Vehicle Certification Agency

New Heavy-Duty Vehicles Carbon Dioxide Performance Standards Report

2020 Reporting Period

A report analysing the data transmitted by manufacturers for the 2020 reporting period on carbon dioxide emissions from the fuel consumption of new heavy-duty vehicles pursuant to assimilated Regulation (EU) 2018/956, Article 10

1. Legal Base

- In accordance with Article 10 of assimilated Regulation (EU) 2018/956 ("the Regulation") on the monitoring and reporting of CO_2 emissions from and fuel consumption of heavy-duty vehicles ("HDVs"), the Secretary of State shall publish a report each year with its analysis of the data transmitted by manufacturers for the preceding reporting period. This is the first report published under the Regulation in the UK, providing a data analysis for the reporting period 2020 (1 July 2020 to 30 June 2021).
- The CO_2 emissions from and fuel consumption of new HDVs are determined via the Vehicle Energy Consumption Calculation Tool (VECTO), a simulation tool for HDVs which was developed by the European Commission. The principles underpinning the simulation of new HDVs using VECTO are provided by assimilated Regulation (EU) 2017/2400.

2. Content of the report

- This analysis covers: (i) the performance of the HDV fleet of each manufacturer; and (ii) the performance of the HDV fleet of the UK.
- The two items above are calculated on the basis of the CO_2 emissions for each representative HDV group for different mission profiles, load combinations and fuels. Average fuel consumption of the UK-wide fleet of conventionally fuelled HDVs has also been analysed for each manufacturer.
- The analysis covers the available data on the uptake of new and advanced CO_2 reducing technologies, as well as of alternative powertrains.
- Further HDV performance values can be found in the data sets published on the VCA website.

3. Data Basis

- This report is based on data including all vehicles reported by manufacturers to the Vehicle Certification Agency ("VCA") in accordance with Article 5 of the Regulation. These data are matched by registrations in the UK during the reporting period 2020 as they were available to the Secretary of State by 10 December 2024.[1]
- Registration data is collected by the Driver and Vehicle Licensing Agency ("DVLA") before it is processed by the Department for Transport, and then finally analysed by the VCA.

[1] It is possible that certain corrections for individual vehicles will be reported to the Secretary of State after this date and will therefore not be included in this report.

4. Average specific CO_2 performance of manufacturer fleets in g/tkm

- Table 1 presents the average payload in (t) and the average specific CO_2 emissions in g/tkm of different groups and subgroups for all manufacturers.
- The average specific CO_2 emissions of a heavy-duty vehicle are calculated as a weighted mean over different mission profiles.
- Annex A.2 of COM(2023) 517 final (EU HDV report 2020) provides a description on how the average payload has been calculated for all vehicle groups.
- Vocational vehicles are not taken into account.

Table 1: Average specific CO_2 emissions in g/tkm, and average payload in (t) per vehicle group and subgroup

Vehicle group	Vehicle subgroup	Average payload (t)	DAF NV	DAIMLER TRUCK AG	IVECO MAGIRUS-AG	IVECO SPA	MAN TRUCK & BUS SE	RENAULT TRUCKS	SCANIA CV AB	VOLVO TRUCK CORPORATION
1	-	-	-	-	-	-	-	-	-	-
2	-	2.36	266.863	-	-	-	240.764	-	-	240.194
3	-	3.31	213.988	213.799	-	230.070	187.439	198.036	-	201.017
4	4-UD	2.65	305.428	-	-	-	-	-	296.478	-
4	4-RD	3.18	189.499	204.968	185.146	208.331	183.620	187.849	179.430	190.285
4	4-LH	7.42	100.995	103.857	-	114.606	106.709	101.316	103.109	109.074
5	5-RD	10.26	83.745	89.353	-	-	80.084		70.488	89.263
5	5-LH	13.84	55.783	60.190	58.592	-	57.139	58.916	52.831	60.995
9	9-RD	6.28	105.401	110.595	110.589	-	101.412	108.369	103.266	110.858
9	9-LH	13.40	63.554	66.195	66.348	-	64.308	64.961	61.016	64.438
10	10-RD	10.26	83.103	82.434	-	-	83.035		80.605	89.697
10	10-LH	13.84	58.549	58.131	58.409	-	56.220	58.931	55.023	57.509
11	-	5.39	154.232	159.736	-	-	154.930	161.112	145.053	192.628
12	-	9.81	105.273	105.896	-	-	109.844	106.508	109.819	98.645
16	-	9.81	108.533	117.671	-	-	109.036	108.417	104.771	105.574

5. Fuel consumption of diesel fuelled vehicles in manufacturer fleets in l/100km

- Table 2 presents the average fuel consumption of conventionally fuelled vehicles in l/100km. This is shown for each group and subgroup for all manufacturers.
- Hybrid, Dual-fuel and Electric vehicles are not taken into account.
- Vehicles with a simulation fuel type “LNG PI” or “CNG PI” are not taken into account.
- Vocational vehicles are not taken into account.

Table 2: Average fuel consumption of vehicle groups and subgroups by manufacturer

Vehicle group	Vehicle subgroup	DAF NV	DAIMLER TRUCK AG	IVECO MAGIRUS-AG	IVECO SPA	MAN TRUCK & BUS SE	RENAULT TRUCKS	SCANIA CV AB	VOLVO TRUCK CORPORATION
1	-	-	-	-	-	-	-	-	-
2	-	24.060	-	-	-	21.703	-	-	21.648
3	-	27.278	24.427	-	27.354	24.469	23.794	-	25.852
4	4-UD	30.927	-	-	-	-	-	30.033	-
4	4-RD	23.031	24.904	22.503	25.322	22.316	22.832	21.824	23.124
4	4-LH	28.641	29.438	-	32.509	30.265	28.731	29.250	30.941
5	5-RD	32.846	35.032	-	-	31.401	-	31.179	35.028
5	5-LH	29.498	31.842	31.616	-	30.238	31.159	28.427	32.261
9	9-RD	25.294	26.550	26.619	-	24.332	25.999	24.780	26.615
9	9-LH	32.548	33.910	33.989	-	32.934	33.264	31.248	32.994
10	10-RD	32.574	32.302	-	-	32.547	-	31.602	35.174
10	10-LH	30.968	30.748	31.179	-	29.734	31.169	29.104	30.413
11	-	31.785	32.890	-	-	31.913	33.185	29.879	39.690
12	-	39.468	39.679	-	-	41.181	39.923	41.165	36.980
16	-	40.690	44.122	-	-	40.876	40.642	39.284	39.594

6. CO_2 emissions and fuel consumption of conventionally fuelled vehicles in the UK fleet in g/tkm and l/100km for each mission profile

- Table 3 presents the average specific emissions in g/tkm and fuel consumption in l/100km from vehicle groups 3, subgroup 10-LH and group 16.
- Hybrid, Dual-fuel and Electric vehicles are not taken into account.
- Vehicles with a simulation fuel type “LNG PI” or “CNG PI” are not taken into account.
- Vocational vehicles are not taken into account, except in group 16 where all vehicles are included.

Table 3: Average fuel consumption in l/100km of conventionally fuelled vehicles of vehicle groups 3, 10-LH, and 16 for each mission profile

Mission profile / payload	Medium lorries Vehicle group 3		Heavy lorries Vehicle group 10-LH		Vocational vehicles Vehicle group 16	
	Fuel consumption (l/100km)	Average CO_2 emissions (g/tkm)	Fuel consumption (l/100km)	Average CO_2 emissions (g/tkm)	Fuel consumption (l/100km)	Average CO_2 emissions (g/tkm)
RDL	21.089	653.971	26.023	261.894	-	-
RDR	23.300	144.372	32.391	65.701	-	-
LHL	-	-	24.851	250.124	-	-
LHR	-	-	32.551	44.134	-	-
UDL	26.687	827.106	-	-	-	-
UDR	32.293	199.984	-	-	-	-
REL	-	-	32.795	245.195	-	-
RER	-	-	41.543	62.118	-	-
LEL	-	-	31.178	233.082	-	-
LER	-	-	41.984	41.457	-	-
MUL	-	-	-	-	-	-
MUR	-	-	-	-	-	-
COL	-	-	-	-	33.852	340.734
COR	-	-	-	-	43.359	87.945

7. Advanced CO_2 technologies and Advanced Driver-Assistance Systems (ADAS) in the UK fleet

- During the reporting period of 2020, manufacturers could, but were not obliged to, indicate "advanced CO_2 technologies". This information had no influence on VECTO simulation results.
- Only one manufacturer consistently reported on such technologies:
  - **71**% of vehicles were equipped with an active front grille (classified as an advanced aerodynamic measure).
  - **96**% of vehicles were equipped with a pulse and glide technology (an additional ADAS technology).
  - Vocational vehicles are not taken into account.
- Table 4 presents the use of Advanced Driver-Assistance Systems (ADAS) across all manufacturers in the vehicles registered during the 2020 reporting period. It lists the total number of vehicles, and the share of the fleet equipped with at least one given technology.
- No vehicles registered in the UK during the reporting period of 2020 were equipped with the ADAS technologies "engine stop-start during vehicle stop" or "eco-roll with engine stop-start".
- Vocational vehicles are not taken into account.

Table 4: Number of vehicles per vehicle group equipped with an ADAS technology

ADAS technology	Vehicle group										
	1	2	3	4	5	9	10	11	12	16	Total
Eco-roll without engine stop-start	-	-	45	316	989	534	7433	8	42	18	9385
Predictive cruise control	-	-	0	271	498	225	5292	1	4	34	6325
Total number of vehicles in group	-	28	735	3107	1953	1575	13081	124	101	87	20791
Share of vehicles equipped with ADAS (%)	-	0%	6%	10%	51%	34%	57%	7%	43%	49%	45%

8. Alternative Powertrains in manufacturer fleets

- Table 5 presents the distribution of vehicles with an alternative powertrain for each manufacturer.
- Vocational vehicles are not taken into account, with the exception of battery electric vehicles. This is because a small number of battery electric HDVs registered with a vocational bodywork code have contributed to the manufacturer's ZLEV factor in the UK 2020 reporting period.

Table 5: Number of vehicles with alternative powertrains by manufacturers

Fuel type (engine)	DAF NV	DAIMLER TRUCK AG	IVECO MAGIRUS-AG	IVECO SPA	MAN TRUCK & BUS SE	RENAULT TRUCKS	SCANIA CV AB	VOLVO TRUCK CORPORATION	Total
Battery electric	5	-	-	2	-	1	-	1	9
Hydrogen fuel cell	-	-	-	-	-	-	-	-	-
Dual-fuel	-	-	-	-	-	-	-	348	348
Hybrid	-	-	-	-	-	-	1	-	1