



Investigations on the CV Chassis Dynamometer as Basis for an Assessment by TÜV-Nord

Draft Result Report

EMITEC

Background



- › The results described here, based on the work performed under the Continental Emitec quotation ESA-TV-18-024-V1 dated May 7th 2018 and the dynaCERT Inc. purchase order number PO000010260 of May 11th 2018.
- › The aim of the company dynaCERT Inc. was to demonstrate that the use of the dynaCERT HydraGEN™ system has no, respectively a positive impact on emission performance and fuel consumption of a commercial vehicle with the aim of obtaining a official operating permit (ABE). Basis for the ABE is an assessment of the TÜV NORD. For this purpose, a MAN TGX vehicle was investigated in series configuration and equipped with a dynaCERT HydraGEN™ system and measured on the commercial vehicle chassis dynamometer in presence of an TÜV NORD engineer.
- › Each of the variants described above was then operated and measured at
 - Full Load curve (corresponding with UN R.49WHSC)
 - Stationary test corresponding with WHSC (World Harmonized Stationary Cycle) and
 - Transient test corresponding with WHTC (World Harmonized Transient Cycle)
 - Vibration measurement at full load and part load



		Original	with HydraGEN™	Change / Improvement
System Configuration	-			
Date of Measurement	-	13.06.2018		
Test no.	-	24	40	
Test Cycle	-	WNTE	WNTE	
THC	g/kWh	0.0015	0.0010	34.3%
CO	g/kWh	0.0000	0.0022	-
NOx	g/kWh	0.0633	0.0071	88.7%
CO2	g/kWh	532.1	485.2	8.8%
Ammonia	ppm	1.7311	2.8237	-63.1%
Particulate Matter	g/kwh	0.0009	0.0009	0.0%
Particle number	p/kWh*10 ¹¹	3.1395	0.9639	69.3%
Fuel Consumption	g/kWh	178.7	162.8	8.9%

System Configuration	-	Original			with HydraGEN™			Change / Improvement
Date of Measurement	-	14.06.2018	14.06.2018	14.06.2018	17.07.2018	17.07.2018	17.07.2018	
Test no.	-	26	27		37	38		
Test Cycle	-	cold	hot	Total	cold	hot	Total	
Weighting factor	-	0.14	0.86	-	0.14	0.86	-	
THC	g/kWh	0.007867	0.002471	0.00322644	0.006624	0.004422	0.00473028	-46.6%
CO	g/kWh	0.089161	0.015228	0.02557862	0.04928	0.013632	0.01862272	27.2%
NOx	g/kWh	0.603154	0.056122	0.13270648	0.487336	0.031765	0.09554494	28.0%
CO2	g/kWh	603.3187	585.4682	587.96727	559.6342	542.635	545.014888	7.3%
Ammonia	ppm	0.516389	0.472988	0.4791	0.320242	0.190114	0.20833192	56.5%
Particulate Matter	g/kwh	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0%
Particle number	p/kWh*10 ¹¹	248.6995	8.807838	42.3927	5.950978	1.448322	2.07869384	95.1%
Fuel Consumption	g/kWh	208.7005	203.0532	203.843822	194.7669	189.1959	189.97584	6.8%

System Configuration	-	Original			with HydraGEN™			Change / Improvement
Date of Measurement	-	14.06.2018	14.06.2018	14.06.2018	18.07.2018	18.07.2018	18.07.2018	
Test no.	-	26	27		42	43		
Test Cycle	-	cold	hot	Total	cold	hot	Total	
Weighting factor	-	0.14	0.86	-	0.14	0.86	Gesamt	
THC	g/kWh	0.007867	0.002471	0.00322644	0.003052	0.001114	0.00138532	57.1%
CO	g/kWh	0.089161	0.015228	0.02557862	0.044265	0.01809	0.0217545	15.0%
NOx	g/kWh	0.603154	0.056122	0.13270648	0.598463	0.044372	0.12194474	8.1%
CO2	g/kWh	603.3187	585.4682	587.96727	546.4386	529.0187	531.457486	9.6%
Ammonia	ppm	0.516389	0.472988	0.4791	0.641249	0.250808	0.30546974	36.2%
Particulate Matter	g/kwh	0.0015	0.0015	0.0015	0.0011	0.0006	0.00067	55.3%
Particle number	p/kWh*10 ¹¹	248.6995	8.807838	42.3927	26.06366	0.258675	3.8713729	90.9%
Fuel Consumption	g/kWh	208.7005	203.0532	203.843822	191.1531	185.4914	186.284038	8.6%

System Configuration		Orginal	with HydraGEN™	Change / Improvement
Date of Measurement	-	13.06.2018	17.07.2018	
Test no.	-	23	39	
Test Cycle	-	WHSC	WHSC	
THC	g/kWh	0.0046	0.0022	52.0%
CO	g/kWh	0.0010	0.0079	-685.4%
NOx	g/kWh	0.0876	0.0283	67.7%
CO2	g/kWh	559.9	518.3	7.4%
Ammonia	ppm	4.7256	3.8746	18.0%
Particulate Matter	g/kwh	0.0011	0.0005	54.5%
Particle number	p/kWh*10 ¹¹	4.4648	1.1484	74.3%
Fuel Consumption	g/kWh	188.5	173.8	7.8%