CityHush Dissemination Seminar

Building design – Propagation attenuation of road traffic noise

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Introduction

- ✓ Who is APT?
- ✓ Tasks of APT within CityHush
- ✓ Solutions to reduce noise in cities

APT: Alpha Products & Technologies

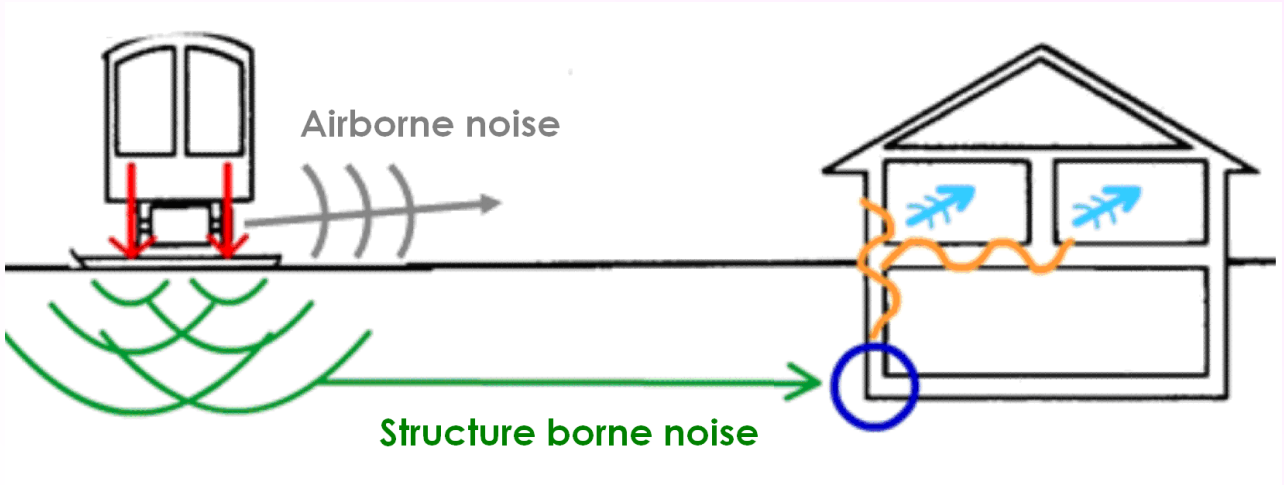
- ✓ Belgian SME
- ✓ Partner in CityHush
- ✓ Also: QCity, Urban Track, …
- ✓ Activities
  - Development of solutions and design of products
  - In the fields of vibration and noise control
- ✓ www.aptrail.com

Tasks of APT within CityHush

- ✓ Design solutions to reduce noise:
  - Inside buildings and in city-centers
  - Airborne noise
  - Low frequency noise (LFN)

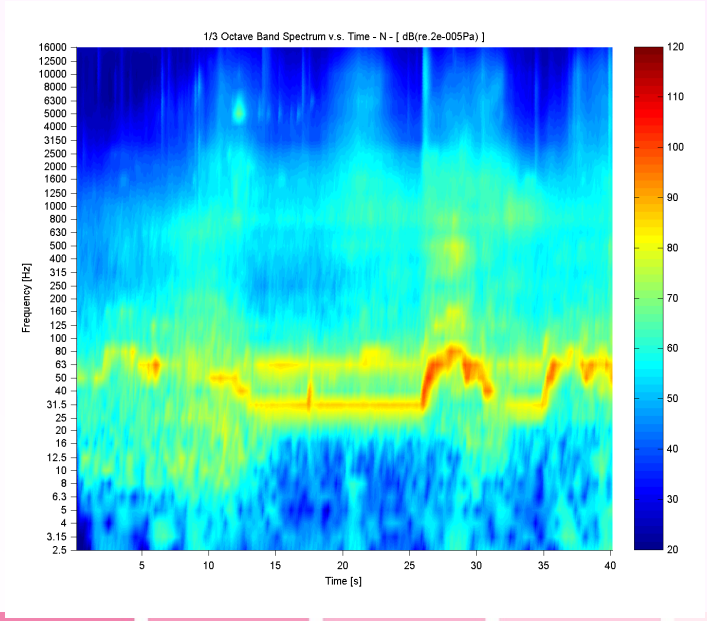
Low frequency **airborne noise** ?

- ✓ Airborne noise:
  - Follows direct path between source and receiver
  - Not: structure borne or vibration induced noise



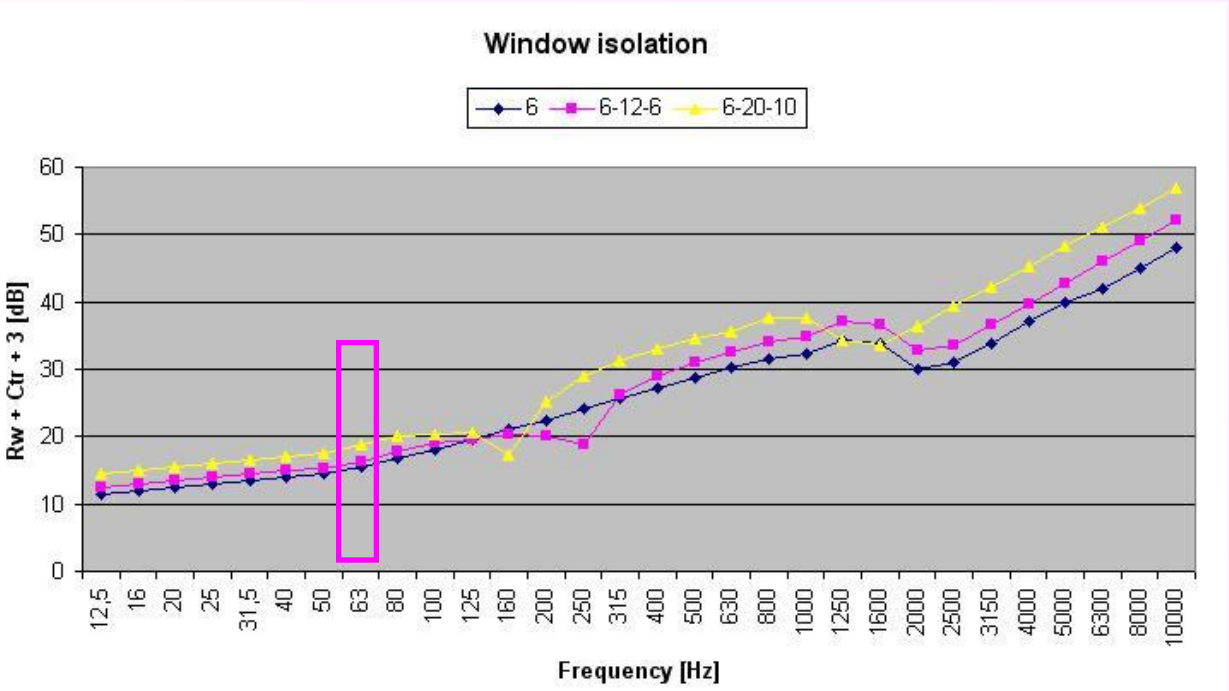
Low frequency airborne noise ?

- ✓ Busses and trucks in city-centers:
  - Low speeds → sound at low frequencies (engine and exhaust)
  - Frequencies between 31,5 and 63 Hz



Solutions to reduce LFN at the level of the building design

- ✓ Why new solutions for LFN?
  - Existing window types: low isolation values at low frequencies



Solutions to reduce LFN at the level of the building design

- ✓ LFN: at low frequencies – sound has long wavelengths

→ To reduce LFN: distance needed!

- ✓ Double façades
- ✓ Absorbing panels

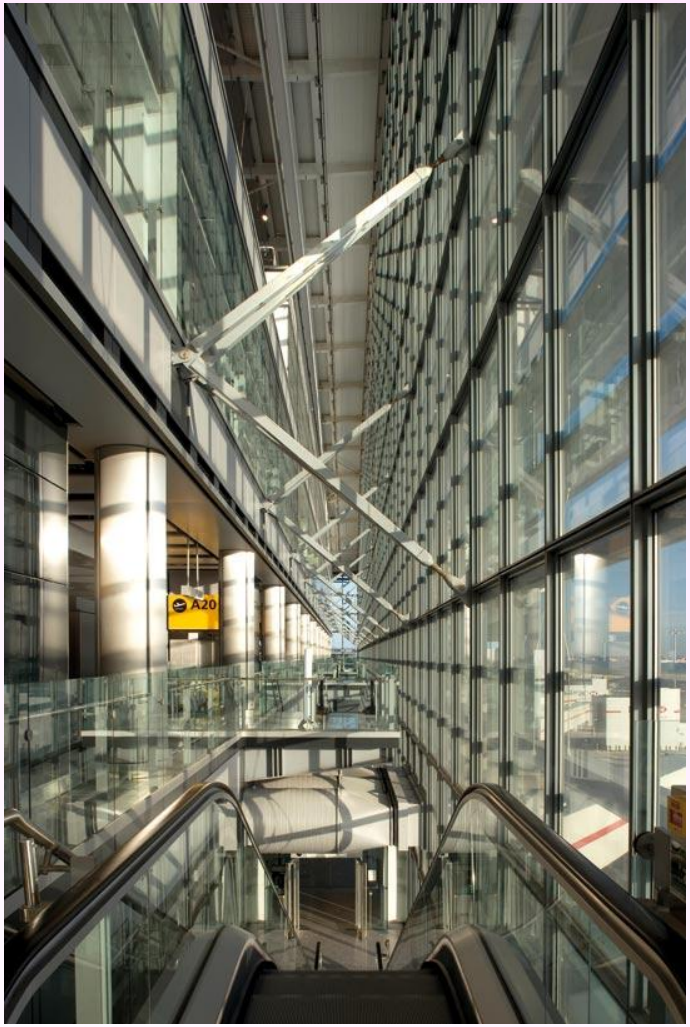
Double façades

- ✓ Façade needed with following dimensions:
  - Inner façade (standard façade):
    - Glass pane: 6 mm
    - Air gap: 12 mm
    - Glass pane: 8 mm
  - Air gap: **1,3 m !**
  - Outer façade:
    - Glass pane: 12 mm

Double façades

- ✓ Air gap of 1,3 m can be used as:
  - Walking corridor
  - Entrance to appartements

Examples of double façades

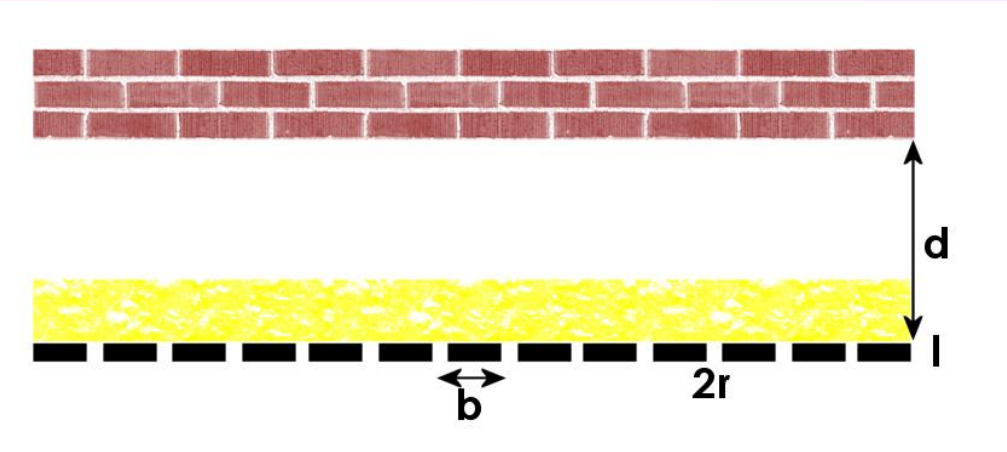


Absorbing panels: perforated panels

- ✓ Designed to absorb frequencies between 31,5 and 63 Hz (LFN of busses and trucks):
  - Perforations:

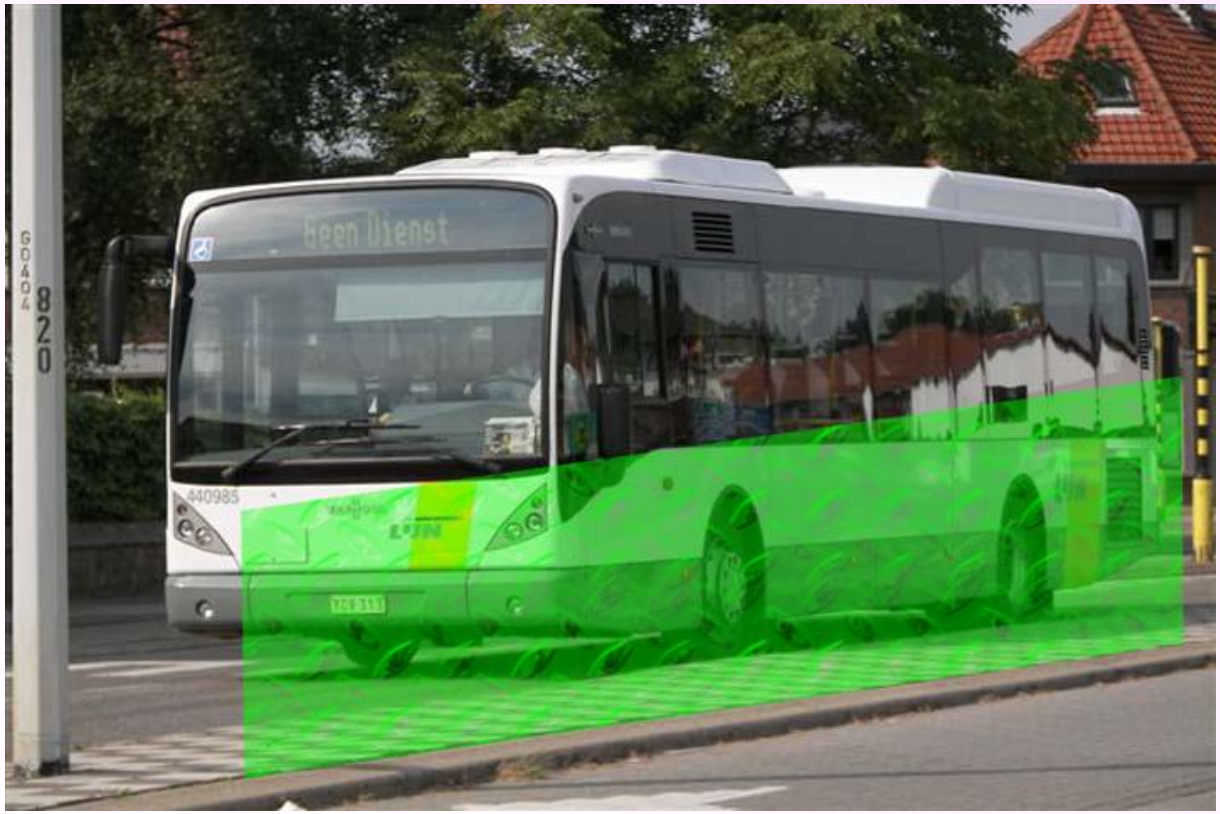
    r = 20 mm

    b = 140 mm
  - Distance: 0,6 m
  - Absorbing material



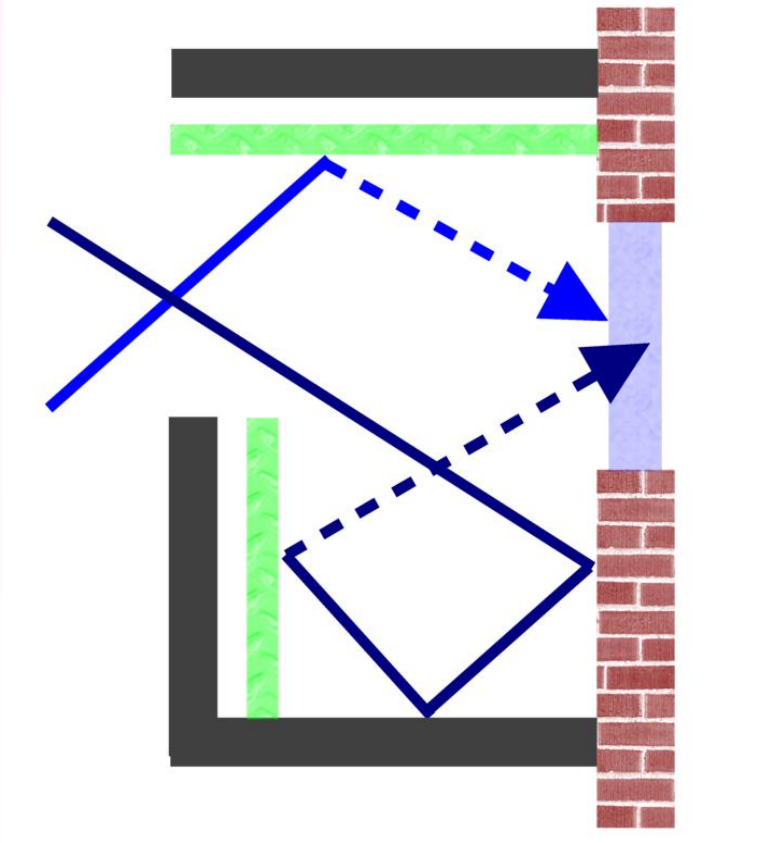
Absorbing panels: applications

- ✓ Next to drive-line



Absorbing panels: applications

- ✓ On balconies



Thank you for you attention

- ✓ Questions?