12th UIC Workshop on Railway Noise and Vibrations
19 March 2019
Paris, UIC Headquarters

ÖBB INFRA

Railway.noise @ ÖBB: what‘s next ?

Dr Günter DINHOBL

ÖBB-Infrastruktur AG

Strecken- und Anlagenentwicklung, Stab LCI/Team Forschung&Entwicklung

Paris, March 19th, 2019

Railway.noise @ ÖBB – what have we got?

- **IM**
  - **noise barriers: 906 km (2018)**, new lines also with noise protection dams (55 km)
  - **NDTAC: since 12/2017**, corresponding Regulation (EU) No 2015/429,
    → within one year: +47% of retrofitted wagon-km (Jan 2017 and Jan 2018)
  - rail noise @ curves: **flange lubrication** individual, **railhead conditioning** under testing
  - a set of noise abatement methods - **BUT:** no rail dampers in use – because of
    - operational issues (→ digitised inspection of track not possible – needed 2-4 times p.a.)
    - safety issues (→ danger of crack of railhead at curves), corrugation quickly in curves
    - perception issues (→ perception of noise level difference depends on frequency, results see e.g. Kasess et. al. at inter.noise 2015, in german: ETR 3/2015, p64ff.)
- **RU**
  - **passenger** (ÖBB-PV): **all coaches disc braked** (no coaches with brake blocks in permanent operation since 2015), new EMU/DMU since 1990s disc braked
  - **freight** (RCW): **>50% silent wagons (2/2019),** nearly 30% of these LL retrofitted

Railway.noise @ ÖBB – what's coming?

- **IM**
  - **noise barriers** at existing lines (to be buildt): finalized up to early 2020s
  - **new (main) lines** to be opened in the 2020s: southern line; Brenner base tunnel
  - **ongoing** testing and Research&Development (R&D) → see long term issues

- **RU**
  - **passenger** (ÖBB-PV):
    - **ongoing** vehicle procurement – replace older vehicles (EMU) by new, NOI TSI compliant ones
    - noise of parked trains – implement energy-saving mode for fans
  - **freight** (RCW): **retrofitting programme**, up to end 2020: >7500 wagons retrofitted

Railway.noise @ ÖBB – what's in the long run?

- **remember cornerstones:**

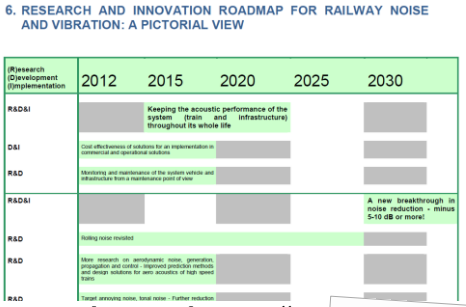
  - framework: **silent and more silent**…END (incl. (EU) 2015/996), WHO, NOI TSI, …
  - but: achievable?
    - **technically** possible? – which solution(s), which part(s) of the system railway? at which location/vehicle?
    - which **costs**? - not only invest cost, also re-invest and additional maintenance- and operation complications (complete LCC of whole system)
    - → cost-benefit analysis – BUT:
      - **benefit often not for IM/RU** (e.g. public health),
      - to be **in line with transport policy goals** (e.g. White Paper of EC with target values for modal shift towards railways)

  - → demand for further systematic investigation(s) of whole system 'railway'

Railway.noise @ ÖBB – long term issues

- **demand for systematic investigation(s) - research**

  - e.g. ERRAC-roadmap for railway noise research (2011):
    → to be updated?



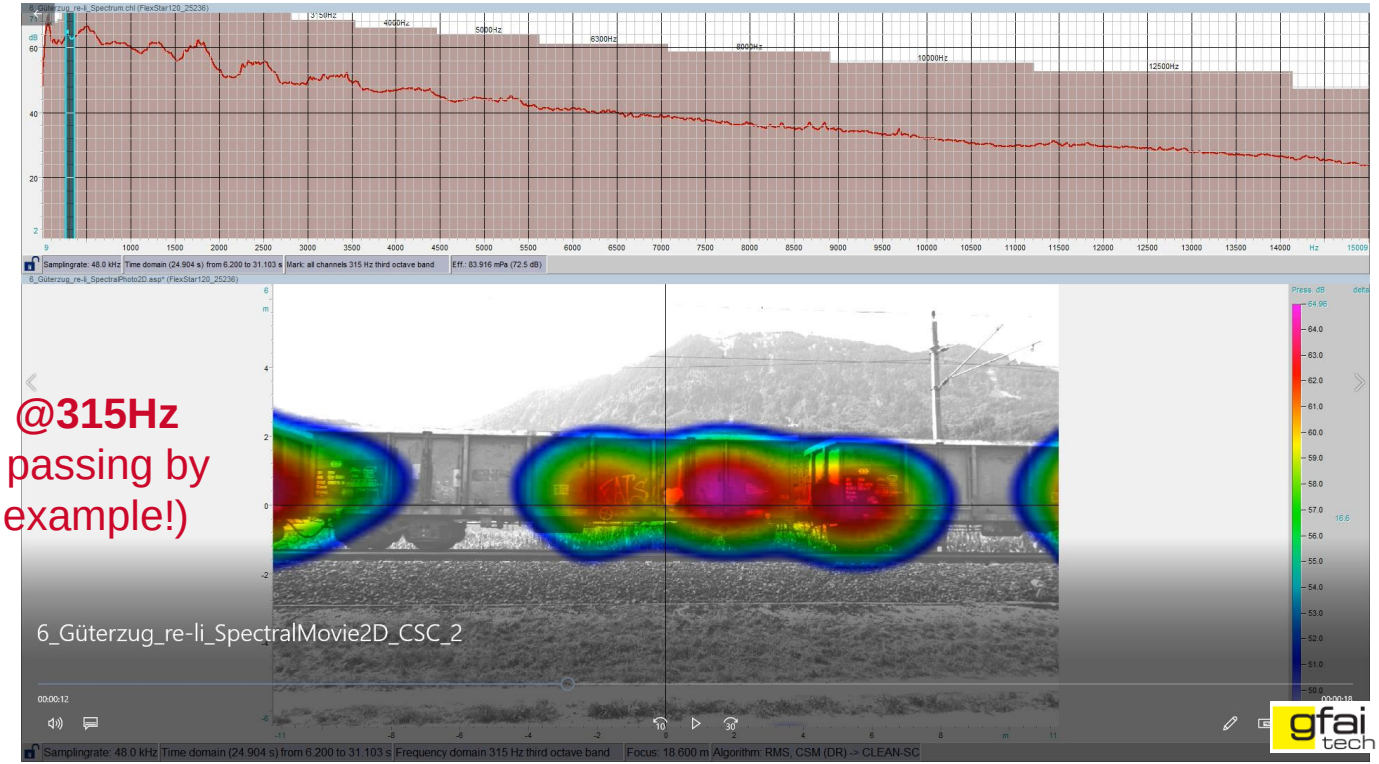
  - **ÖBB-Infra**: in preparation – „**RailNoiseResearch**. Agenda and roadmap“, contains 3 research-clusters
    - infrastructure
    - vehicle-infrastructure-dynamics
    - OTMs (On-Track-Machines)
  - **Meantime**: no rest – also in future highest benefit for freight trains@night
    - R&D-project „LowNoiseTrain2“ (2018-20)
    - identification of noise sources and best-practice-construction style for freight wagons by measurements with acoustic camera

Railway.noise @ ÖBB – long term issues

- **LNT2: test train** (K/LL and CI-brake block wagons)
  measurement with acoustic camera (120 micro's → e.g. >360 Mio.datasets/s (quality: one-third octave band), >1GB raw data per pass-by) & new pass-by-module for visualization ("*under construction*")

Railway.noise @ ÖBB – long term issues

- **LNT2-campaign: frequency location** – e.g. block train with 40 silent wagons of same type (‘Eaos’)



here: @315Hz
for all wagons passing by
(image as example!)

thank.you – for listening

and, any questions…?

Dr Günter DINHOBL

ÖBB-Infrastruktur AG

guenter.dinhobl@oebb.at