Managing Wheel / Rail Noise & Vibration on Transit Systems

Moderator:
Martin P. Schroeder

Panel Members:
Gary Click, Technical Director, Nortrak
Bryce Dudgeon, Mechanical Engineering Manager, Siemens
Mike Holbrook, Senior Manager Track & ROW, DART
Matt Doyle, Mechanical Engineer, BCRTC (Sky Train)
Objective

• Provide a holistic view of vibration causes, mitigation strategies and possible relationships between noise and the condition of state-of-good-repair in transit.
Panel Experts

• Gary Click provides the track perspective and how track design from the start can mitigate noise
• Bryce Dudgeon provides mechanisms for noise mitigation from the vehicle side through design and mitigation practices
• Mike Holbrook and Matt Doyle give us a hands-on perspective from their experience with DART and Vancouver’s Sky Train.
Wheel / Rail Noise Generation

- Flanging in curves
- Rail corrugation
- Hollow wheel and shelling of wheel
- Conicity and effect on running tread
- Worn wheels and rail (profile degradation)
- Wheel creep (stick slip)
- Wheel impact
- Rail curvature and angle of attack
Mitigation of Noise

• Maintenance of wheel / rail profiles
• Wheel and rail profile optimization
• Lubrication
• Contact stiffness / rail fasteners / subgrade
• Resilient wheels
• Vibration absorption matting and floating slab
• Tuned rail and wheel vibration absorbers
• Integrated design of track and vehicle
• Design of special track work
• Vehicle wheel skirts
• Lowering vehicle un-sprung mass
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