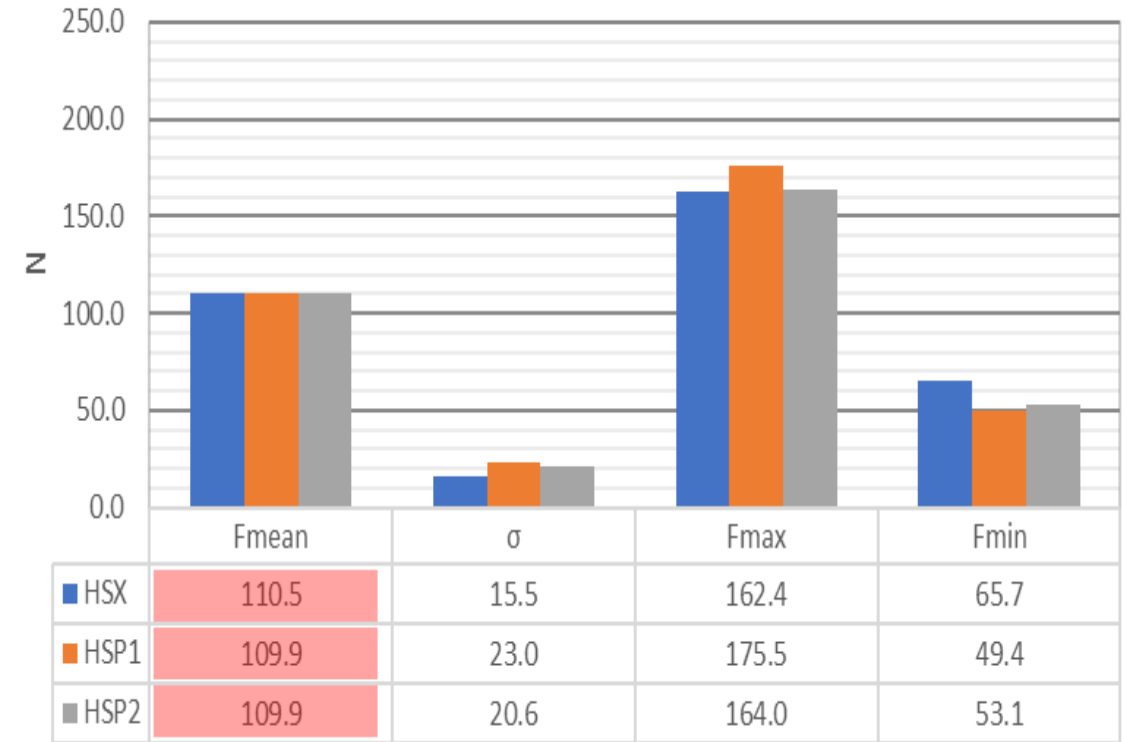


Steventon – First Results

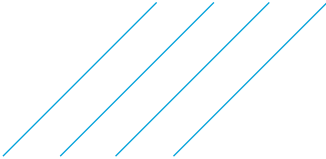
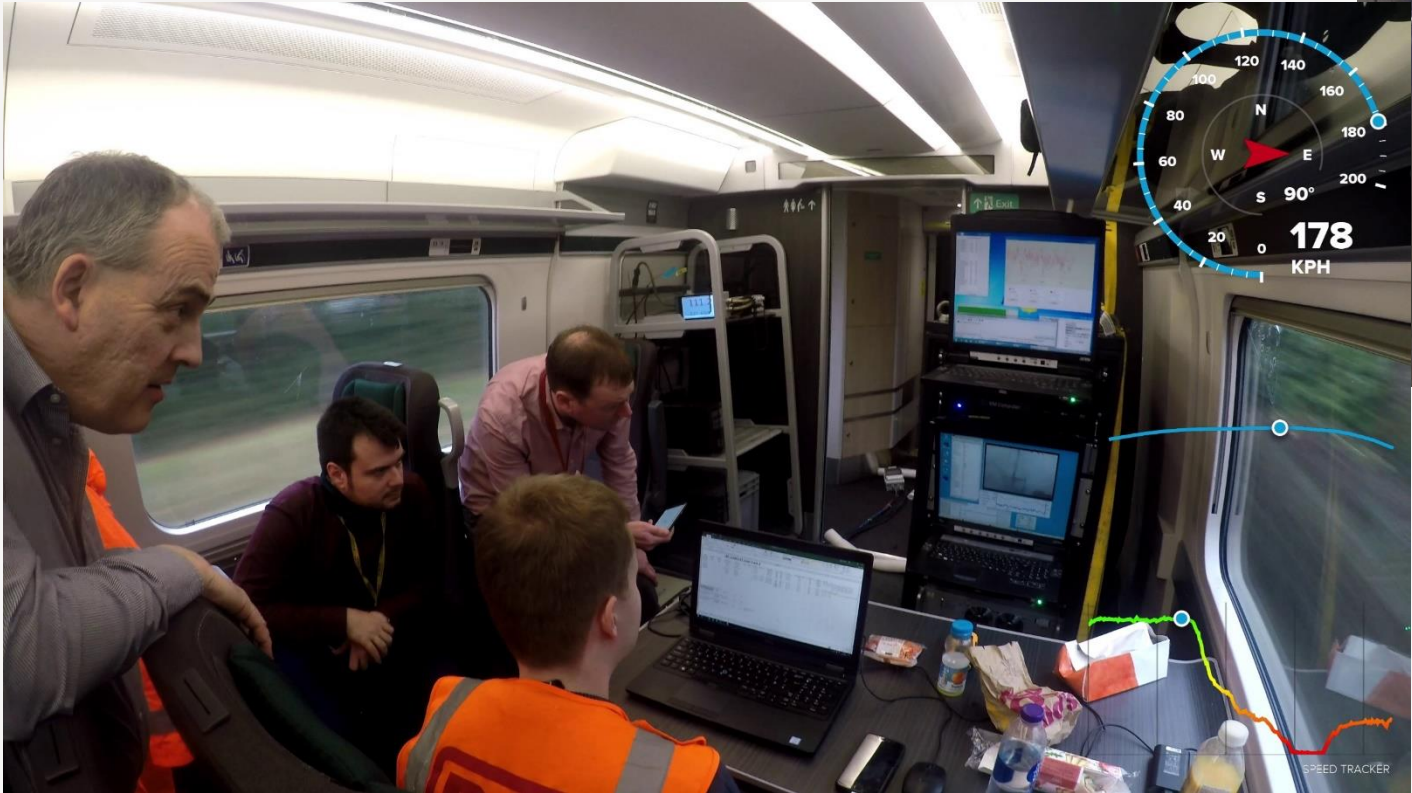
110mph - INCLINED - Trailing Pan - With BA



110mph - INCLINED - Leading Pan - No BA



Back to the Real World: Testing



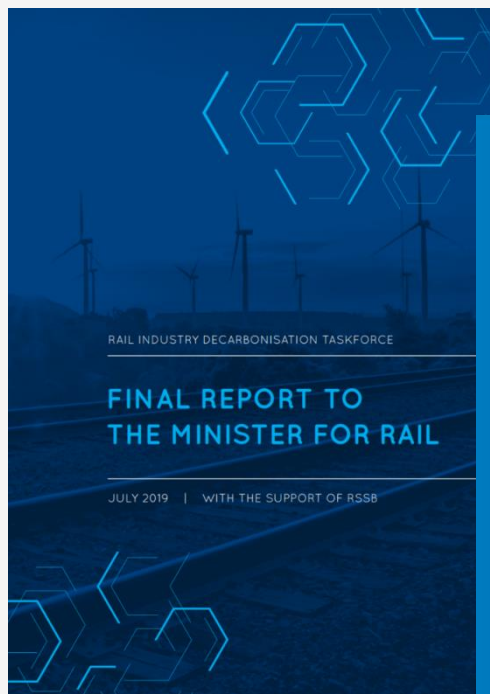
Modelling Phase 2 – 12 Car Class 387



What this Means for GW



What this Means for Decarbonisation and a Rolling Programme

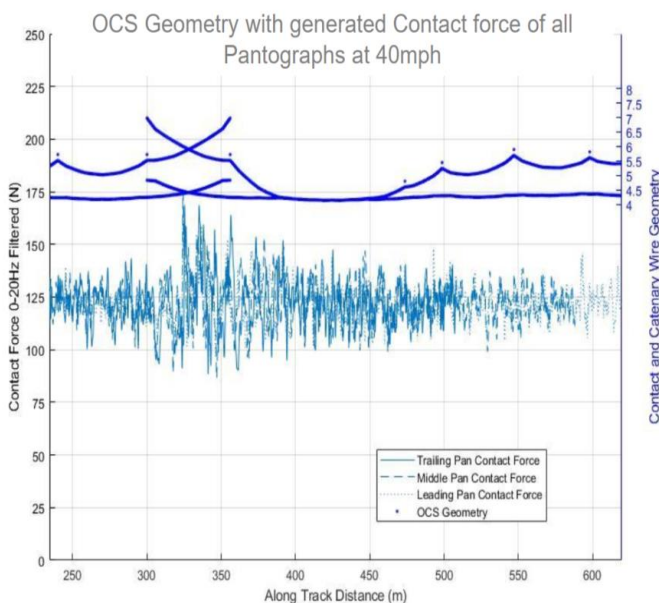


What this Means for Decarbonisation and a Rolling Programme

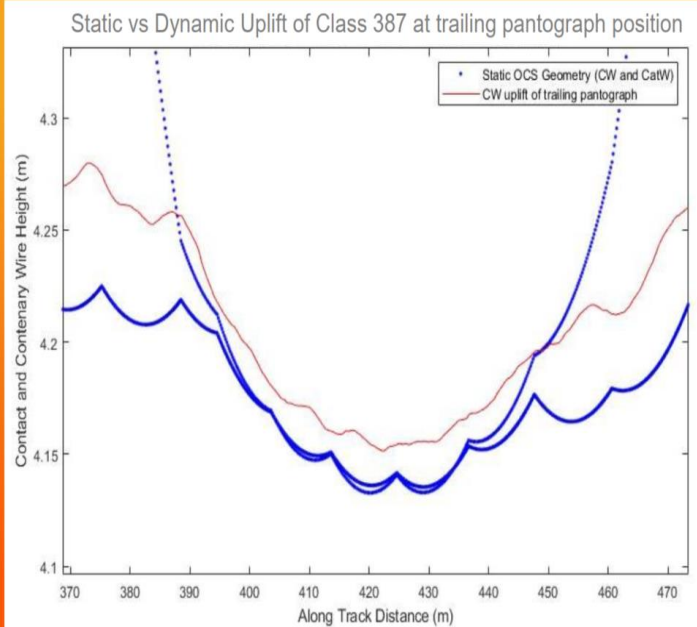
Cardiff Intersection Bridge – Uplift Analysis

TSI Current Collection Criteria at the pantograph to OCS interface

Speed (mph)	40
F_m	122.3
F_{min}	86.4
F_{max}	175.3
σ	10.0
σ/F_m	0.1
Uplift	23.9
NQ (%)	0



DR161	Location	Uplift (mm)
SWM/233/004	Support	14.2
	Mid-Span	19.5
SWM/233/013	Support	11.2
	Mid-Span	23.2
SWM/233/023	Support	9.8
	Mid-Span	23.9
SWM/233/034	Support	12.3
	Mid-Span	22.6
SWM/233/046	Support	13.9
	Mid-Span	18.9
SWM/233/058	Support	18.5



Acknowledgements

- › Simon Warren
- › Peter Dearman
- › Dr Nikolaos Bampais
- › Deutsche Bahn Systemtechnik
- › Hitachi
- › Great Western Railways



Question & Answer



*Our values are the essence of our company's identity.
They represent how we act, speak and behave together,
and how we engage with our clients and stakeholders.*

S~~A~~F~~E~~T~~E~~Y

We put safety at the heart of everything we do, to safeguard people, assets and the environment.

I~~N~~T~~E~~G~~R~~I~~T~~Y

We do the right thing, no matter what, and are accountable for our actions.

C~~O~~L~~L~~A~~B~~O~~R~~A~~T~~I~~O~~N

We work together and embrace each other's unique contribution to deliver amazing results for all.

I~~N~~N~~O~~V~~A~~T~~I~~O~~N~~

We redefine engineering by thinking boldly, proudly and differently.

