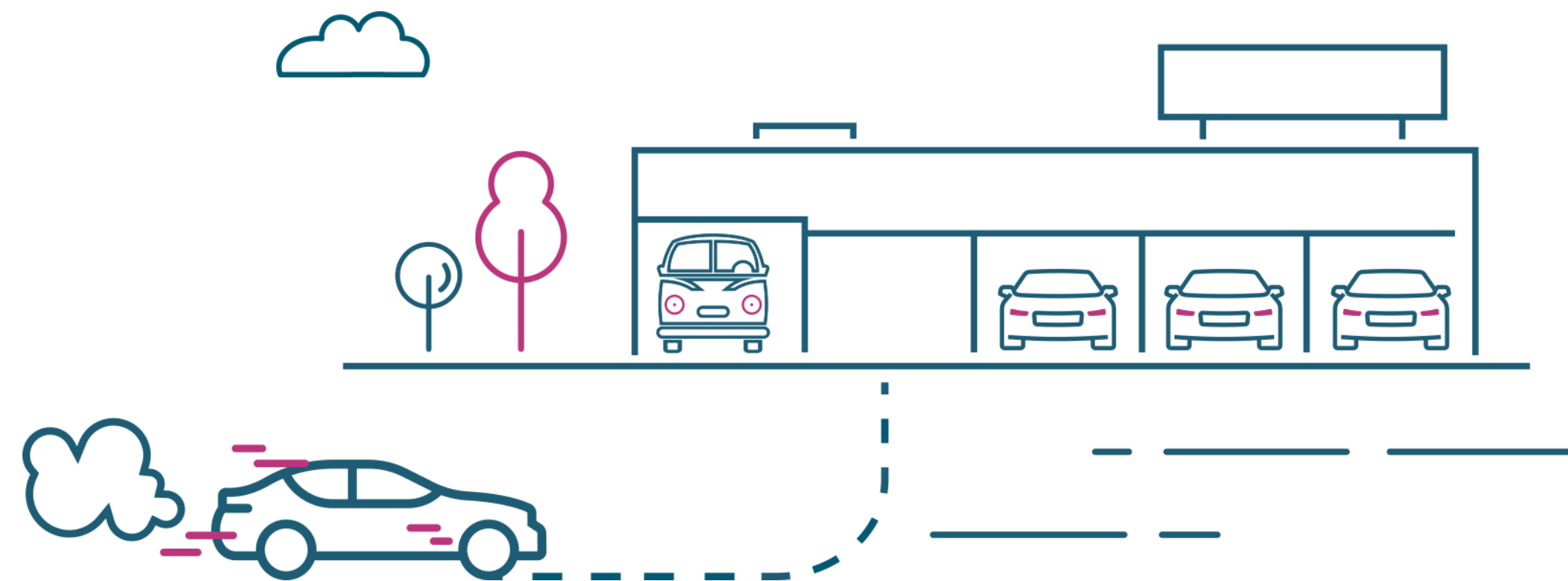




VERT Focus Day 2026

NPTI Introduction in Flanders (Belgium)

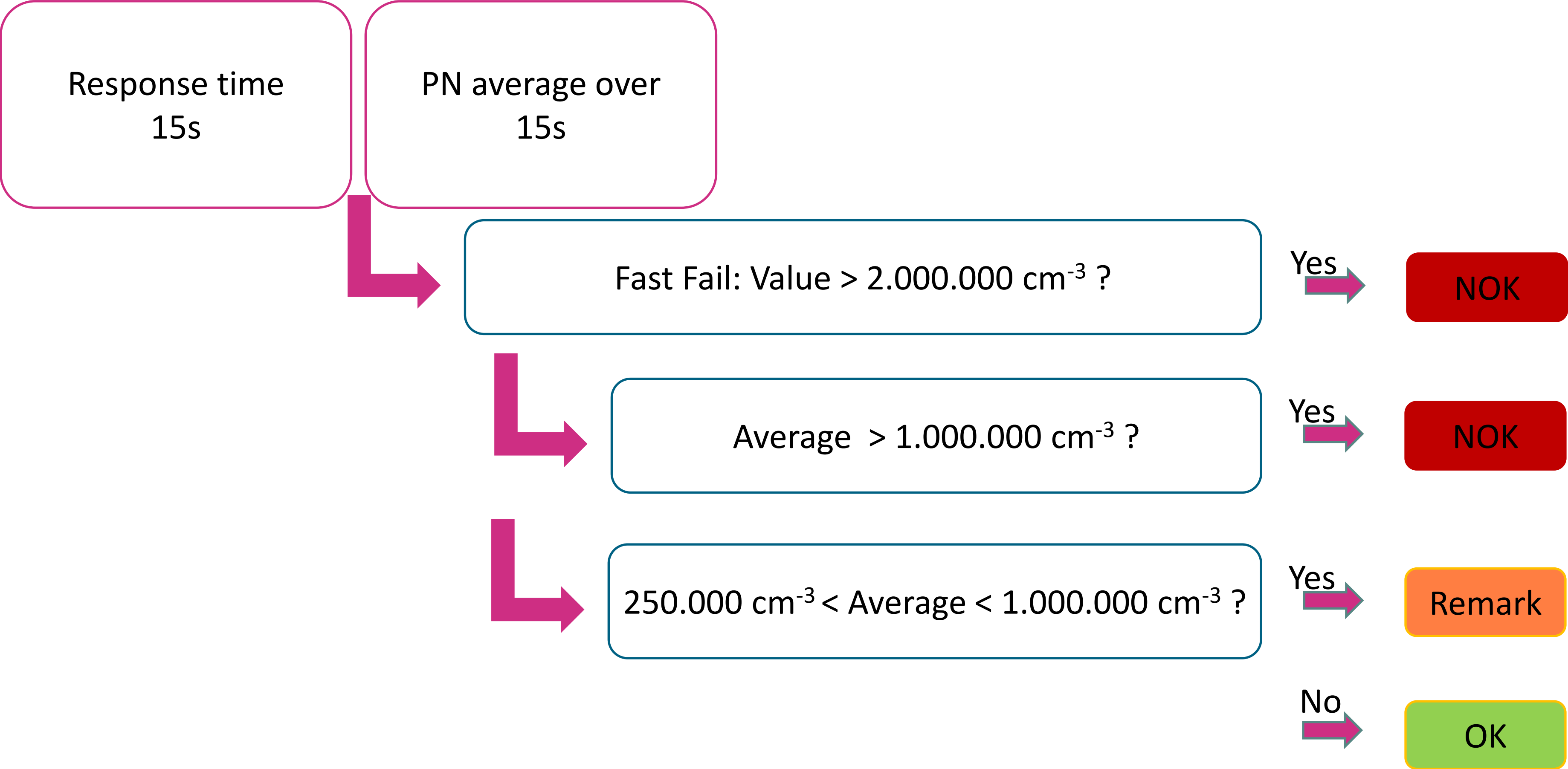
Pascal Buekenhoudt



PN measurement in Belgium

	Belgium	
	Flanders & Brussels	Wallonia
Vehicle category	M1, N1	M1, N1
Start Date	1.7.2022	1.7.2022
Fuel type	Diesel	Diesel
Euro Norm	Euro 5a and higher	Euro 5b and higher
Threshold [cm ⁻³]	(250.000) 1.000.000	(250.000) 1.000.000
Equipment specifications	NMi Part 1 & 2 (NPTI)	NMi Part 1 & 2 (NPTI)

Easy procedure during Idle test



The Netherlands & Belgium

Technology	Neutral
Particle size	23 – 80 nm
Counting efficiency	0,2 – 1,3
Max permissible error	2,50E+04 cm ⁻³ or ± 25%
Display range [cm ⁻³]	5,00E+03 cm ⁻³ - 5,00E+06 cm ⁻³
Type Approval	NMi

PTI results from July 1th 2022 until Februari 2026

3.912.935 diesel vehicles with euro norm 5 or higher

were tested in the Flemish Regio.

Above 1.000.000 cm⁻³: 6,29 %

Between 250.000 cm⁻³ and 1.000.000 cm⁻³: 3,64 %

Rejection rate in function of emission standard

Emission standard	Number of tests	Above 1.000.000 cm ⁻³	Between 250.000 cm ⁻³ and 1.000.000 cm ⁻³
Euro 5a	725.977	15,35%	6,97%
Euro 5b	859.002	8,68%	4,24%
Euro 6	2.327.956	2,59 %	2,37 %
Totaal	3.912.935	6,29 %	3,64 %

Effect on the emissions due to the PTI tests

Emission standard	Above 1.000.000 cm ⁻³			
	2023	2024	2025	2026
Measurements in Februari				
Euro 5a	19,73 %	16,35 %	10,93 %	7,77 %
Euro 5b	11,70 %	9,49 %	6,03 %	4,79 %
Euro 6	3,04 %	2,77 %	2,30 %	2,09 %

Max permissible error $\pm 25\%$

- On site calibration with a salt generator: Difficult to get !!!
- Every equipment manufacturer should use the same source:
a salt generator with the same equipment settings
- Raise the tolerance of the max permissible error MPE?
- Use the **Reference operating conditions** and the **Rated operating conditions** principle from the Recommendation (EU) 2023/688 of 20 March 2023
- Use for the **Rated operating conditions** a MPE_{rel} of **50 %** of the actual concentration but not lower than MPE_{abs} . The MPE_{abs} is recommended to be less than or equal to 25.000 cm^{-3} .

Our recommendations

PN

EU

	Belgium July 2022	Today our recommendation for other states
Equipment Specifications	NPTI	Recommendation (EU) 2023/688 of 20 March 2023
Type Approval	NMi	NMi, PTB, METAS
Assessment – threshold value	1.000.000 m ⁻³	250.000 m ⁻³
Scope	Euro 5a and higher	Euro 5b and higher Euro VI and higher
Subsequent verification @ the Rated operating conditions	± 25%	± 50%



Thank you for your attention

Questions?

