

Annex D5

Thermal Oxidizer, Landfill  
Gas Flare and Landfill Gas  
Generator Stack Emission  
Monitoring Results

**Table D5.1 Thermal Oxidiser Stack Emission Monitoring Results**

Parameters	Monitoring Results
NO <sub>2</sub>	0.38 gs <sup>-1</sup>
CO	<0.02 gs <sup>-1</sup>
SO <sub>2</sub>	<0.01 gs <sup>-1</sup>
Benzene	<2 x 10 <sup>-5</sup> gs <sup>-1</sup>
Vinyl chloride	<2 x 10 <sup>-5</sup> gs <sup>-1</sup>
Exhaust gas velocity	15.3 ms <sup>-1</sup>

**Table D5.2 Thermal Oxidiser Stack Continuous Monitoring Results**

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms <sup>-1</sup> ) <sup>(a)</sup>
01 Dec 21	945	1235	
02 Dec 21	938	1226	
03 Dec 21	984	1316	
04 Dec 21	941	1264	
05 Dec 21	941	1223	
06 Dec 21	944	1237	
07 Dec 21	936	1238	
08 Dec 21	939	1234	
09 Dec 21	949	1253	
10 Dec 21	955	1270	
11 Dec 21	936	1230	
12 Dec 21	932	1231	
13 Dec 21	948	1219	
14 Dec 21	952	1272	
15 Dec 21	942	1226	15.3
16 Dec 21	937	1222	
17 Dec 21	936	1224	
18 Dec 21	957	1221	
19 Dec 21	941	1226	
20 Dec 21	944	1230	
21 Dec 21	938	1241	
22 Dec 21	942	1219	
23 Dec 21	943	1230	
24 Dec 21	935	1223	
25 Dec 21	938	1229	
26 Dec 21	937	1223	
27 Dec 21	967	1287	
28 Dec 21	936	1223	
29 Dec 21	936	1225	
30 Dec 21	937	1221	
31 Dec 21	941	1228	
<b>Average</b>	943	1237	-
<b>Min</b>	932	1219	-
<b>Max</b>	984	1316	-

**Notes:**

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.

**Table D5.3 Landfill Gas Flare Stack Emission Monitoring Results**

Parameters	Monitoring Results
NO <sub>2</sub>	<0.02 gs <sup>-1</sup>
CO	2.81 gs <sup>-1</sup>
SO <sub>2</sub>	0.11 gs <sup>-1</sup>
Benzene	9.9 x 10 <sup>-5</sup> gs <sup>-1</sup>
Vinyl chloride	<1.4 x 10 <sup>-5</sup> gs <sup>-1</sup>
Exhaust gas velocity	9.1 ms <sup>-1</sup>

**Table D5.4 Landfill Gas Flare Stack Continuous Monitoring Results**

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms <sup>-1</sup> ) (a)	Operation Status
<b>Flare 1 - F601</b>				
01 Dec 21	-	-		Standby
02 Dec 21	935	1115		In Operation
03 Dec 21	-	-		Standby
04 Dec 21	-	-		Standby
05 Dec 21	-	-		Standby
06 Dec 21	-	-		Standby
07 Dec 21	-	-		Standby
08 Dec 21	-	-		Standby
09 Dec 21	-	-		Standby
10 Dec 21	-	-		Standby
11 Dec 21	-	-		Standby
12 Dec 21	-	-		Standby
13 Dec 21	850	1053		In Operation
14 Dec 21	864	1047	9.1	In Operation
15 Dec 21	854	1049		In Operation
16 Dec 21	820	1025		In Operation
17 Dec 21	-	-		Standby
18 Dec 21	-	-		Standby
19 Dec 21	-	-		Standby
20 Dec 21	-	-		Standby
21 Dec 21	-	-		Standby
22 Dec 21	-	-		Standby
23 Dec 21	-	-		Standby
24 Dec 21	-	-		Standby
25 Dec 21	-	-		Standby
26 Dec 21	-	-		Standby
27 Dec 21	-	-		Standby
28 Dec 21	859	1064		In Operation
29 Dec 21	-	-		Standby
30 Dec 21	-	-		Standby
31 Dec 21	-	-		Standby
<b>Average</b>	864	1059	-	
<b>Min</b>	820	1025	-	
<b>Max</b>	935	1115	-	
<b>Flare 2 - F602</b>				
01 Dec 21	892	984		In Operation
02 Dec 21	893	1097		In Operation
03 Dec 21	890	1053		In Operation
04 Dec 21	869	1065		In Operation
05 Dec 21	878	1085		In Operation
06 Dec 21	-	-		Standby
07 Dec 21	-	-		Standby

Date	Gas Combustion Temperature (°C)	Exhaust temperature (K)	Exhaust gas velocity (ms <sup>-1</sup> ) (a)	Operation Status
08 Dec 21	849	1016		In Operation
09 Dec 21	-	-		Standby
10 Dec 21	-	-		Standby
11 Dec 21	854	1037		In Operation
12 Dec 21	820	1045		In Operation
13 Dec 21	875	1078		In Operation
14 Dec 21	825	1027		In Operation
15 Dec 21	832	1026		In Operation
16 Dec 21	837	1038	9.1	In Operation
17 Dec 21	834	1014		In Operation
18 Dec 21	836	1079		In Operation
19 Dec 21	841	1078		In Operation
20 Dec 21	882	1007		In Operation
21 Dec 21	828	1038		In Operation
22 Dec 21	847	990		In Operation
23 Dec 21	829	976		In Operation
24 Dec 21	-	-		Standby
25 Dec 21	874	959		In Operation
26 Dec 21	857	949		In Operation
27 Dec 21	832	1025		In Operation
28 Dec 21	-	-		Standby
29 Dec 21	894	1040		In Operation
30 Dec 21	823	1021		In Operation
31 Dec 21	832	944		In Operation
<b>Average</b>	853	1027	-	
<b>Min</b>	820	944	-	
<b>Max</b>	894	1097	-	

**Notes:**

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.

**Table D5.5 Landfill Gas Generator Stack Emission Monitoring Results**

Parameters	Monitoring Results
NO <sub>2</sub>	0.007 gs <sup>-1</sup>
CO	0.046 gs <sup>-1</sup>
SO <sub>2</sub>	0.074 gs <sup>-1</sup>
Benzene	4 x 10 <sup>-6</sup> gs <sup>-1</sup>
Vinyl chloride	<1.2 x 10 <sup>-6</sup> gs <sup>-1</sup>
Exhaust gas velocity	17.6 ms <sup>-1</sup>

**Table D5.6 Landfill Gas Generator Stack Continuous Monitoring Results**

Date	Exhaust temperature (K)	Exhaust gas velocity (ms <sup>-1</sup> ) (a)	Operation Status (Landfill Gas Generator in Operation)
01 Dec 21	837		In Operation (ENGB)
02 Dec 21	837		In Operation (ENGB)
03 Dec 21	838		In Operation (ENGB)
04 Dec 21	843		In Operation (ENGB)
05 Dec 21	841		In Operation (ENGB)
06 Dec 21	843		In Operation (ENGB)
07 Dec 21	843		In Operation (ENGB)
08 Dec 21	844		In Operation (ENGB)
09 Dec 21	843		In Operation (ENGB)
10 Dec 21	847		In Operation (ENGA)
11 Dec 21	847	17.6	In Operation (ENGB)
12 Dec 21	843		In Operation (ENGB)
13 Dec 21	-		Under maintenance
14 Dec 21	843		In Operation (ENGB)
15 Dec 21	845		In Operation (ENGB)
16 Dec 21	846		In Operation (ENGB)
17 Dec 21	748		In Operation (ENGA)
18 Dec 21	-		Under maintenance
19 Dec 21	-		Under maintenance
20 Dec 21	842		In Operation (ENGB)
21 Dec 21	844		In Operation (ENGB)
22 Dec 21	841		In Operation (ENGB)
23 Dec 21	841		In Operation (ENGB)
24 Dec 21	841		In Operation (ENGB)
25 Dec 21	840		In Operation (ENGB)
26 Dec 21	838		In Operation (ENGB)
27 Dec 21	838		In Operation (ENGB)
28 Dec 21	838		In Operation (ENGB)
29 Dec 21	840		In Operation (ENGB)
30 Dec 21	841		In Operation (ENGB)
31 Dec 21	840		In Operation (ENGB)
<b>Average</b>	838	-	
<b>Min</b>	748	-	
<b>Max</b>	847	-	

**Notes:**

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.