



Association of Train Operating Companies

VTAC Reduction Options in CP5

Jan 14

VUC Drivers – Passenger Fleets

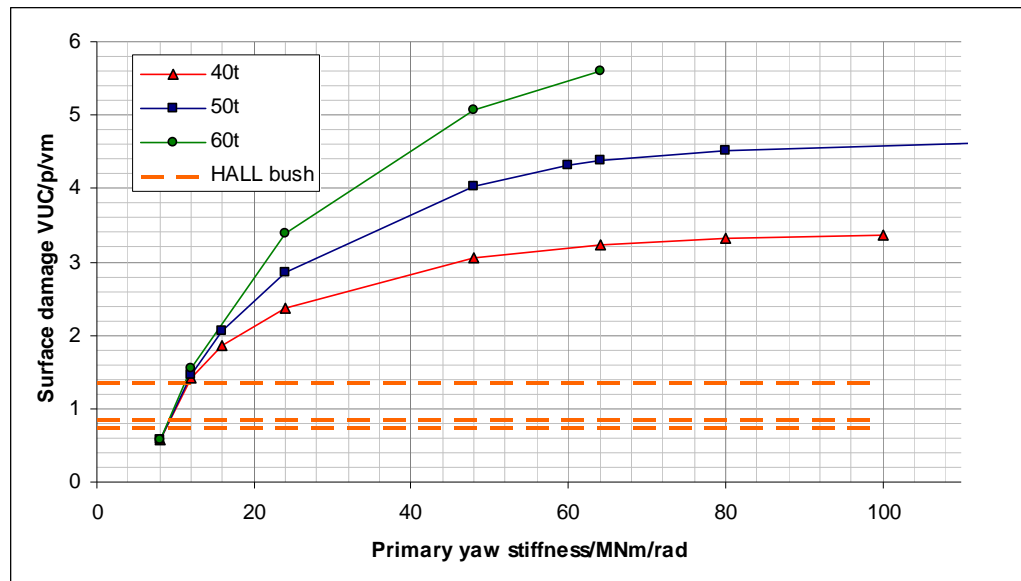
- Vehicle weight
- Unsprung mass
- Operating Speed
- ‘Curving Class’ (primary yaw stiffness)

VUC Reduction Options

- Reduce vehicle weight
 - Best achieved for new build or vehicle re-engineering
- Reduce unsprung mass
 - Traction packages, braking options?
- Reduce maximum-rated vehicle speed
 - ‘Operating speed’, which is used as input to VUC is, by default, derived arithmetically from maximum speed
 - Determine an operating speed derived from timetable analysis, not derived arithmetically from maximum-rated speed
 - But, any operating speed must be applicable to all operators of that vehicle

VUC Reduction Options

- Improve vehicle curving class
 - Unfortunately, alternative wheel profiles cannot be assessed in the current methodology: but they can have other benefits(!)
 - Reduce ‘primary yaw stiffness’
 - Use of variable rate (HALL) radial arm bushes
 - Provide reduced yaw stiffness on curves (less wear & RCF) but high stiffness at high frequency oscillation, so maintains stability and ride



VTACs Reductions Delivered/Proposed

- EC MkIV coaches
 - Max rated speed reduced to 125mph from 140mph
 - Fleet part fitted with Hall bushes
- SWT Desiros
 - Fleet fitted with Hall bushes
- XC Voyagers
 - Fleet being fitted with Hall bushes
- VT Voyagers
 - Fleet proposed for Hall bush fitment
- XC & VT Voyagers
 - Reduced operating speed proposed based on timetable analysis
- CI175, 180, 185, 334, 390
 - Considered for possible HALL bush fitment



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