

EGEA Meeting



Emission Testing in Germany – New Legislation beginning from January 2018 on

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Content

- New Emission Testing – a three step approach
 - Background of legislation
 - Time line
 - Cut off speed
 - New reference values Petrol
 - New reference values Diesel
 - DAkks Calibration from 2019 off
- UBA project
- BASt project
- Emission 2020



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The new emission testing from 2018 on – legislation

- At 15th of Oct. 2017 Ministry of Transport published a new legislation for emission testing for all vehicles
- This was published in the document „Verkehrsblatt Heft 19 Nr. 158“
- It's a paper which references to the previous legislation (difference paper)
- Meantime Ministry of Transport published end of Dec. in the document „Verkehrsblatt Heft 24 Nr. 194“ a transitional arrangement (tailpipe test obligatory, but you can use existing procedure (LF5) by forcing a manual tailpipe test)



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The new emission testing from 2018 on – a three step approach - what are the changes?

➤ **01.01.2018:**

- Obligatory testing of emission for all vehicles
- Cut off speed $\geq 90\%$ of nominal speed listed in the vehicle registration document
- limit value for Diesel is plate value (we use it since 2012)

➤ **01.01.2019:**

- Reduction of limit values for all Euro 6/VI vehicles
- 0,1 % vol. CO at high idle for Petrol engines (0,2%vol at this moment)
- 0,25 m⁻¹ for Diesel engines (plate value, EU VI 0,5 m-1)

➤ **01.01.2021:**

- Counting of particles PN
- Definition of a procedure - open
- Definition of reference values - open



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Which consequences has the reintroduction of tailpipe test? – What happens with the information from the OBD system?

- The information from the OBD-system is further used (function test). If a fault is detected, it's the same if emission is too high.
- Readinesscodes are also detected and documented
- Test procedure is the same we used for vehicles up to 31.12.2005



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Nummer	Version 4	Version 5	Version 5 Rev. 01
3.2 (Kraftfahrzeuge mit Fremdzündungsmotor; ohne-/ U-Kat)	X	X	X
3.3 (Kraftfahrzeuge mit Fremdzündungsmotor und G-Kat)	X	X	X
3.4 (Kraftfahrzeuge mit Fremdzündungsmotor mit G-Kat und OBD-System) (*) - EZ bis 31.12.2005 - EZ ab 01.01.2006 - Stufe Euro 6/VI	X	X	X X X
3.5 (Kraftfahrzeuge mit Kompressionszündungsmotor)	X	X	X
3.6 (Kraftfahrzeuge mit Kompressionszündungsmotor mit OBD-System)(*) - EZ bis 31.12.2005 - EZ ab 01.01.2006 - Stufe Euro 6/VI	X	X	X X
3.8, 3.9 (Kraftrad)		X	X



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How we will deal with the cut off speed of vehicles having speed reduction when vehicle is not driven?

- This problem is not new – on a lot of Diesel vehicles it's not possible to rise the speed up to natural cut off speed when vehicle is not driven (protection of clutch)
- Therefore in the new legislation there is written, that the cut off speed have to exceed $\geq 90\%$ of the rpm written in the registration document (where the engine has max. power)
- Means, that the test person has to input this value from the vehicle registration document Feld P4 bzw. Feld 7.

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Abregeldrehzahl bei im Stand begrenzten Dieselmotoren?



B	30.06.2014	2.1	1313	2.2	BGW00586 8		1	02	9	01	P.2 P.4	0170/03800	T	250
J	M1			4	AA		18	--	04902			-- 1870		
E	WDD2120271A960170			3		2	20	--	1490	G	--	01885		
D.1	MERCEDES-BENZ						12	-		13	00084			
212							V.7	0148	F.1	002440	F.2	002440		
JOBCPO							Z.1	01180	7.2	01260	7.3	-		
NZCCB501							8.1	01180	8.2	01260	8.3	-		
E 300 BLUETEC							U.1	72	U.2	02850	U.3	73		
DAIMLER (D)							0.1	02100	0.2	0750	S.1	005	S.2	-
FZZ.PERS.BEF.B. 8 SPL.							15.1	245/40 R18 97Y XL						
LIMOUSINE							15.2	245/40 R18 97Y XL						
715/2007/195/2013T							15.3	-						
EURO6;T;CI; M; N1 I							R	-		11	9			
DIESEL							K	e1*2001/116*0501*20						
0002	38T0		02987				6	14.11.2013		17	K	WK038158		
F.1/F.2:2540 B.ANH.BETR.*7.2/8.2:1380 B.ANH.BETR."WW.A							21	-						
HK LT.EGTG*STUFE PM 5 AB TAG ERSTZUL.*FZ IST BEI WERKS														
SEITIG MONTIERT AHK U.ESP M.SPEZ.FAHRDYN.STABI.SYST.F.														
ANH.BETR.F.TEMPO 100 KM/H GEM.5.AEND.VO.Z.9.AUSN.VO.Z.														
STVO AUSGESTATTET*														

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Abregeldrehzahl bei im Stand begrenzten Dieselmotoren? – Wie wird das umgesetzt?

- Beim Gasstoß werden wie bisher auch die Daten herangezogen, die der Fahrzeughersteller bei den AU-Solldaten vorgegeben hat.
- Eine Bewertung des Gasstoßes mit einem i.O. (in Ordnung) oder n.i.O. wird nur anhand dieser Daten durchgeführt.
- Am Ende der/des Gasstoßes wird dann bewertet, ob die beim Gasstoß real gemessene Drehzahl größer oder kleiner als 90 % der Nenndrehzahl ist.
- Falls diese DZ kleiner sein sollte wird im Nachweis in der Bemerkungszeile lediglich der Text:
„ Abregeldrehzahl < 90 % der Nenndrehzahl
(Standdrehzahlbegrenzung)“ ausgedruckt.
- Reine Dokumentation – derzeit keine weiteren Konsequenzen

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Nachweis über die Durchführung der AU nach Anlage VIII StVZO			
Ausführende Stelle:	TÜV-Nord Niederlassung Musterstadt, Musterweg 7, 45300 Muster		
Datum:	23.02.2018	Uhrzeit:	15:12 Uhr
Messprogramm: Diesel			
Fahrzeug – Ident. – Daten:			
Amtliches Kennzeichen:	TE ST 1234		
Kilometerstand:	148056		
Emissionsklasse:			
Fzg-Hersteller:	BMW		
Fzg-Typ:	E46		
Fzg-Ident.-Nr.:	WBAP461040C084541		
Datum der Erstzulassung: 13.05.2000			
Feld 14.1 / Schlüssel-Nr. zu 1: **44			
Feld 2.1 / Schlüssel-Nr. zu 2: 0005			
Feld 2.2 / Schlüssel-Nr. zu 3: 468			
Nenndrehzahl Feld P.4 / 7: 3800 min ⁻¹			
Funktionsprüfung Abgas:			
	Fzg – Solldaten	Fzg – Istdaten	Ergebnis
Konditionierung:	[Gasst/min ⁻¹]	3/4500	---
Motortemperatur:	[°C]	min.: 60	73
i.O.			
Abgasmessung:			
Leerlauf:	[min ⁻¹]	min.: 800	max.: 950
Abregeldrehzahl:	[min ⁻¹]	min.: 2500	max.: 2800
Trübungswert:	[m ⁻¹]	---	880
Beschleunigungszeit (t _s)	[sek.]	max.: 2,0	2625
		---	2605
		1,10	2610
		1,00	2610
		1,05	i.O.
		---	i.O.
		1,0	1,05
		1,1	1,3
Arithm. Mittelwert der Trübung (S):	[m ⁻¹]	max.: 1,5	1,05
Trübungsbandbreite:	[m ⁻¹]	≤ 0,5	≤ 0,5
Bandbreite Beschleunigungszeit:	[sek.]	≤ 0,5	i.O.
Messzeitanteil (t _x)	[sek.]	1,0	i.O.
Messmodus:		B	
Sonde Nr.:		1	i.O.
Ergebnis:	Funktionsprüfung Abgas: I.O.		
GESAMTERGEBNIS: BESTANDEN			
Hinweis:			
Bemerkungen:			
Abregeldrehzahl < 90 % der Nenndrehzahl (Standdrehzahlbegrenzung!)			
Mängel-Nr. 813 der HU-Richtlinie (Mängel nach Nr. 4.4 der AU-Richtlinie, die behoben wurden): <input type="checkbox"/> ja			
Erkannte, aber nicht behobene Mängel nach Nr. 5.3 der AU-Richtlinie:			
AU-Messgerät:	Hersteller / Typ:	BBB / AA_XY	
	Gerätenummer:	D1034	
	AU-Programmversion:	Version 6.2.15 nach AU-Geräteleitfaden Version 5.01	
Solldaten:	Stand:	I / 2018	
Kontrollnummer:	Prüfer:	Unterschrift:	Stempel mir Kennnummer, bzw. Siegel:
----- Dipl.-Ing. G.-F.Müller -----			

**Istdrehzahl
kleiner 90 % der
Nenndrehzahl**

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New reference values beginning from 2019 – what does this mean for the equipment?

PETROL

- 0,1 %vol. for all Euro 6/VI vehicles at high idle
 - In the legislation is not fixed which equipment you have to use (OIML class 0 or class 1)
 - Meeting with PTB last week – result was, that they want to initiate a field test with test gas of 0,1 %CO (OIML 0,25 %vol.!!)
 - Class 1 (0,06%vol) is not sufficient
- ⇒ Less experience - it's open how we will deal with



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New reference values beginning from 2019 – what does this mean for the equipment?

DIESEL

- 0,25 m⁻¹ for all Euro 6/VI vehicles
 - Germany calibration value (Eichfehlergrenze) +/- 0,3 m⁻¹ at k=1,62 m⁻¹ (N=50%)
 - Decision from PTB (REA): +/- 0,1 m⁻¹ at k=0,25 m⁻¹ (N=10%)
 - Filter with quarz glass 10 % (k=0,25) for calibration
 - Field test with existing equipment (5 participants) was extremly positive
 - PTB made also a comparison with 10 % filters at different calibration stations (Eichämter) – uncertainty was 0,048 m⁻¹ m⁻¹ over three stations – improvement to 0,024 is possible
- ⇒ Results are positive -



DAkkS – Calibration

PTI Stations have to fullfil DIN/ISO 17020



- In German Legislation Road Traffic Licensing Legislation (StVZO) Annex VIII b paragraph 2.1 b is written,
.....that at least the requirements of DIN/EN ISO/IEC 17020:2004 has to be fullfilled
- This is not new, legislation was published 2012
- „Verkehrsblatt Heft 14/2016 Nr.115“ is written, that beginning of 01.01.2019 emission testers have to be calibrated conform to DIN/ISO 17025
- For brake testers and head line systems it's beginning of 2018
- Up to now in Germany „Eichung“ – responsible are the supreme federal state authorities
- Could be, that for some years „Eichen“ und „Calibration“ will be operated in parallel

UBA Study – Ministry of Environment



- Ministry of Environment is further fixed on NOx measurement during periodical inspection
- In the existing regulation it's nothing written dealing with NOx
- Nevertheless during the discussion counting particles there was also a discussion with NOx
- UBA initiated a study for NOx – similar to SET II
- VdTÜV got this mandate to run this study
- ASA is participant of this study (equipment)
- Study is running up to Febr. 2019
- Study is focused on vehicles Euro 6d

UBA Study – Ministry of Environment



Content of the project:

- Development of a method to diagnose the activity of the emission reduction system (NOx) on diesel engines
 - a) *Developing a robust and usable procedure for evaluation of NOx-Emissions during PTI*
 - b) *Conditioning of NOx-reduction systems*
- Testing and validation of methods (2 vehicles)
- Analysis of cost-benefit-analysis
- Proposal for the revision of Directive 2014/45/EU

- TÜV Rheinland: AVL/Capelec steady state method
- TÜV Nord: RDE
- TÜV Süd: Test bench – ASM 20/50

BAST Study



- Meeting at 20.07.2017 in Bergisch-Gladbach
- Participants: BAST, TÜV's, DEKRA, KBA, ZDK, ASA, PTB, UBA
- Aim of this meeting was:
Exchange of information, coordination particle

BAST got from ministry of transport the offer to make proposals to

- define a method (procedure) for measuring particles
(idle, hight idle,...)
- - make proposals for reference values
- test and give a statement that equipment canbe used for
 periodical tests
- Study is running up to end of Jan./Febr. 2018
- Study is running from TÜV Süd
- Equipment they test or use at this moment (Sensors, TSI, TESTO)

Emission 2020

- VdTÜV project with TÜV Süd, TÜV Nord, TÜV Rheinland, DERKA, ZDK, ASA
- NOx,
- Particles



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Thanks for listening

