

Bus Fleet of Berlin since 2001

16th June 2016

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Public Service Bus Department

Berliner Verkehrsbetriebe (BVG)

Public Law Company



About BVG – Size and passenger trends

The BVG in figures

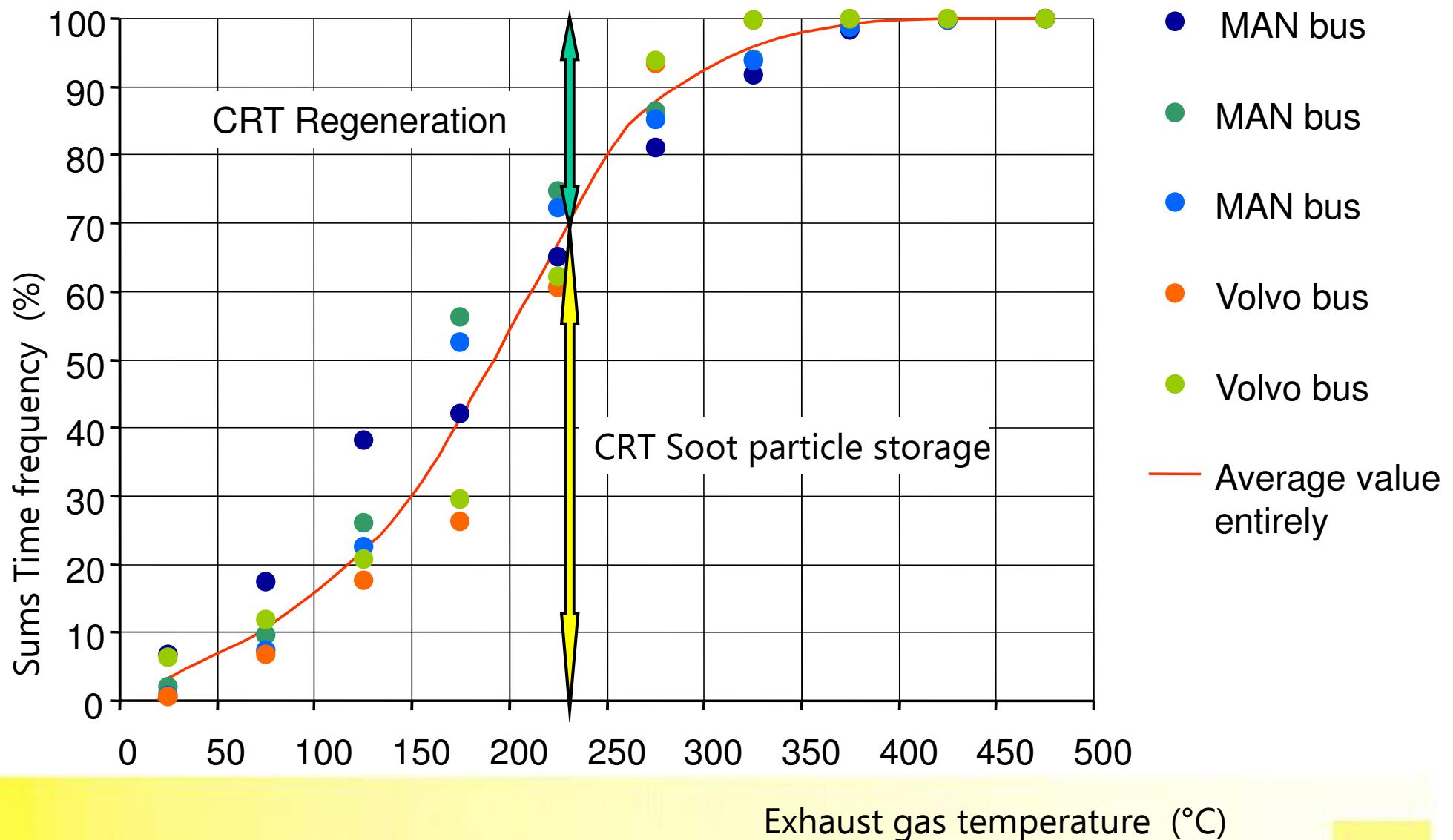
<u>Rolling Stock</u>	<u>Subway</u>	1.244
	<u>Tram</u>	350
	<u>Bus</u>	1.392

<u>No. Lines</u>	<u>Subway</u>	10 - 8
<u>(Day - Night)</u>	<u>Tram</u>	22 - 9
	<u>Bus</u>	151 - 62

<u>Passengers</u>	<u>Subway</u>	534,5 Mio.
	<u>Tram</u>	187,1 Mio.
	<u>Bus</u>	418,5 Mio.

Cumulative probability of bus exhaust-gas temperatures

(CRT filter regenerates above curve, but accumulates particles below curve)

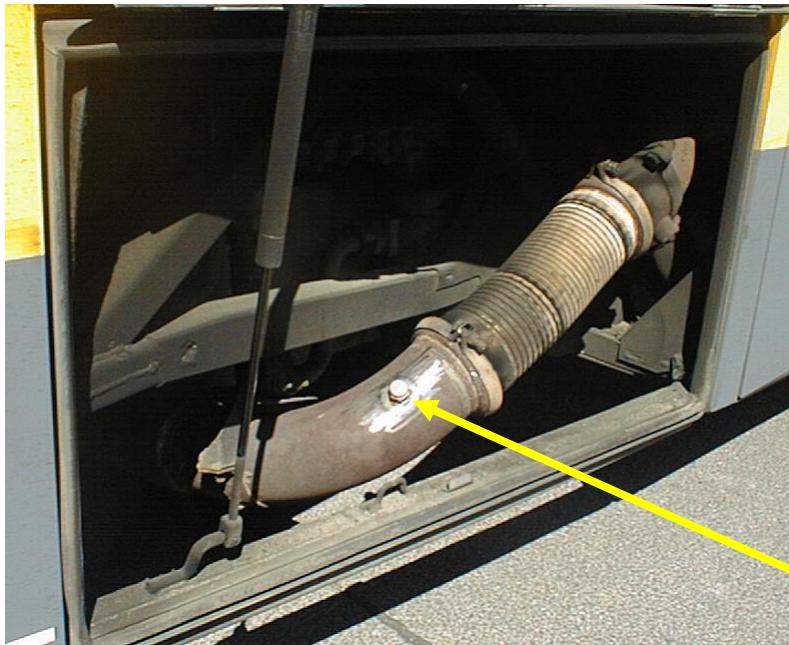


CRT Filter mounting

By the end of 1999, BVG had retrofitted (Fig. 4) 126 city buses. By the end of 2002, 1,000 of its total 1,350 buses were retrofitted with this system. All new vehicles purchased after 1999 came with the CRT ex-factory.



Back-pressure instrument and location



- Exhaust-gas back-pressure measurement
- Vehicle warmed up (75°C)
- Connect instrument
- Run engine at limiting RPM for 1 minute
- Read exhaust-gas back-pressure
- If the back-pressure exceeds prescribed level, then filter cleaning is necessary



HJS new regeneration method for CRT systems

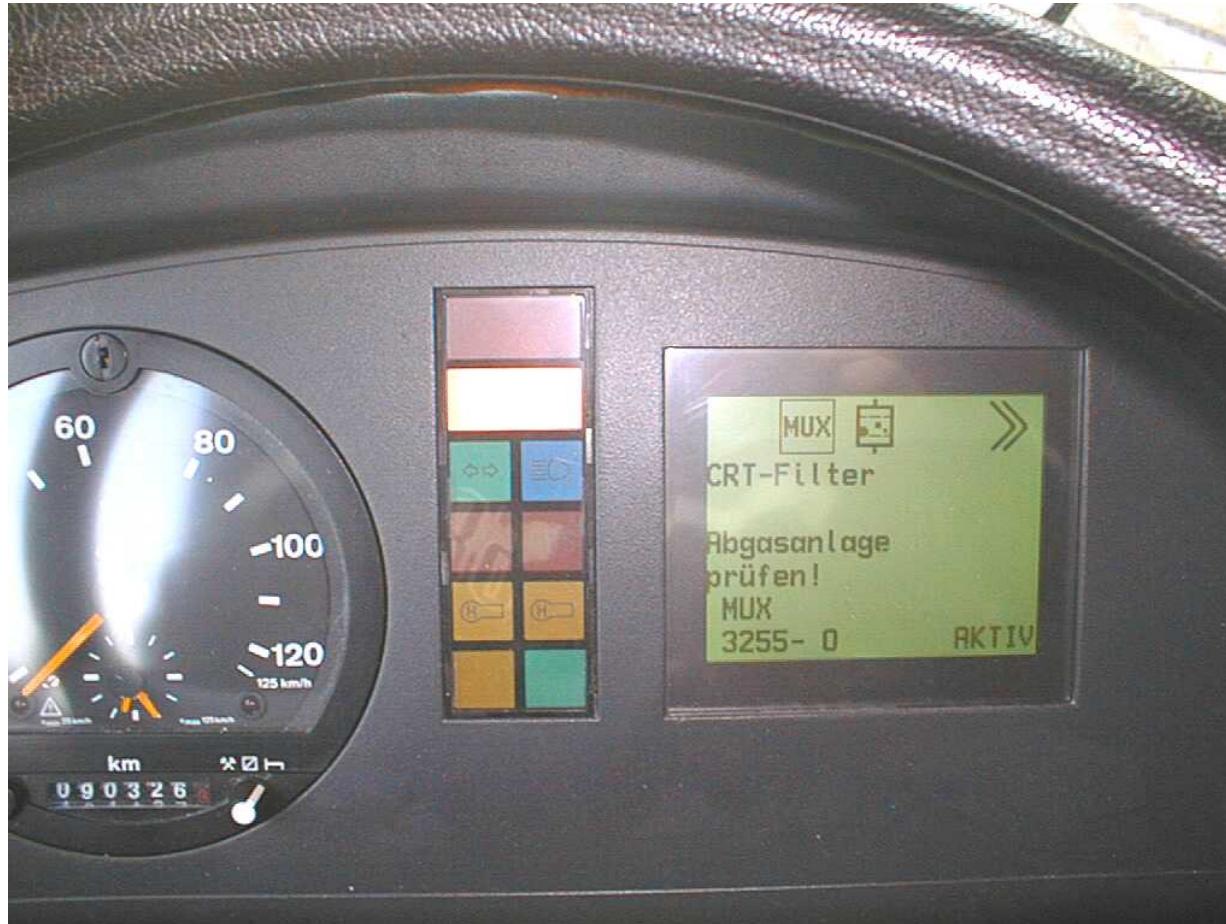
Step 1: Heat filter

Step 2: Cool filter

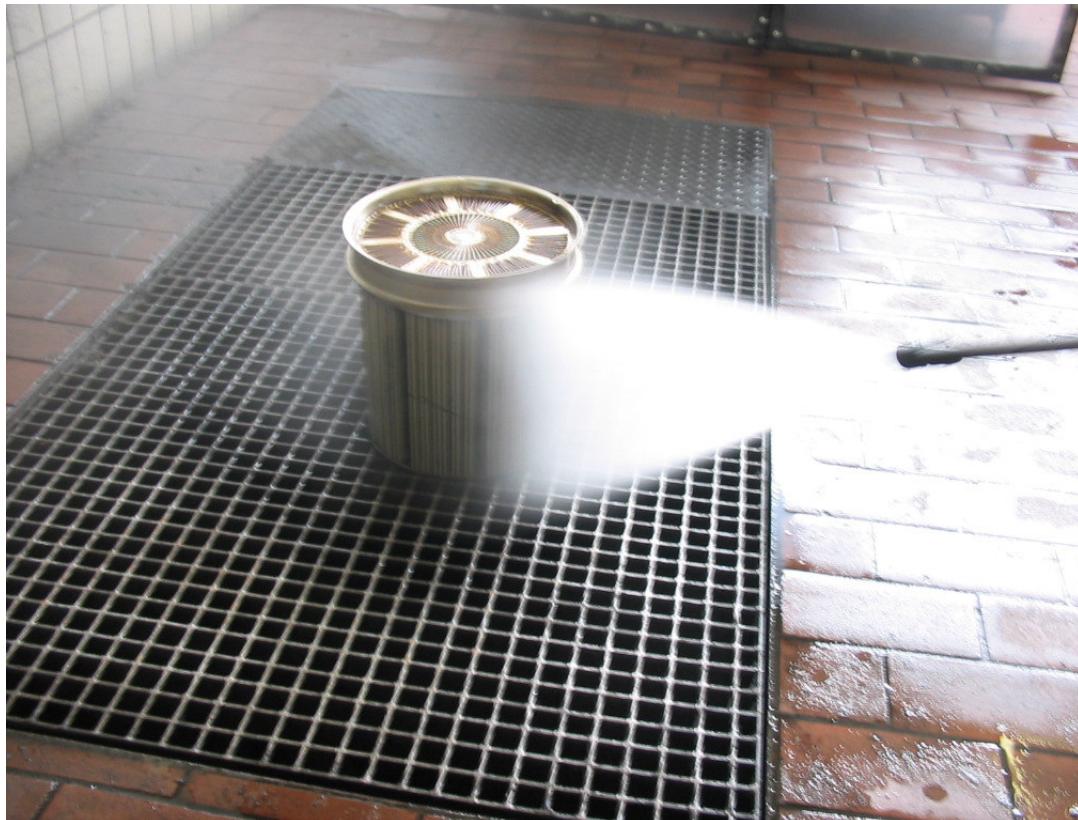
Step 3: Blow out oil ash



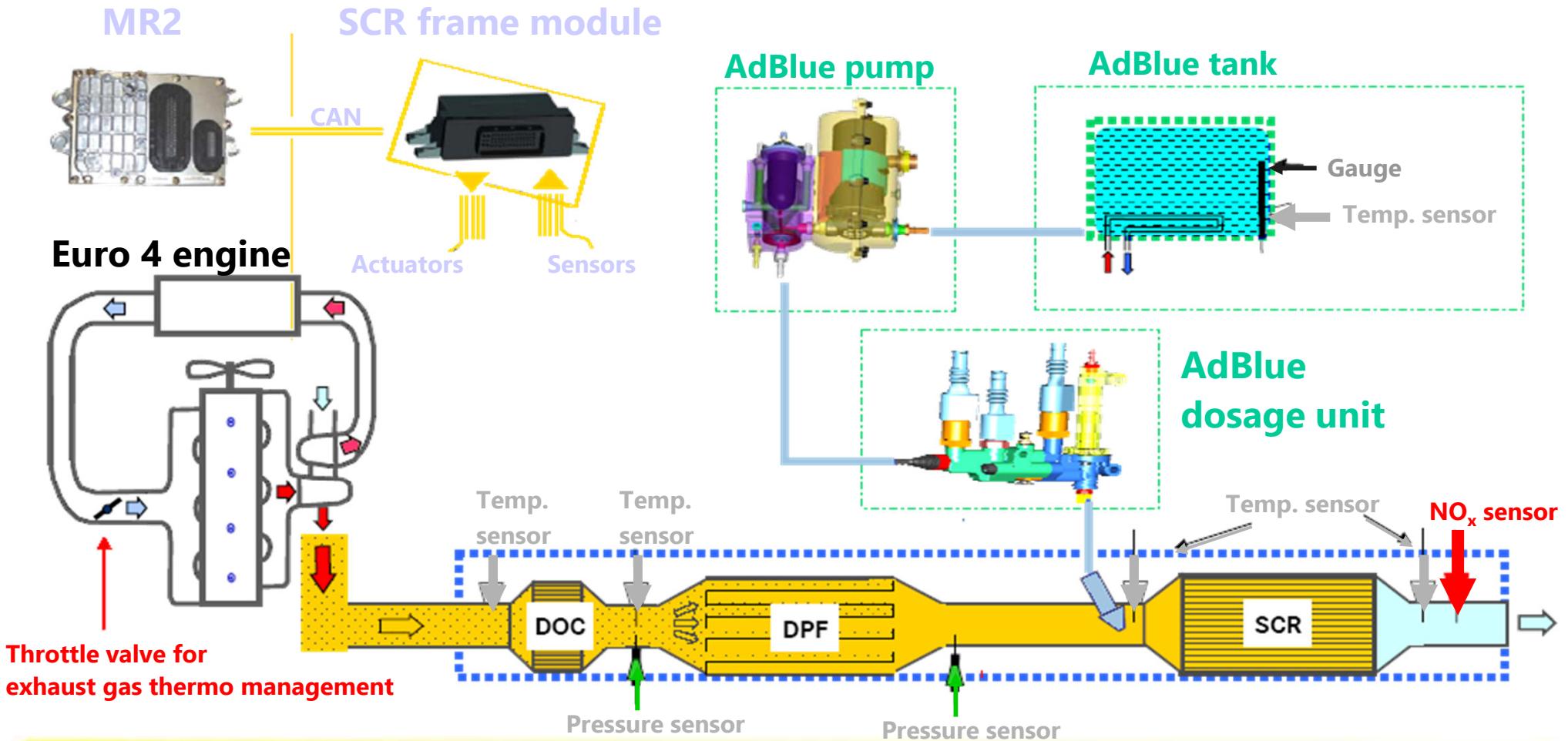
Exhaust-gas back-pressure alarm display in new buses



Regeneration SMF



Extension of the closed particle filter by introducing a SCR system



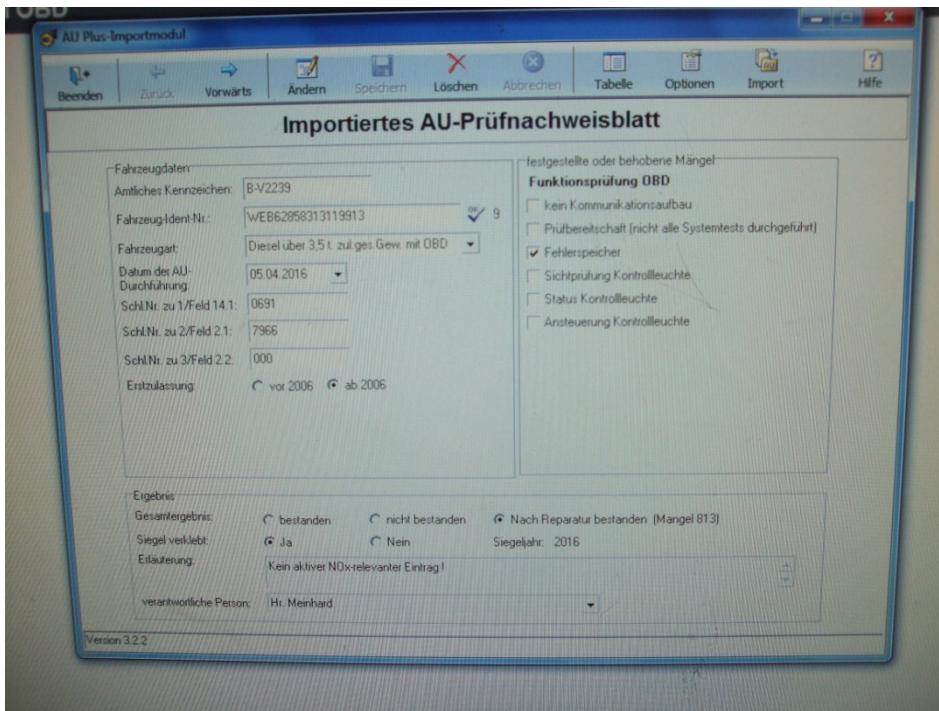
HU – Emission measurement with motorcycle and temperature



HU Emission measurement with OBD



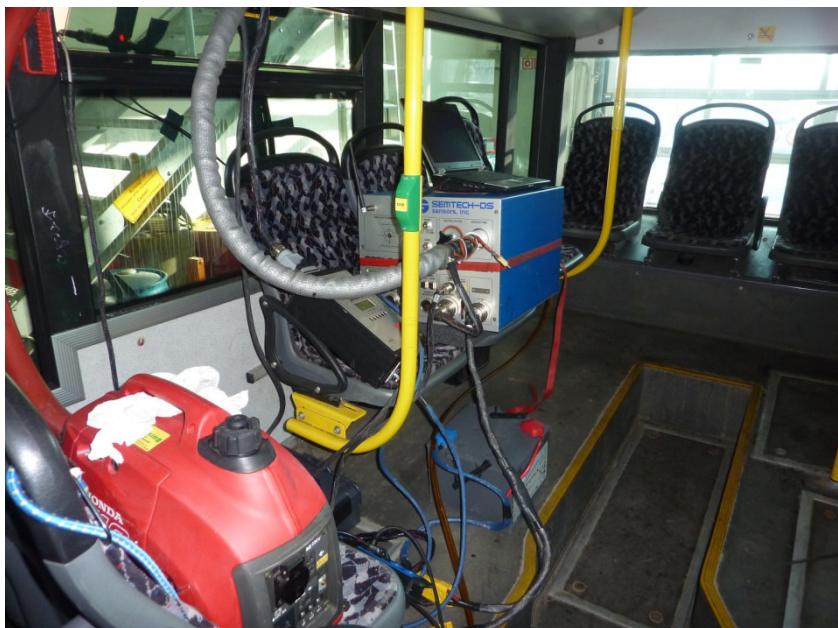
HU – technical failure



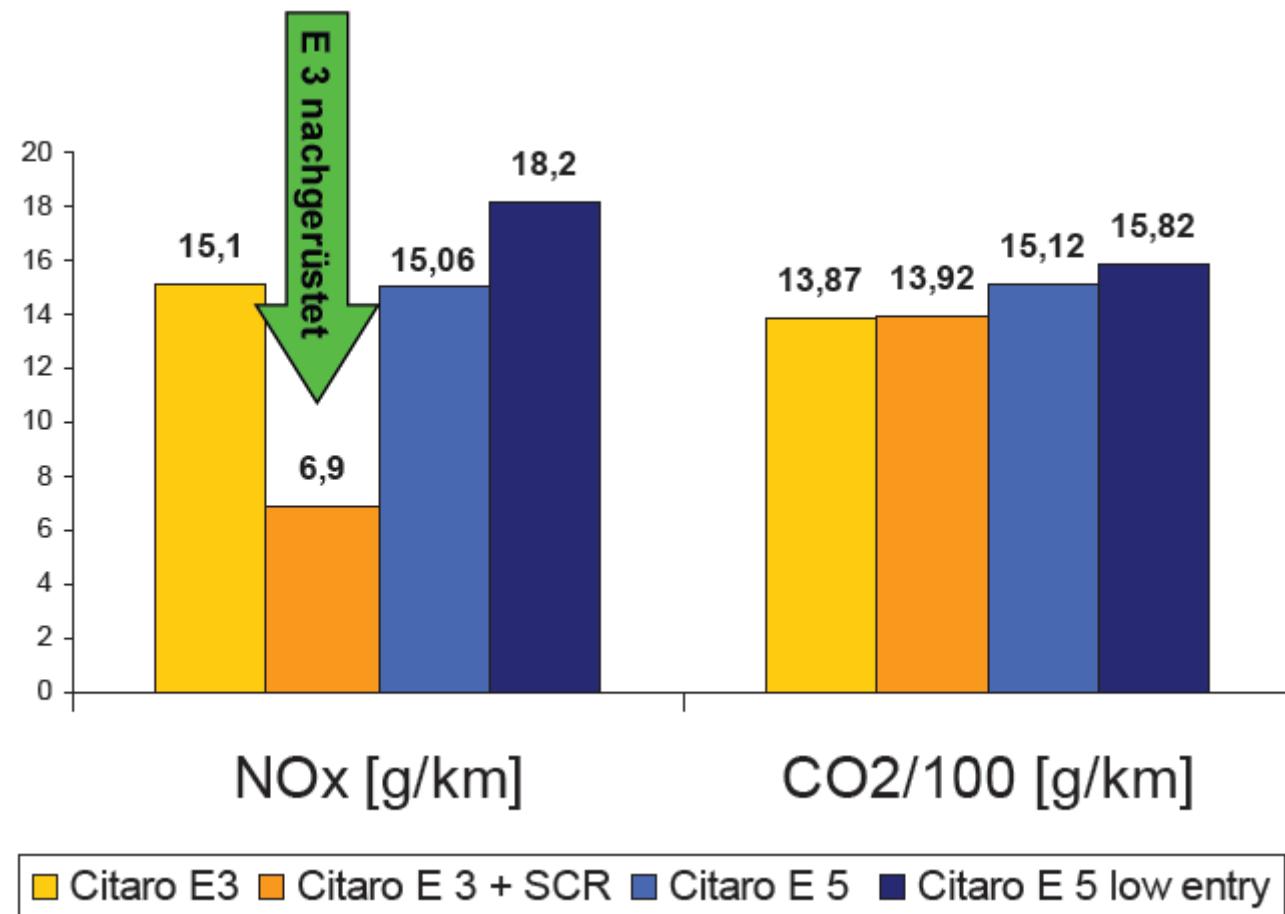
Screen shot of assurance data:
 154 buses EEV: 2015 total cost 197.233 €, AdBlue / Diesel
 consumption 1,6 %

E26	2162	31.10.2015	491918	3458	gelb	4215	Differenzdruck im DPF ist zu hoch. (4215)	Fehler gelöscht.
E26	2162	07.11.2015	493400	1482	gelb	4215	Differenzdruck im DPF ist zu hoch. (4215)	Druckmessung 18 -221 mBar / Fehler gelöscht.
E26	2162	11.12.2015	499899	6499	gelb	4215	Differenzdruck im DPF ist zu hoch. (4215)	Druckmessung 30 -267 mBar / Fehler gelöscht.
E26	2162	18.12.2015	500597	698	gelb	4215	Differenzdruck im DPF ist zu hoch. (4215)	Filter mit Wasser gereinigt. Adblue-Düse ern. Dosiereinheit gereinigt u. auf Funktion kontr. (Starke Adblue-Ablagerungen um die Düse.)
E26	2162	04.02.2016	508638	8041	gelb	4215	Differenzdruck im DPF ist zu hoch. (4215)	Filter mit Wasser gereinigt. Adblue-Düse ern. Dosiereinheit ern. u. auf Funktion kontr. (Starke Adblue-Ablagerungen um die Düse.)
E26	2162	04.03.2016	515021	6383	gelb	4215	Differenzdruck im DPF ist zu hoch. (4215)	Fehler gelöscht.
E26	2162	15.03.2016	516901	1880	gelb	4219 / 6820	Diffuser ist verstopft+SCR Druckluft ist zu hoch.	Fehler gelöscht.

TÜV Emission Measurements



TÜV- Emission Measurement 2012: Berlin Cityline M27



TÜV Emission Measurement: cityline M49

retrofit Euro IV double deck buses with SCR – System (including new software for motormanagement)

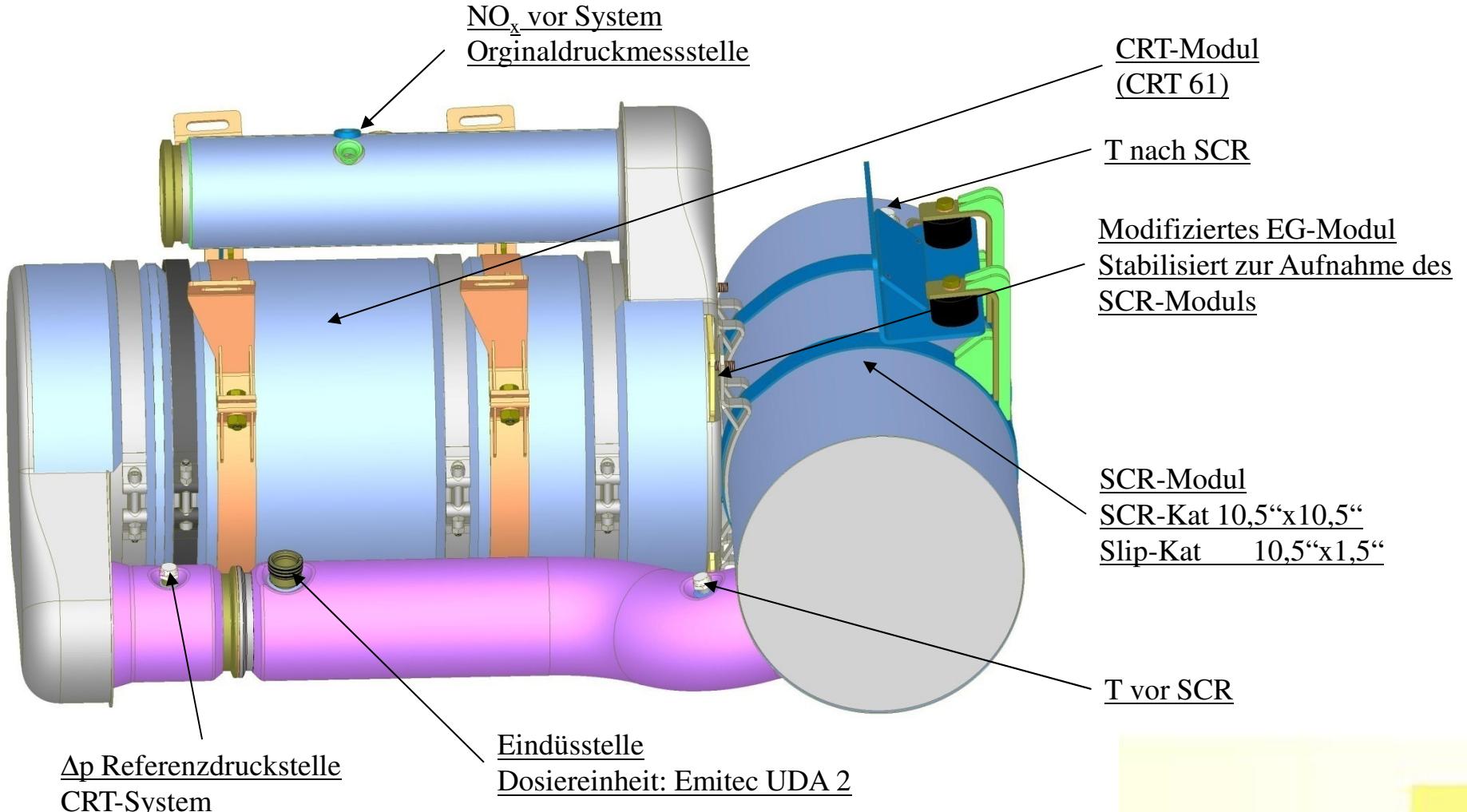


Reduction in %

<u>NO_x</u>	<u>NO₂</u>	<u>CO₂</u>
-76%	-92 %	- 2 %

Source: Technical Report TÜV Nord,
8/2012

Projekt: HJS SCRT® Applikation am MAN A39 DD
BVG, Berlin 2014 / 2015 – Design



Thank you

