# Introduction in the Netherlands of the PTI particle number test at low idle to check diesel particulate filters from July 1, 2022

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# Content of the presentation

**Main topic:**

- Introduction in the Netherlands of the new PTI particle test for DPFs from July 1, 2022

**Bonus topics:**

- TNO research project on checking three-way catalytic converters of petrol cars

- Approach for checking the emissions of NRMM

# Introduction the new PTI particle test for DPFs

1. Roadmap to the introduction of the new PTI test
2. Way in which the new PTI test is performed
3. Scope of implementation of the new PTI test
4. PTI particle counters for checking DPFs
5. Last minute adjustments for the new PTI test
6. Activities towards the introduction of the new test

# 1. Roadmap to the introduction of the new PTI test

- 2012 : Start research by TNO for a new test
- 2015 : Motion by the House of Representatives
- 2016 : Start N-PTI working group
- Jan 2020 : Entry into force of regulations to enable test
- Jan 2021 : Final decision for implementation in PTI
- July 2022 : Introduction of the new test in PTI

# Origin of the particle counter test for DPF’s


Origin: 2014

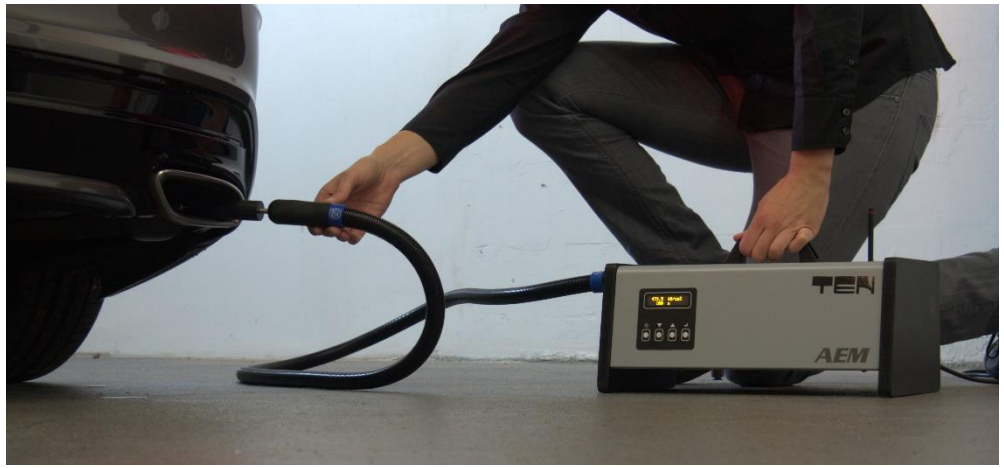
Checking DPFs with the TSI NPET in Swiss tunnel construction

Swiss Regulation SR 941.242 (2014) for NRMM

# Development of new test by the N-PTI working group

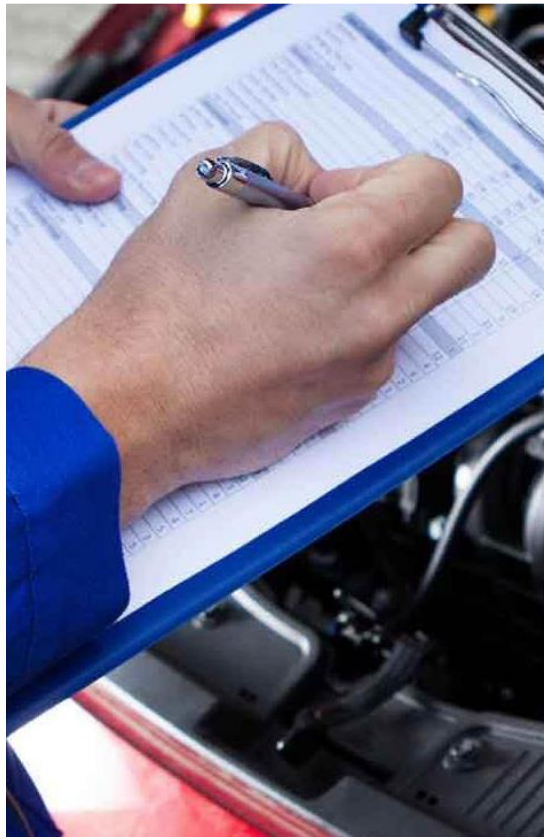

10-th meeting of
the NPTI working group
in Arnhem, May 2017,
in the Netherlands

# 2. Way in which the new PTI test is performed




- Instrument : According to the specifications of the N-PTI working group
- Procedure : 15 sec. measurement time
- Vehicle : Low idle condition
  any vehicle conditioning allowed
- Limit value : 1,000,000 particles per $cm^3$

# 3. Scope of implementation of the new PTI test



- For all diesel cars with factory fitted DPF
- 1,400,000 passenger cars, vans, trucks and busses
- 125,000 expected failures for the new test
- 5,000 PTI stations are expected to purchase a counter
- Environmental effect: 121 ktonne of PM reduction

# 4. PTI particle counters for checking DPFs









# 4. Last minute adjustments by the House of Representatives

- Just before the regulation for the new test was signed, a motion was passed by the House of Representatives.

- After consultation, the following adjustments to the new test have been made:

  - Limit value for all diesel cars to 1,000,000 #/$cm^3$

  - For passenger cars extension of the transitional arrangement to vehicles up to and including 2016

Further information:

- Letter-to-the-House-of-Representatives-on-introductie-of-PTI-particle-filter-test-for-diesel-cars-in-the-Netherlands.pdf (citainsp.org)

- Dutch-regulations-for-the-PTI-particle-filter-test-fo-diesel-cars.pdf (citainsp.org)

# 6. Activities towards the introduction of the new test

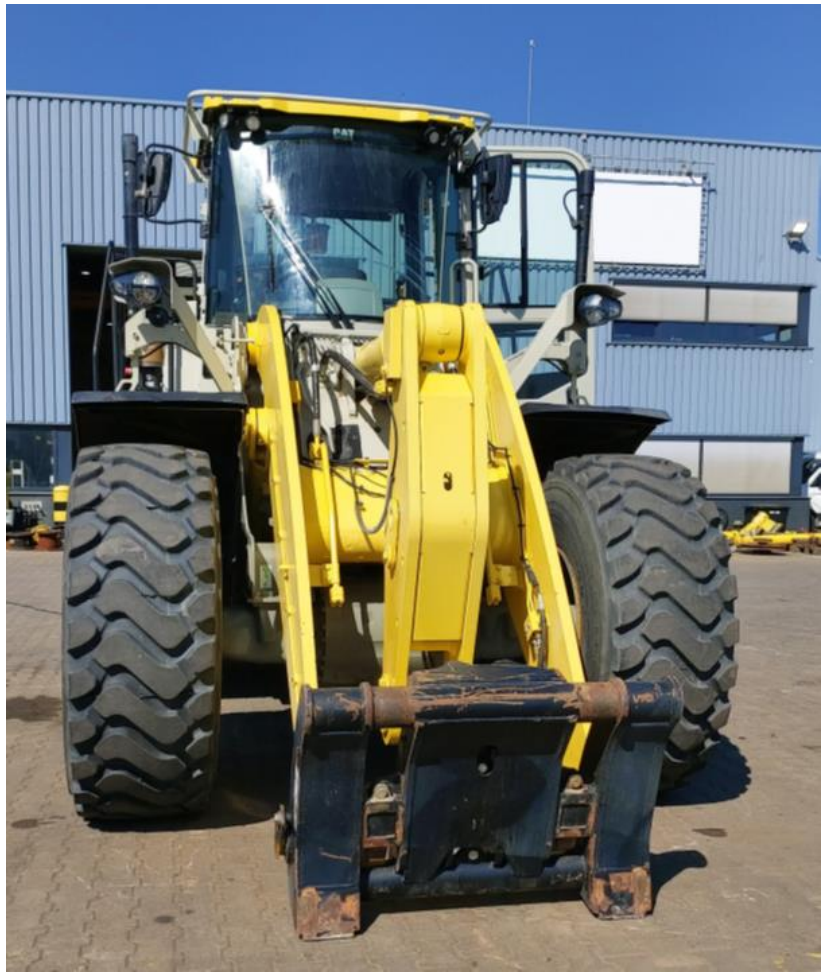
- Further approval of measuring instruments by NMi
- Prepare for implementation by RDW
- Official communication about new measure
- DPF checks by the police during roadside inspections
- Prior checks of particulate filters by garages

# Bonus topic 1: Checking three-way catalytic converters


- TNO has just completed a research project for checking the operation of three-way catalytic converters.
- The catalytic converters of 50 petrol cars have been checked: 3 high emitters.
- Current PTI exhaust gas analyzer test as well as reading of OBD were found to be not effective.
- TNO report in English:

http://publications.tno.nl/publication/34637926/q4zWim/TNO-2020-R11883.pdf

# Bonus topic 2: Checking the emissions from NRMM



- TNO has just completed a research project to measure emissions from NRMM.

- Measurement method:
  - Online NOx monitoring with NOx sensor
  - DPF control with particle counter

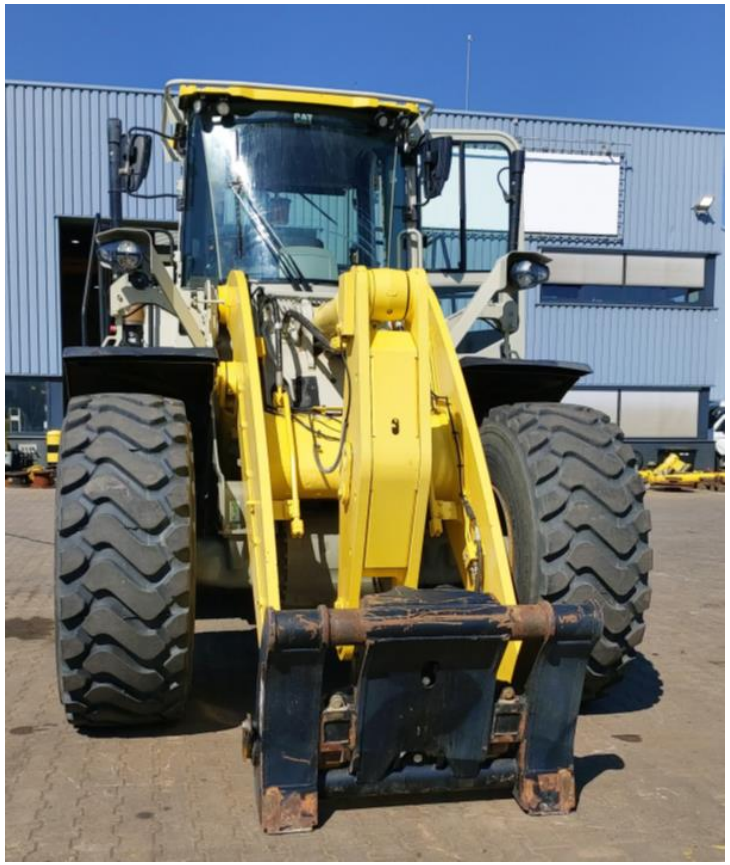
- TNO report in English:

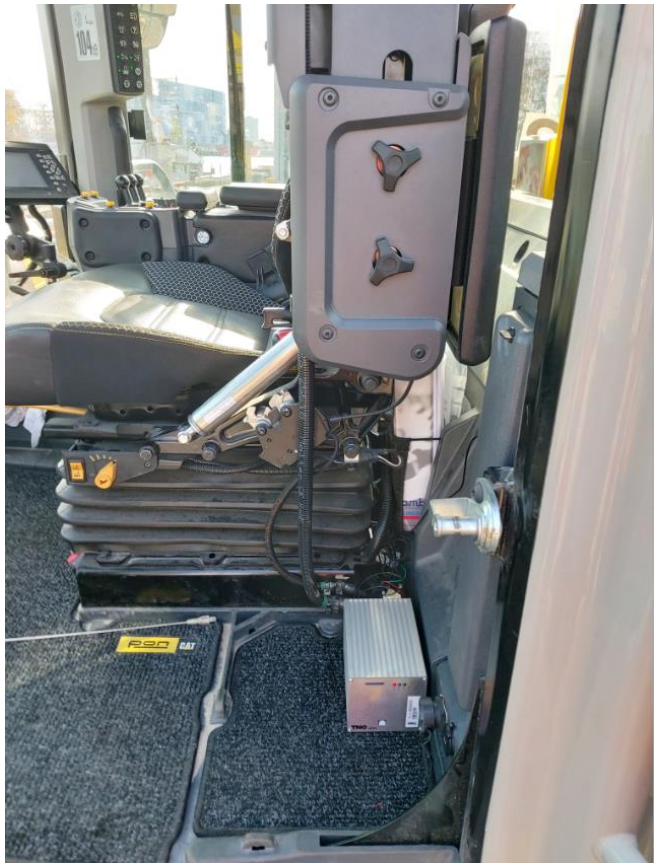
http://publications.tno.nl/publication/34637929/2q7UNo/TNO-2021-R10221.pdf

- Possibly demonstration project for checking the emissions of 50 to 100 NRMM.

Emission-Monitoring-and-Periodic-Inspection-EMPI-of-mobile-machines.pdf (citainsp.org)

# Continuous NOx monitoring in a Stage V wheel loader



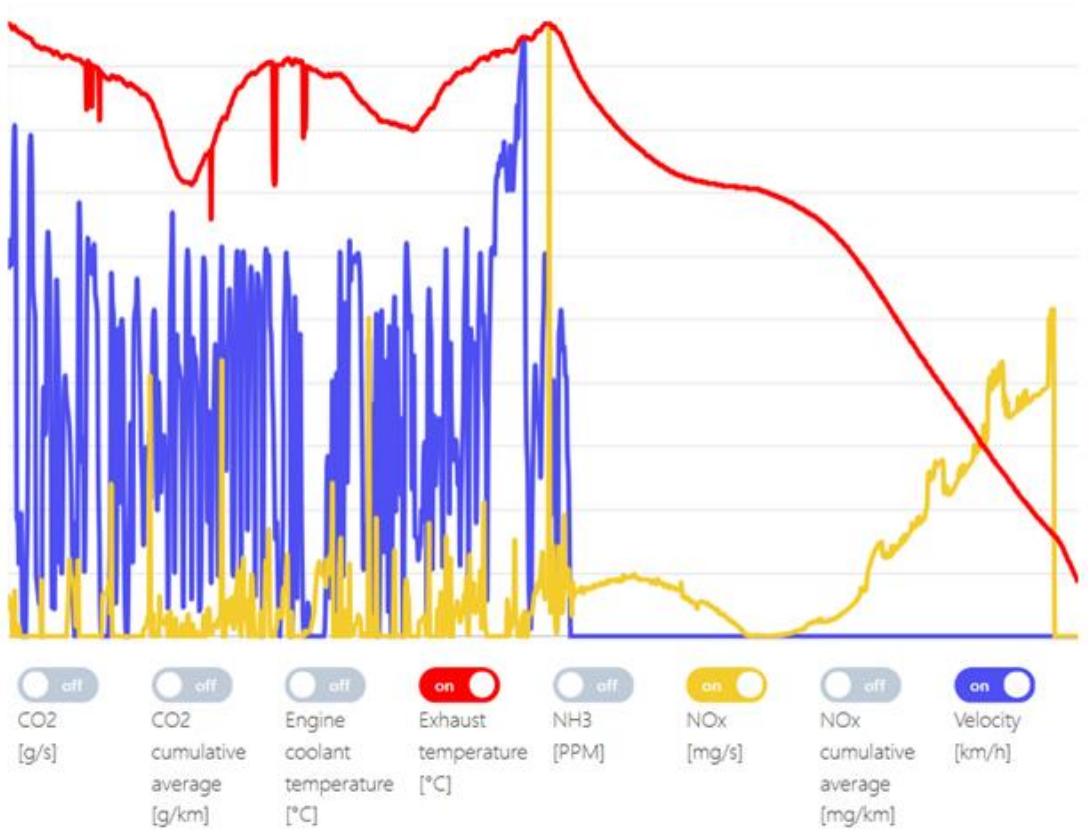


# Result NOx-monotoring

| Start | End | Duration | Average speed | $CO_2$ | $NO_x$ | Fuel consumption |
|---|---|---|---|---|---|---|
| 07:47 | 08:09 | 00:22:08 | 3.5 km/h | 10717.4 g/km | | 400.5 liters per 100 km |

Map

Route

# Thank you for your attention