Research into a new road side enforcement test for the noise emission of mopeds

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Noise emission of mopeds in the Netherlands

- Vehicle category: L1 (2 wheelers, max speed 45 km/h)

- Most important source of noise nuisance in the Netherlands

- 1 milion mopeds (vs 16 milion inhabitants)

- Often used by youngsters (age: 16 -18)
  - if 18+ transfer to cars and motorcycles

- Estimated: 40-60% tampered
  - Main goal: increased speed (+10 up to +60 km/h)
  - Main effect: increased noise (+10 up to +40 dB(A))

Police experience with stationary road side enforcement test

- All Police departments have received special noise measurement equipment + instruction

- Use: relatively scarce, 1 a 2 active departments

- Why?
  - Lack of manpower/priority
  - Complicated and time consuming
  - Need for special trained staff
  - Measurement method is not OK

    - Depends on RPM, troublesome to get rpm signal, calibration
    - Hard to reproduce measurement (Instable rpm, lack of load)
    - 50% S is not representative for average moped usage
    - Hard to explain criteria to the public (Reference value instead of fixed limit)
    - Measurement values do not correlate with subjective judgment (false result)

New idea for road side enforcement: noise measurement on rollerbench

- Stationary test under load could
  - Depend on speed instead of RPM
  - Reduce complexity noise test
  - Improve reproducability
  - Improve correlation to nuisance
  - Enable absolute limits
  - Improve acceptance

Pilot project:
4 mopeds and 3 measurements

Pass by test

Stationary test

Roller bench test

Analysis / conclusions
with respect to roller bench test

- Background noise low enough
  - Self induced noise
  - Tyre/roller interaction

- Stable test condition (load and speed)

- Good reproducibility

- Good correlation to pass by noise

How to proceed?

- Feedback of GRB is most welcome!

- More vehicles need to be tested to
  - Explore correlation with nuisance
  - Explore boundaries of roller bench test
  - Explore transition to motorcycles