Performance Based Track Geometry (PBTG™)

What is PBTG™ Technology?
- An “add-on” to existing track geometry measurement system to identify track locations that could cause poor vehicle performance
  - Interface acquires track geometry data, track speed and processes them as neural network inputs
  - Software performs near “real-time” vehicle performance analysis
- Accounts for vehicle dynamics as influenced by track geometry
- Combines several inputs
  - Track geometry
  - Track features
  - Operating speed
  - Vehicle characteristics
- Identifies track maintenance actions that will improve vehicle performance

Benefits of PBTG™
- Improves track geometry
- Reduces track geometry caused derailments
- Prioritizes track geometry maintenance
- Reduces vehicle dynamics and the stress state of railroads

Conventional track geometry systems
- Do not account for vehicle dynamics
- May not identify conditions that cause poor vehicle performance
- May identify track as needing repair when it does not necessarily cause poor vehicle performance

How does neural network (NN) modeling identify locations that cause poor performance?
- NNs relate vehicle response to track geometry conditions and operating speeds
- NNs have been developed for vehicle types that are most sensitive to track geometry
  - Tank cars
  - Box cars
  - Coal gondolas
- NN models are “trained” with field test results
- NN models take into account nonquantified track characteristics based on their statistical distributions
- Future library additions will be developed depending on customer demand

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