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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