



MERCEDES-BENZ
UNIMOG U530
PowerMix
DLG Test Report 6392

Unimog U530

Data sheet DLG PowerMix

Applicant

Mercedes-Benz Special Trucks
Daimlerstrasse 1
D-76742 Wörth
Germany
www.mercedes-benz.de

Test performed by

DLG e.V.
Test Center
Technology and Farm Inputs
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Test No.

2015-00697



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Specifications

Engine			
Manufacturer	Mercedes-Benz		
Stage of emission	Euro 6		
Exhaust aftertreatment device			
Nitrous gaseous emission*	Selective Catalytic Reduction (SCR)		
Particulate matter emission	Active and passive regenerating Diesel particulate filter (DPF)		
Time for regeneration DPF (average)	52	min	
Time between regeneration:			
- maximum*	150	h	
- under PowerMix conditions*	-	h	
- checked			
Exhaust gas recuperation			
	Extern, cooled		
Number of cylinders*	6		
Bore*	110	mm	
Stroke*	135	mm	
Displacement*	7700	cm ³	
Rated speed	2200	min ⁻¹	
Power by	80/1269/EWG	standard	boost
Rated power	220	kW	- kW
Maximum power	220	kW	- kW
at engine speed	2200	min ⁻¹	- min ⁻¹
Loss of power during regeneration	-		
Main fan			
Diameter	680	mm	
Number of fan blades	9		
Transmission			
Manufacturer	Mercedes-Benz		
Type of construction	totally synchronized reversing transmission		
Ranges	2		
Powershift gear	-		
Forward	8		
Reverse	6		
Design speed	80	km/h	

Power take off				
Profile	Form 1: 6 spline(1 3/4")			
Transmission ratio*				
Standard pto speed	540	540E	1000	1000E
Engine speed [min ⁻¹]	-	2150	2146	-
Chassis				
Front axle				
Manufacturer	Mercedes-Benz			
Type	Portal axle, suspended			
Tires	front		rear	
Manufacturer	Continental AC70+		Continental AC70+	
Tire size	445/65 R22.5		445/65 R22.5	
Axle load	front	rear	total	
Permissible*	7500 kg	9500 kg	16500 kg	
Empty weight	3260 kg	2740 kg	6000 kg	
Hydraulic				
System*	without load sensing			
Supply of oil	seperated to transmission oil			
Fluid type*	EN 15431			
Capacity*	45	l		
Extractable*	30	l		
Auxiliary valves				
Number	4			
Max. flowrate*	32+55	l/min		
Max. pressure*	240	bar		
Fitted options				
Free return flow	Yes			
Air condition	Yes			
Air compressor	Yes			
Front hydraulic power lift	No			
Front pto (disengageable)	Yes			
	-			
	-			

Test conditions

Axle load	front	rear
With ballast	4410 kg	3690 kg
Ballast		
on frame	1150 kg	950 kg
on axle	- kg	- kg
Axle load distribution	54 %	46 %
Tire pressure		
	front	rear
Field work	1,3 bar	2,2 bar
Transporttest	2,2 bar	2,2 bar

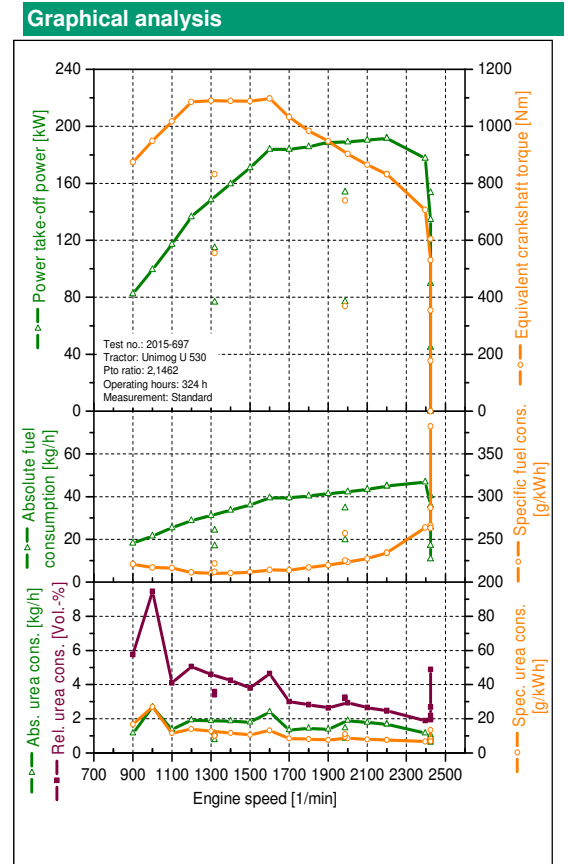
Remarks

* Manufacturer's data

Results of measurement at pto dynamometer – standard

Full load	
Rated speed	
Pto power	191,6 kW
Absolute fuel consumption	44,9 kg/h
Specific fuel consumption	234 g/kWh
Specific urea consumption	7,6 g/kWh
Ratio urea to fuel	2,5 Vol-%
Maximum power	
Engine speed	2200 min ⁻¹
Pto power	191,6 kW
Absolute fuel consumption	44,9 kg/h
Spec. Fuel consumption	234 g/kWh
Spec. urea consumption	7,6 g/kWh
Ratio urea to fuel	2,5 Vol-%
Additional fuel consump. during regeneration	2,0 kg
Additional fuel consump. turned-over**	0,03 %
Spec. fuel consump. with regen. (calculated)	234 g/kWh
Maximum torque	
Engine speed	1600 min ⁻¹
Pto power	183,9 kW
Absolute fuel consumption	39,4 kg/h
Spec. Fuel consumption	214 g/kWh
Spec. urea consumption	13,1 g/kWh
Ratio urea to fuel	4,6 Vol-%
1000 rpm at pto	
Engine speed	2146 min ⁻¹
Pto power	190,7 kW
Absolute fuel consumption	44,1 kg/h
Spec. Fuel consumption	231 g/kWh
Spec. urea consumption	7,3 g/kWh
Ratio urea to fuel	2,4 Vol-%

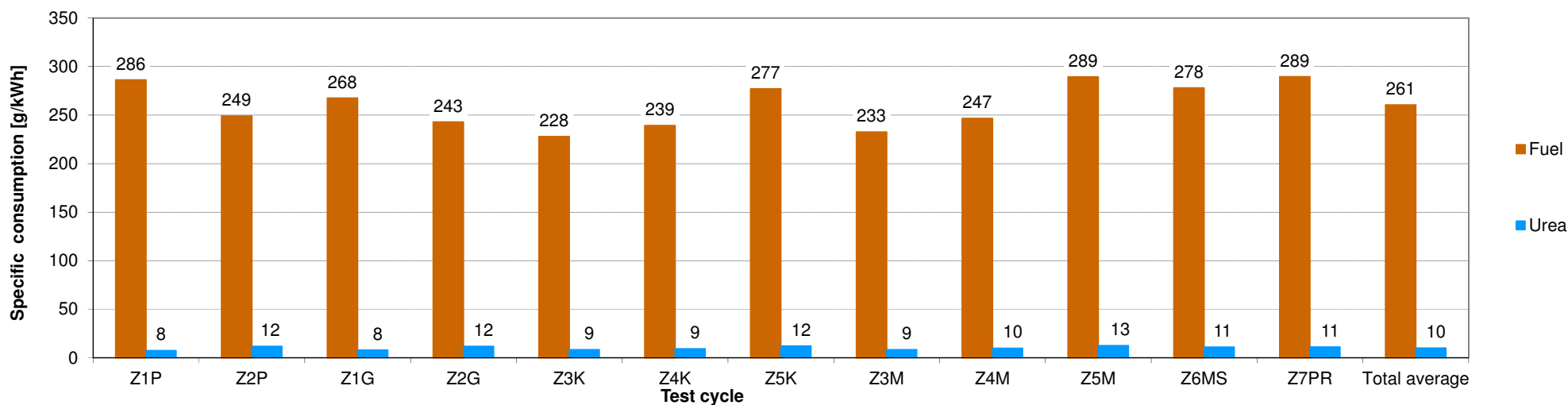
Part load	
Full throttle, 80 % of power at rated speed	
Absolute fuel consumption	34,6 kg/h
Spec. Fuel consumption	263 g/kWh
Spec. urea consumption	6,7 g/kWh
Ratio urea to fuel	2 Vol-%
90 % of rated speed, 80 % of power at rated speed	
Absolute fuel consumption	34,6 kg/h
Spec. Fuel consumption	225 g/kWh
Spec. urea consumption	9,4 g/kWh
Ratio urea to fuel	3,2 Vol-%
90 % of rated speed, 40 % of power at rated speed	
Absolute fuel consumption	19,7 kg/h
Spec. Fuel consumption	257 g/kWh
Spec. urea consumption	11 g/kWh
Ratio urea to fuel	3,3 Vol-%
Additional fuel consump. during regeneration	4,8 kg
Additional fuel consumption turned-over**	0,2 %
Spec. fuel consump. with regen. (calculated)***	258 g/kWh
60 % of rated speed, 40 % of power at rated speed	
Absolute fuel consumption	17,0 kg/h
Spec. Fuel consumption	222 g/kWh
Spec. urea consumption	9,9 g/kWh
Ratio urea to fuel	3,4 Vol-%
60 % of rated speed, 60 % of power at rated speed	
Absolute fuel consumption	24,3 kg/h
Spec. Fuel consumption	212 g/kWh
Spec. urea consumption	10,0 g/kWh
Ratio urea to fuel	3,6 Vol-%
Additional fuel consump. during regeneration	4,1 kg
Additional fuel consumption turned-over**	0,1 %
Spec. fuel consump. with regen. (calculated)	212 g/kWh



Torque rise	32 %
Engine speed drop	27 %
Pulling off torque	114 %

** Ratio of additional fuel for regeneration to total fuel consumption during two regenerations; calculated with maximum operating hours during regeneration (see Specification-Engine)

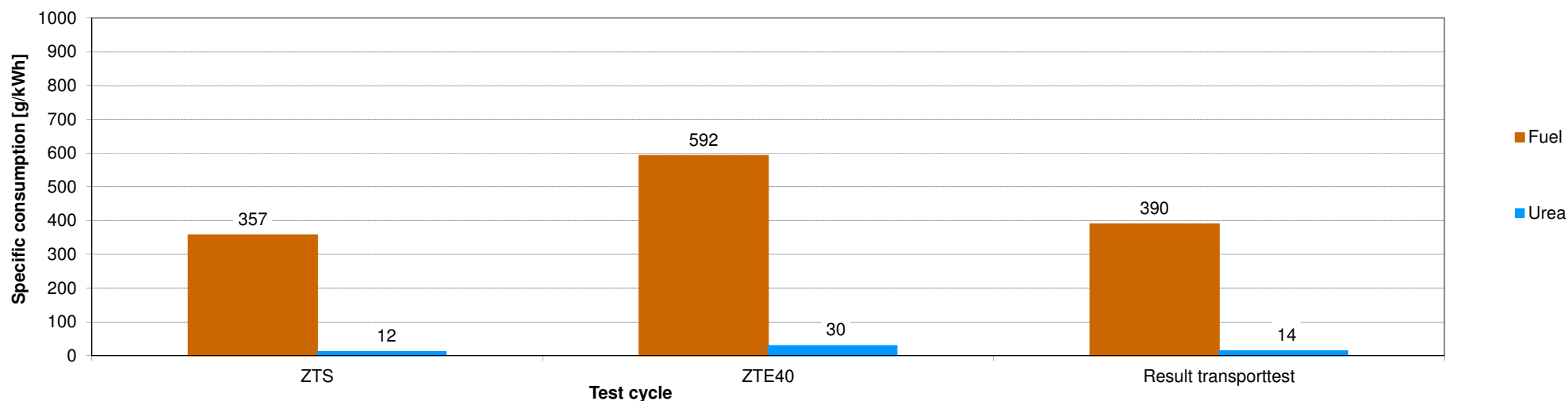
Results at DLG PowerMix - Field work



Load type	Test cycle	Engine speed [min ⁻¹]	Driving speed [km/h]	Total power [kW]	Absolute fuel consumption		Average values		Spec. urea cons. [g/kWh]	Ratio urea to fuel [Vol-%]	Relative additional fuel for DPF regeneration* [%]	Calculated spec. Fuel cons. with DPF regeneration [g/kWh]
					[kg/h]	[l/h]	Specific fuel consumption [g/kWh]	Spec. urea cons. [g/kWh]				
Drawbar work	Plough 100 %	Z1P	2309	8,0	156	44,3	54,3	286	8	2,0	0,0	286
	Plough 60 %	Z2P	1577	8,7	103	25,4	31,1	249	12	3,6	0,1	249
	Cultivator 100 %	Z1G	2151	10,1	163	43,2	52,9	267	8	2,3	0,0	268
	Cultivator 60%	Z2G	1584	11,6	117	28,2	34,6	243	12	3,6	0,1	243
Drawbar + PTO work	Rotary harrow 100 %	Z3K	1901	6,4	166	37,3	45,1	228	9	2,8	0,0	228
	Rotary harrow 70 %	Z4K	1929	6,5	118	27,8	33,8	239	9	3,0	0,1	239
	Rotary harrow 40 %	Z5K	1929	6,5	68	18,2	22,1	277	12	3,3	0,2	277
	Mower 100 %	Z3M	1905	14,6	162	37,7	45,9	233	9	2,8	0,0	233
	Mower 70 %	Z4M	1933	14,8	116	28,5	34,7	246	10	3,0	0,1	247
Mower 40 %	Z5M	1934	14,9	66	18,9	23,1	289	13	3,3	0,2	289	
Drawbar- + PTO + Hydraulic work	Manure spreader	Z6MS	2142	7,2	132	35,5	43,6	278	11	2,9	0,1	278
	Baler	Z7PR	2149	10,5	112	30,7	37,6	289	11	2,9	0,1	289
Total average DLG PowerMix - Fieldwork								260	10	3,0	0,1	261

* Ratio of additional fuel for regeneration to total fuel consumption during two regenerations; calculated with maximum operating hours during regeneration (see Specification-Engine)

Results at DLG PowerMix - Transporttest



Load type	Test cycle	Engine speed [min ⁻¹]	Driving speed [km/h]	Total power [kW]	Absolute fuel consumption		Average values				
					[kg/h]	[l/h]	Specific fuel consumption [g/kWh]	Spec. urea cons. [g/kWh]	Ratio urea to fuel [Vol-%]	Relative additional fuel for DPF regeneration** [%]	Calculated spec. Fuel cons. with DPF regeneration** [g/kWh]
Transportwork	only hill section ZTS	1758	44,7	106	37,7	45,6	357	12	3,1	0,03	357
	flat section 40 km/h ZTE40	1244	41,4	16	9,3	11,3	590	30	3,5	0,3	592
Idle*	ZLL	717	-	-	2,7	3,3	-	-	-	-	-
Result DLG-PowerMix - Transporttest (flat section with 40 km/h; 50 % ZTS : 40 % ZTE40 : 10 % ZLL)** *							389	14	2,8	0,2	390

Optional tests (e.g. ZTS with reduced (-R) engine speed, flat section with additional speed settings (-50, -60))

Transportwork	only hill section ZTSR	-	-	-	-	-	-	-	-	-	-
	flat section 50 km/h ZTE50	1418	50,9	21	12,4	15,0	580	26	3,4	0,3	582
	flat section 60 km/h ZTE60	1341	60,5	28	16,4	19,8	591	22	2,8	0,2	592
Optional results based on	hill section with reduced engine speed ZTSR (50 % ZTSR : 40 % ZTE40 : 10 % ZLL)** *						-	-	-	-	-
	flat section with 50 km/h ZTE50 (50 % ZTS : 40 % ZTE50 : 10 % ZLL)** *						390	14	2,8	0,1	391
	flat section with 60 km/h ZTE60 (50 % ZTS : 40 % ZTE60 : 10 % ZLL)** *						394	14	2,7	0,1	394

* 70 % in parking position w/o driver, 30 % w/ inserted drive position and w/ driver, e.g. waiting at traffic lights

** Relation of additional fuel consumption caused by regeneration to conventional fuel consumption within two regeneration cycles; calculated for the maximum regeneration interval (see technical data - engine)

*** Results are calculated for a distance of 10 km. The fuel consumption in cycle ZLL is taken into the final result by a calculation based on the real measured fuel consumption during the test.