



Annual Performance Report 2024

Permit No. EPR/P0446/14A/V2

Full Circle Generation Ltd

other name of facility (if applicable)

operator name

Year: 2024

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Version: 1

Issue Date: 02.02.2025

Plant Description and Design

The plant is located in the Belfast Harbour Estate, adjacent sites are Spirit Aerospace and Calor Gas.

Plant Overview / Configuration:

- Three process streams incorporating 3 gasifiers/boilers, each 20.8MW net thermal
- Two steam turbines: 4.87 and 9.98 MWe
- Two identical package boiler islands feed one 10mw for private wire to Spirit
- A third identical package boiler island feeds second 5 mw turbine direct to the grid connection
- RDF crane is fully automated
- RDF NCV range: 11.5-16.5 MJ/kg
- A flue gas scrubbing system consists of SNCR (urea) and dry abatement (lime & PAC) with bag filters
- Design throughput of each line is 5.4 t/h of RDF. A total of 16.2 t/h for the plant as a whole.

Summary of Operational Processes and Procedures

The plant has a comprehensive set of Standard Operating Procedures (SOPs) covering site activities including:

- Waste reception, waste handling, waste quarantine, waste sampling
- Residue handling, storage and transport
- All process-related systems including for fuel metering, operation of gasifier, boiler, filtration, RDF and ash systems, water-steam cycle
- Functional safety test procedures
- Start up and shutdown procedures
- Maintenance procedures
- Building management procedures
- Statutory inspections, tests and checking.
- CEMS monitoring and calibration
- EH&S related procedures (accredited to ISO 45001)

The plant also has critical Emergency Operating Procedures (EOPs) covering:

- 01: Boiler Island Steam Leak
- 02: Emergency Evacuation (Fire, Syngas, Steam Leak)
- 03: Major Liquid Spill
- 04: Loss of Grid Connection
- 05: Failure of ESV (Potential to Overspeed)
- 06: Steam Turbine Fire
- 07: Steam Turbine Generator Oil Leak
- 08: Step-up Transformer Fire
- 09: Motoring on Generator
- 10: Fire Response
- 11: Syngas Escape
- 12: Steam Escape
- 13: Bag Filter Pod Fire
- 14: Emergency Diesel Generator Fuel Leak
- 15: Process Cyber Attack

SOPs are reviewed periodically.

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Version Control		
Section	Information	Date
All	First Issue	31/01/2025

Distribution		
Copy	Name, Role	No.
1	Robert Lynd, Plant Manager	1
2	Steven Castles, NIEA Case Officer	2

This report is required under the Industrial Emissions Directive's Article 55(2) requirements on reporting and public information on waste incineration plants and co-incineration plants, which require the operator to produce an annual report on the functioning and monitoring of the plant and make it available to the public.

Operational Data

Plant Size	144,000 tonnes pa	21 MWth	15 MWe
No. of combustion lines	3	No. of Turbines:	2

Waste types received	Unit	Q1	Q2	Q3	Q4	Year Total	%
Household / Local Authority	tonnes					-	-
Commercial & Industrial						-	-
Hazardous						-	-
Clinical						-	-
Waste wood (biomass)						-	-
Refuse Derived Fuel * - H'hold/LA		35,742	23,970	34,590	30,194	124,496	100.0%
Refuse Derived Fuel * - C&I						-	-
Other [Please specify]						-	-
Other [Please specify]						-	-
Other [Please specify]						-	-
Total waste received		35,742	23,970	34,590	30,194	124,496	
Rejected Waste						-	-
Unprocessed waste transferred out			26			26	0.0%
Total waste combusted **		35,742	23,996	34,590	30,194	124,522	

Energy Usage / Export	Unit	Q1	Q2	Q3	Q4	Year Total	KWh/te
Power Generated	MWh	23,812	16,579	24,297	19,991	84,679	680
Power Exported		18,757	13,026	18,816	15,682	66,281	532
Power Used on site						-	-
Power Imported		7	350	9	163	530	4
Parasitic Load	%	21.3%	23.1%	22.6%	22.2%	22.2%	
Thermal Energy Produced ***	MWh					-	-
Thermal Energy Exported ***	MWh					-	-
R1 value (if applicable)	R1						

Waste Disposal & Recovery	Unit	Q1	Q2	Q3	Q4	Year Total	% inputs
APC Residues - produced	tonnes	1,694	1,075	1,550	1,193	5,512	4.4%
IBA - produced		3,768	2,485	3,694	3,255	13,202	10.6%
Metals recycling						-	-
Other		74	56	23	123	275	0.2%
Other		288	171	198	232	889	0.7%
Other		-	-	-	-	-	-

Raw Material Usage	Unit	Q1	Q2	Q3	Q4	Year Total	kg or Ltr /te
Mains Water	ltrs	#####	#####	#####	#####	42,809,000	343.79
Other Water	ltrs					-	-
Ammonia	kgs					-	-
Urea	kgs	52	25	23	16	116	0.00
Activated Carbon	kgs	41	30	52	37	160	0.00
Lime / hydrated lime	kgs	691	417	572	417	2,097	0.02
Fuel oil	ltrs	1,551	7,336	1,563	2,353	12,803	0.10
Gas	cuf	37,160	45,365	2,614	190,689	275,828	
Other						-	

Summary	Line/Unit	Q1	Q2	Q3	Q4	Year Total	
	1	2,156	1,452	2,198	1,772	7,578	86.5%
Availability of waste combustion by	2	2,009	1,447	2,188	1,896	7,539	86.1%
line, hrs ****	3	2,148	1,450	2,197	1,848	7,642	87.2%
	4					-	0.0%
	5					-	0.0%
Overall Availability, mean avg. of all lines, hrs						4,552	52.0%
Hours of turbine operations, hrs	1	2,184	1,424	2,201	1,808	7,617	87.0%
Hours of turbine operations, hrs	2	2,163	1,429	2,201	1,973	7,766	88.7%
Hours of heat / steam export						-	n/a
Net Calorific Value of waste	MJ/kg	13	15	20	14		
Abnormal Events	qty.	-	-	-	-	-	no
Abnormal operation	hours	3	-	2	3	8	0.1%
Permit Breaches	qty.	15	3	-	-	18	yes

Summary of Plant Operations and Maintenance during the reporting year

There were two planned outages in the period (April and Oct 2024) for maintenance, projects, cleaning and statutory inspection.

The plant has been running extensive trials on dioxins and furans to establish trends and identify a programme of rectifications to mitigate against exceedances. Subsequently, schedule 1 notifications have been issued where results have been above the permitted limit.

On 08 October 2024, Full Circle Generation received Q42-8 Enforcement Notice for contravention of the following permit conditions:

2.2.1.2 'The limits for emissions into air for the parameter(s) and emission point(s) set out in Table 2.2.1.2 and 2.2.1.3 shall not be exceeded'.

FCG is in the process of closing the enforcement action plan.

Summary of Residue Handling for the reporting year

There are 4 residue sources at the plant:

- A non-hazardous Incineration Bottom Ash (IBA) from the grate.
- A hazardous Undergrate and Combustor ash (UGC)
- A hazardous Boiler Ash
- A hazardous APCr filter ash

Tonnages are provided in Operational Data tab.

IBA is collected in a common silo (from all three boilers), and discharged on trailers (covered) and taken to Riverridge site at Craigmore where it is disposed of to landfill or washed and recovered for use as an aggregate.

UGC is collected in bags (separately from each stream), transported off-site and disposed of to landfill at Augean.

Boiler ash is collected in bags (separately from each stream), transported off-site and disposed of to landfill at OCO's Wingmoor Farm site near Avonmouth.

APCr filter ash is collected in two silos (from all three boilers), discharged in tankers, transported to OCO's Leeds facility and recovered for use in construction products.

2024 Annual Reporting Performance Form 1

Permit No. EPR/P0446/14A/V2

Facility: Full Circle Generation Ltd

Operator: operator name

Form: Performance 1

Reporting Period from: 01 January 2024 to: 31 December 2024

2024 Annual Reporting of Waste Disposal and Recovery

Waste Description	Disposal Route(s)	Disposal Tonnes	Recovery Tonnes	% / tonne of waste incinerated
1) Hazardous Wastes				
APC Residues			5,511.8	4.4%
IBA				-
UGC	Augean	886.3		0.7%
Boiler Ash	OCO	275.4		0.2%
Total Hazardous Waste		1,161.6	5,511.8	5.4%
2) Non-Hazardous Wastes				
IBA	RR	13,202.2		10.6%
Ferrous Metal				-
Process Water	Trade Effluent	28,539.3		22.9%
				-
				-
Total Non-Hazardous Waste		41,741.5	0.0	33.5%
TOTAL WASTE		42,903.1	5,511.8	38.9%

Operator's comments :

2024 Annual Reporting of Water and Other Raw Material Usage

Raw Material	Usage	Unit	Specific Usage	Unit
Mains Water	42809	m ³	0.34	m ³ /te
Total Water	42809	m ³	0.34	m ³ /te
Urea / Ammonia	0	kg	-	kg/te
Activated Carbon	159.65	kg	0.00	kg/te
Lime / hydrated lime / Sodium Bicarb.	2097	kg	0.02	kg/te

Operator's comments :

2024 Annual Reporting of other performance indicators

Parameter	Results by Line						Turbine 1	Turbine 2
	A1	A2	A3	A4	A5			
Operating hours for the year, hours	7578	7538.9	7642.2				7617	7766
Number of periods of abnormal operation, qty.	2	4	2					
Cumulative hours of abnormal operation for this year, hours	4.5	5.5	3.5					

Operator's comments :

Signed: _____ *W Macartney* _____

Date: 02/02/2025

2024 Annual Reporting of Energy Usage/Export

Permit No. EPR/P0446/14A/V2

Operator: operator name

Facility: Full Circle Generation Ltd

Form: Energy 1

Reporting Period from: 01 January 2024 to: 31 December 2024

Energy Source	Energy Usage	Unit	Specific Usage (KWh/tonne incinerated)
Electricity Produced	84,679	MWh	680
Electricity Imported	529.658	MWh	4
Electricity Exported	66,281	MWh	532
Gas Oil		tonnes	
Steam/hot water exported	0	GWh	-

Operator's comments :

Signed: CS Macartney

Date: _____

Summary of Permit Compliance

Compliance with permit limits for continuously monitored pollutants

The plant met its emission limits as shown in the table below:

Substance	Percentage time compliant during operation ^{Note 1}	
	97% Half-hourly limit	Daily limit
Particulates	100.00%	100.00%
Oxides of nitrogen	100.00%	100.00%
Sulphur dioxide	100.00%	100.00%
Carbon monoxide	100% Half hourly limit 99.99 %	100.00%
Total organic carbon	100.00%	100.00%
Hydrogen chloride	100.00%	100.00%
Hydrogen fluoride	99.99%	100.00%
	99.97%	100.00%

Summary of non-compliances under the permit ^{Note 2}			
Date	Summary of non-compliance ^{Note 3}	Reason	Measures taken to prevent reoccurrence
17/01/2024	Primary CEMForm showing an intermittent warning light, dust readings for the period typical of stable operation but daily CEMS report, a period of half-hourly data was invalid	Probe fault	SICK and Envirosoft notified, probe checked and refitted, by SICK
03/04/2024	Release Point A1(3): Loss of FID on ST3, Envirosoft and SICK dialled in remotely and switched redundant analyser to ST3.	Programming fault prevented analyser from switching over	Duty analyser returned to SICK Germany
26/01/2024	D&F ST1	Route cause unknown	Dioxins trials and process parameter adjustments
26/01/2024	D&F ST3	Route cause unknown	Dioxins trials and process parameter adjustments
30/01/2024	D&F ST1	Route cause unknown	Dioxins trials and process parameter adjustments
27/01/2024	D&F ST2	Route cause unknown	Dioxins trials and process parameter adjustments

31/01/2024	D&F ST1	Route cause unknown	Dioxins trials and process parameter adjustments
24/01/2024	D&F ST3	Route cause unknown	Dioxins trials and process parameter adjustments
24/01/2024	D&F ST3	Route cause unknown	Dioxins trials and process parameter adjustments
06/03/2024	D&F ST2	Route cause unknown	Dioxins trials and process parameter adjustments
28/03/2024	D&F ST3	Route cause unknown	Dioxins trials and process parameter adjustments
21/05/2024	D&F ST1	Route cause unknown	Dioxins trials and process parameter adjustments
29/05/2024	D&F ST2	Route cause unknown	Enforcement notice issued - Dioxins abatement system to be fitted
23/05/2024	D&F ST3	Route cause unknown	Enforcement notice issued - Dioxins abatement system to be fitted

Summary of any complaints received and actions to taken to resolve them.			
Date	Summary of complaint [including Line/Reference]	Reason (including whether substantiated by the operator or the EA)	Measures taken to prevent reoccurrence
None			

Summary of Plant Improvements

Summary of any efficiency improvements that have been completed within the year.

Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.

Furnace

Upgrades

- Grate shoes upgraded, reducing motor utilisation on the undergrate.
- Slide valves installed, optimising combustion control and gasification while reducing tramp air.
- Natural gas consumption per MWh net exported significantly reduced, reflecting improvements in availability and reliability:

o2020/21: 18.7 m³/MWh net.

o2023/24: 4.4 m³/MWh net.

Planned Improvements

- Further revision of grate shoe design, with trials scheduled for May 2025, aiming to optimise undergrate ash load.
- Investigations into optimising gasification air pre-heating temperatures using gas air heaters are ongoing.

Expected Impact

- Enhanced combustion efficiency, reduced tramp air, and minimised undergrate ash load.

Steam System and Related Components

Current Initiatives

- Feasibility study for a condensing economiser to improve plant efficiency was completed 2024.
- A new 10 MW turbine rotor is under consideration to improve gross electrical output, with OEM engagement for design requirements. Preparatory work, including 3D scanning, is planned during the May 2025 turbine outage.

Planned Milestones

- Final installation of the turbine rotor is targeted for May 2026, with an anticipated improvement in gross electrical output of 6–8%.

Heat and Electrical Efficiency of Ancillary Systems

Completed Upgrades

- 75 kW direct online base load compressor replaced with a VSD unit to manage peak air demand more efficiently.
- Steam soot blowers replaced with SPGs, significantly reducing ancillary steam consumption.

Planned Improvements

- Low-drag filter bags to be installed to improve emissions performance and efficiency by reducing Delta P over the bag filter cell plate (~1% improvement).
- Currently investigating tramp air around boiler ash system with view to reducing tramp air, improve ash capture and minimise energy losses.

Expected Impact

- Reduced parasitic loads and improved overall operational efficiency.
- ~1% improvement in energy efficiency.

Implementation Plan

May 2025: Filter Bag Replacement

- Installation will contribute approximately 1% improvement in energy efficiency.

May 2026 Turbine Rotor Upgrade

- Anticipated gains include a 6–8% improvement in gross electrical output.

Additional Efficiency Projects

- Gas air heater optimisation and boiler ash system modifications are currently ongoing.

Summary of any changes to the plant or operating techniques which required a variation to the permit and a summary of the resulting environmental impact.

None

Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.

None

Details of Public & Stakeholder Liaison

Summary of events held during the reporting year.	
Date	Description
None	

List of events planned for next year	
Date	Description
None	

If you wish to be involved in the public liaison programme, please contact _____

on dioxide emissions and biogenic content of waste i

on dioxide emissions (all types of plant)

Annual mass of carbon dioxide released	tonnes
Annual mass of carbon dioxide released per tonne of waste burned	t CO ₂ / t waste
Annual mass of carbon dioxide released per MWh of energy exported	t CO ₂ / MWh export
Description of how annual carbon dioxide mass emission has been calculated. See Note 1	

us oxide emissions (only plants which use ammonia or urea to at

Annual mass emissions of nitrous oxide	tonnes N ₂ O
Description of how annual nitrous oxide mass emission has been calculated See Note 2	
l annual carbon dioxide + nitrous oxide sions. Note 3.	tonnes CO ₂ e

enic CO2 emissions (See Note 4)

Percentage of total carbon dioxide emissions arising from biogenic waste	%
No. of measurements undertaken	Number
Description of how percentage biogenic carbon dioxide emissions have been measured or calculated. See Note 5	The measured (via value has been ass fraction of the

enic fraction of waste feedstock (See Note 4)

Yearly average biogenic percentage of the waste by net calorific value (NCV)	%
--	---

Description of how biogenic percentage (by NCV) has been calculated or estimated. See Note 6	Data from monthly waste sampling (of our 3 streams) has
Yearly average biogenic percentage of the waste by mass	%
If waste sampling undertaken, no. of samples used to ascertain average biogenic percentages above	Number
Description of how biogenic percentage (by mass) has been calculated or estimated. See Note 7	Data from monthly waste sampling (of our 3 streams) has percentage (using E

Comments:

tion Ltd

inputs

140,225
1.13
2.12
Calibrated CO2 CEMS

date NOx emissions)

0.08
Calibrated N2O CEMS
140,224.61

13.8%
36 lab samples
sampling) biogenic fraction by net calorific umed to be the same as the biogenic CO2 total CO2 emissions from the plant.

13.8%

aste sampling (1 monthly sample from each
been used to calculate the average biogenic
percentage by NCV.

52.7%

36

aste sampling (1 monthly sample from each
been used to calculate the average biogenic
biomass Energy Content of Feedstock (dry
basis).

Residue Quality Monitoring Requirements

Summary of monitoring undertaken and compliance
IBA ash (non-Haz) Quality monitoring: 2 monthly lab samples
UGC and Boiler ash (Haz) Quality monitoring: monthly lab samples.
APCr ash (Haz). Quality monitoring: monthly lab samples.

Commentary on any specific events	
Date & Event	Description

Residue Quality Monitoring Results			
Parameter (unit)	Limit*	Normal Operation	
		Bottom ash	APC Residues
Loss on Ignition (average %)	<5%	3.77	
Total Organic Carbon (average %)	<3%	0.94	
No. of Assessments Undertaken	---	20	11
No. of Hazardous Results	---		

* The permit will specify a limit of either 5% loss on ignition or 3% total organic carbon. If both are measured anyway, please enter the results here, even where the limit does not apply.

Comments :

Emissions to Water

Summary of monitoring undertaken and compliance	
Monthly sampling by NIW and quarterly sampling by McQuillans	

Commentary on any specific events	
Date & Event	Description

Emissions to Sewer

Parameter	Monitoring Frequency	Limit	Target	Max.	Average
COD (Total)	Quarterly	500 mg/l	14.5	25.0	22.4
Suspended Solids	Quarterly	500 mg/l	5.0	19.0	9.3
pH	Quarterly	5 to 10	7.4	7.9	7.6
Ammonia	Quarterly	100 mg/l	0.1	0.3	0.2
Temperature (Deg C)	Quarterly	<43oC	17.4	21.5	19.5

Emissions to Air (periodically monitored)**Summary of monitoring undertaken, standards used and compliance****Results of emissions to air that are periodically monitored - oxygen reference 11%**

Substance	Ref. Period	Emission Limit Value	Average		
			A1	A2	A3
Hydrogen fluoride	1 hr	1 mg/m ³	0.030	0.030	0.050
Cd and Tl and their compounds	0.5-8hrs	0.02 mg/m ³	0.001	0.002	0.003
Hg and its compounds	0.5-8hrs	0.02 mg/m ³	0.001	0.001	0.003
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds	0.5-8hrs	0.3 mg/m ³	0.015	0.017	0.011
Dioxins & Furans (I-TEQ)	6-8hrs	0.06 ng/m ³	0.317	0.170	0.160
PCBs (WHO-TEQ Humans / Mammals)	6-8hrs	None set ng/m ³	0.300	0.157	0.150
PCBs (WHO-TEQ Fish)	6-8hrs	None set ng/m ³	0.304	0.159	0.150
PCBs (WHO-TEQ Birds)	6-8hrs	None set ng/m ³	0.326	0.204	0.181
Dioxins & Furans (WHO-TEQ Humans / Mammals)	6-8hrs	None set ng/m ³	0.300	0.157	0.150
Dioxins & Furans (WHO-TEQ Fish)	6-8hrs	None set ng/m ³	0.304	0.159	0.150
Dioxins & Furans (WHO-TEQ Birds)	6-8hrs	None set ng/m ³	0.367	0.204	0.181
Anthanthrene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(a)anthracene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(a)pyrene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(b)fluoranthene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(b)naphtho(2,1-d) thiophene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(c)phenanthrene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(ghi)perylene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Benzo(k)fluoranthene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Cholanthrene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Chrysene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Cyclopenta(cd)pyrene	6-8hrs	None set µg/m ³	0.005	0.010	0.005
Dibenzo(ai)pyrene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Dibenzo(ah)anthracene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Fluoranthene	6-8hrs	None set µg/m ³	0.020	0.100	0.030
Indeno(123-cd) pyrene	6-8hrs	None set µg/m ³	0.005	0.006	0.005
Naphthalene	6-8hrs	None set µg/m ³	0.340	0.060	0.140

Comments :

The intention was to test PAH's in the first and third round of compliance r

Emissions to Air (continuously monitored)

Summary of monitoring undertaken, standards used and compliance												

Results of emissions to air that are continuously monitored (maximum and average values for each line) - oxygen reference 11%												
Substance	Reference Period	Emission Limit Value	A1		A2		A3		A4		A5	
			Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.
Oxides of nitrogen	Daily mean	170 mg/m ³	139.7	99.3	151.4	115.9	153.6	99.6				
	100 ½ hourly mean	400 mg/m ³	199.9	99.3	250.2	115.9	194.7	99.7				
Particulates	Daily mean	5 mg/m ³	0.2	0.0	0.9	0.1	0.7	0.0				
	100 ½ hourly mean	30 mg/m ³	0.8	0.1	1.5	0.1	1.2	0.0				
Total Organic Carbon	Daily mean	10 mg/m ³	1.4	0.2	1.2	0.2	1.4	0.3				
	100 ½ hourly mean	20 mg/m ³	16.3	0.3	21.6	0.2	13.3	0.3				
Hydrogen chloride	Daily mean	8 mg/m ³	7.4	6.3	7.6	6.4	8.1	6.4				
	100 ½ hourly mean	60 mg/m ³	35.7	6.3	22.5	6.5	27.7	6.4				
Sulphur dioxide	Daily mean	40 mg/m ³	11.3	3.0	3.9	0.2	13.8	0.2				
	100 ½ hourly mean	200 mg/m ³	172.5	3.0	180.9	0.2	595.7	0.3				
Carbon monoxide	Daily mean	50 mg/m ³	6.2	2.2	17.6	3.0	6.2	2.5				
	95%ile 10-min avg *	150 mg/m ³ *	32.1	2.3	29.9	3.1	29.4	2.5				
Ammonia	Daily mean	15 mg/m ³	1.0	0.2	0.8	0.1	0.3	0.2				
* = delete as appropriate, depending on whether your plant has half-hourly or 10-min CO ELVs												

Comments :

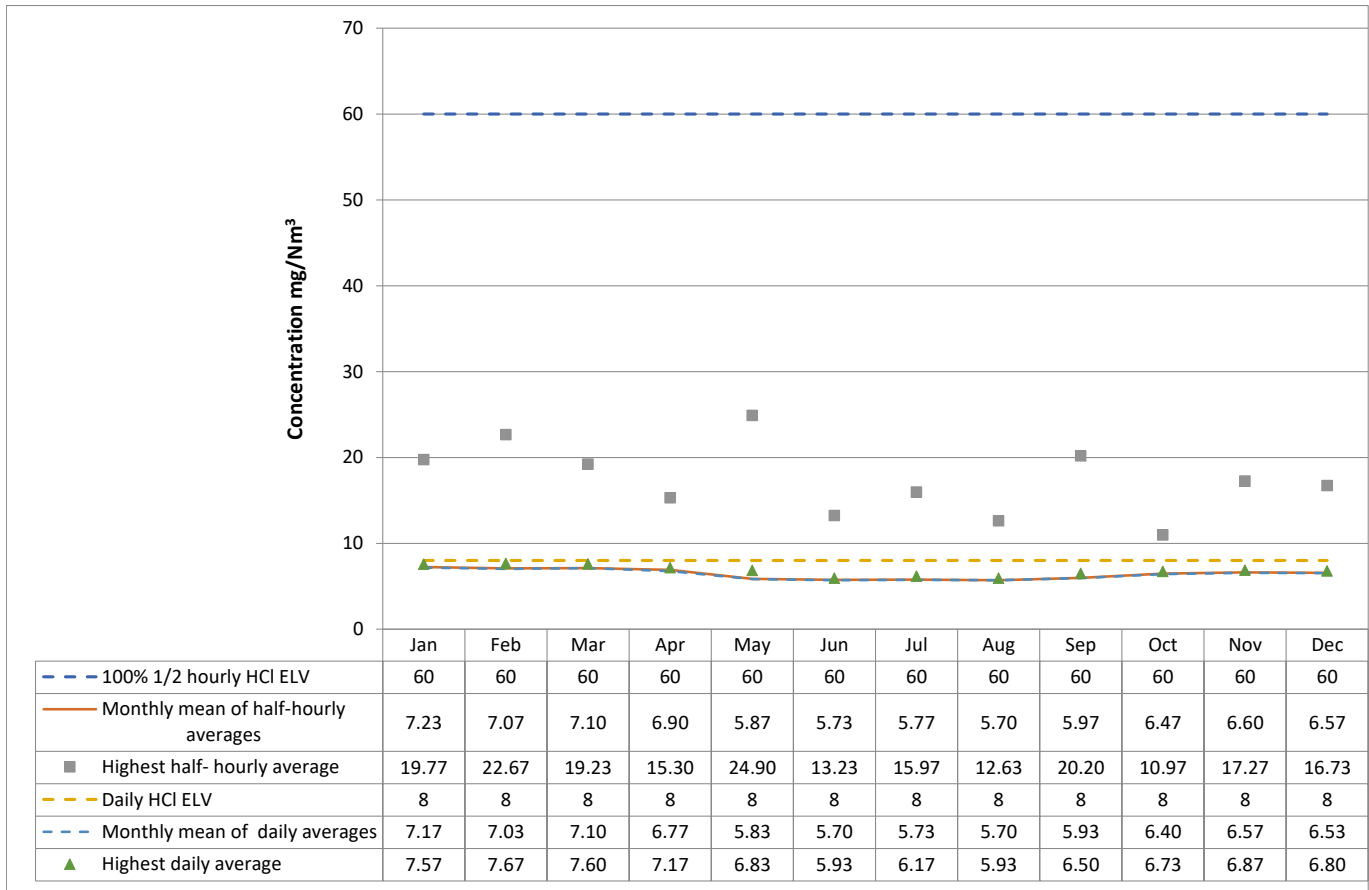
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Monitoring of Hydrogen Chloride emissions

Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	100% 1/2 hourly HCl ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily HCl ELV	Monthly mean of daily averages	Highest daily average
Jan	60	7.23	19.77	8	7.17	7.57
Feb	60	7.07	22.67	8	7.03	7.67
Mar	60	7.10	19.23	8	7.10	7.60
Apr	60	6.90	15.30	8	6.77	7.17
May	60	5.87	24.90	8	5.83	6.83
Jun	60	5.73	13.23	8	5.70	5.93
Jul	60	5.77	15.97	8	5.73	6.17
Aug	60	5.70	12.63	8	5.70	5.93
Sep	60	5.97	20.20	8	5.93	6.50
Oct	60	6.47	10.97	8	6.40	6.73
Nov	60	6.60	17.27	8	6.57	6.87
Dec	60	6.57	16.73	8	6.53	6.80



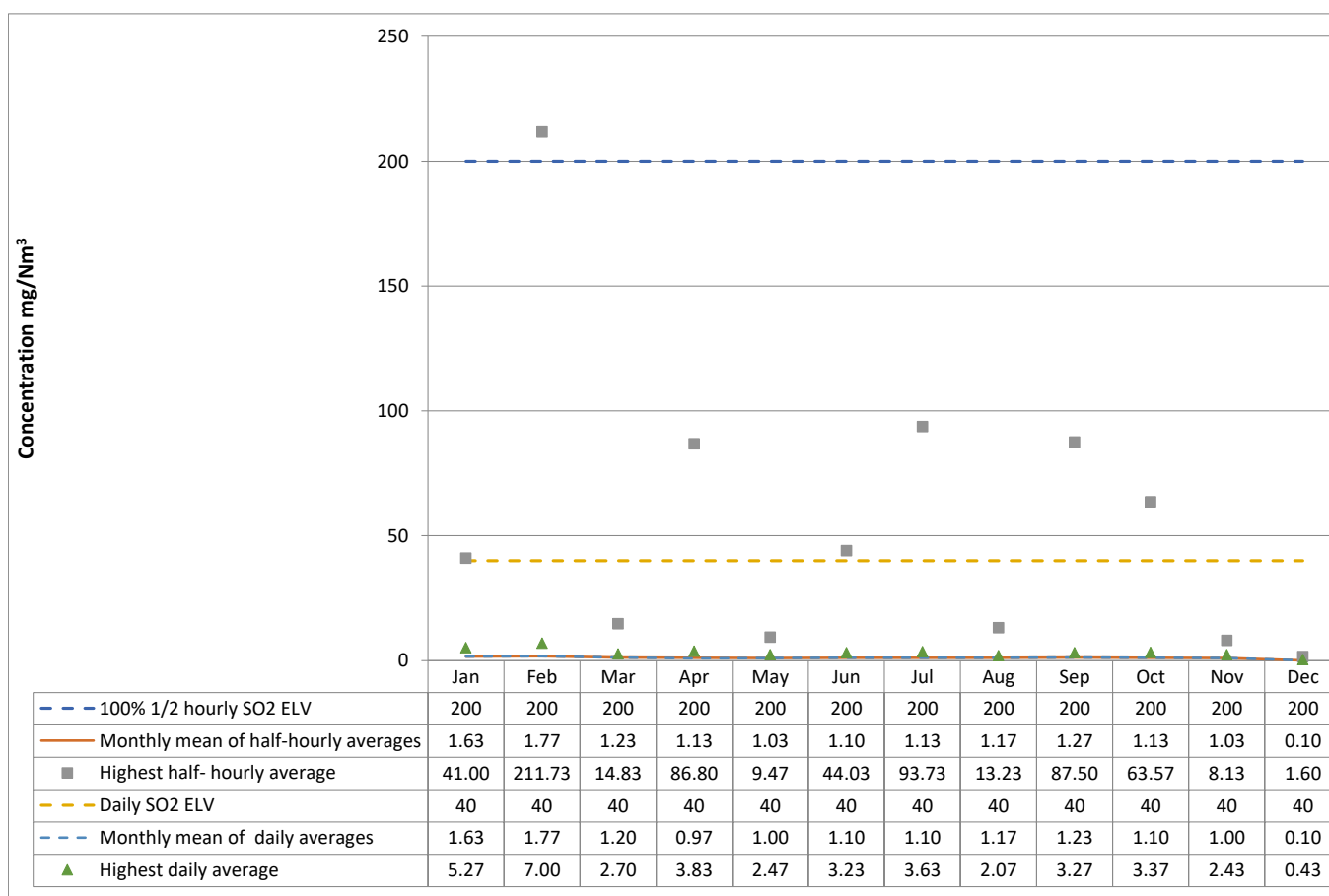
Comments :

Monitoring of Sulphur dioxide emissions

Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	100% 1/2 hourly SO2 ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily SO2 ELV	Monthly mean of daily averages	Highest daily average
Jan	200	1.63	41.00	40	1.63	5.27
Feb	200	1.77	211.73	40	1.77	7.00
Mar	200	1.23	14.83	40	1.20	2.70
Apr	200	1.13	86.80	40	0.97	3.83
May	200	1.03	9.47	40	1.00	2.47
Jun	200	1.10	44.03	40	1.10	3.23
Jul	200	1.13	93.73	40	1.10	3.63
Aug	200	1.17	13.23	40	1.17	2.07
Sep	200	1.27	87.50	40	1.23	3.27
Oct	200	1.13	63.57	40	1.10	3.37
Nov	200	1.03	8.13	40	1.00	2.43
Dec	200	0.10	1.60	40	0.10	0.43



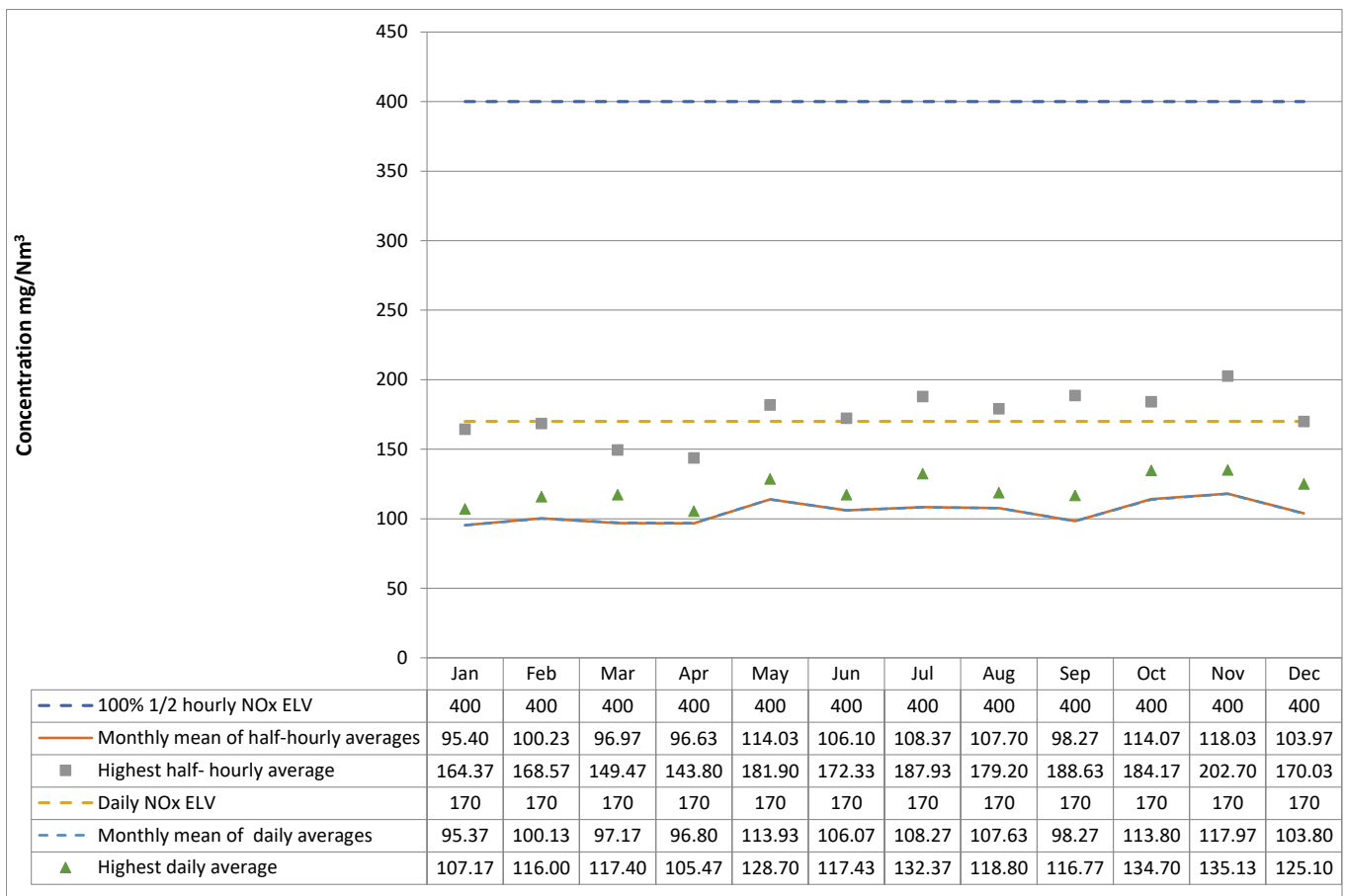
Comments :

Monitoring of Oxides of Nitrogen emissions

Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	100% 1/2 hourly NOx ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily NOx ELV	Monthly mean of daily averages	Highest daily average
Jan	400	95.40	164.37	170	95.37	107.17
Feb	400	100.23	168.57	170	100.13	116.00
Mar	400	96.97	149.47	170	97.17	117.40
Apr	400	96.63	143.80	170	96.80	105.47
May	400	114.03	181.90	170	113.93	128.70
Jun	400	106.10	172.33	170	106.07	117.43
Jul	400	108.37	187.93	170	108.27	132.37
Aug	400	107.70	179.20	170	107.63	118.80
Sep	400	98.27	188.63	170	98.27	116.77
Oct	400	114.07	184.17	170	113.80	134.70
Nov	400	118.03	202.70	170	117.97	135.13
Dec	400	103.97	170.03	170	103.80	125.10

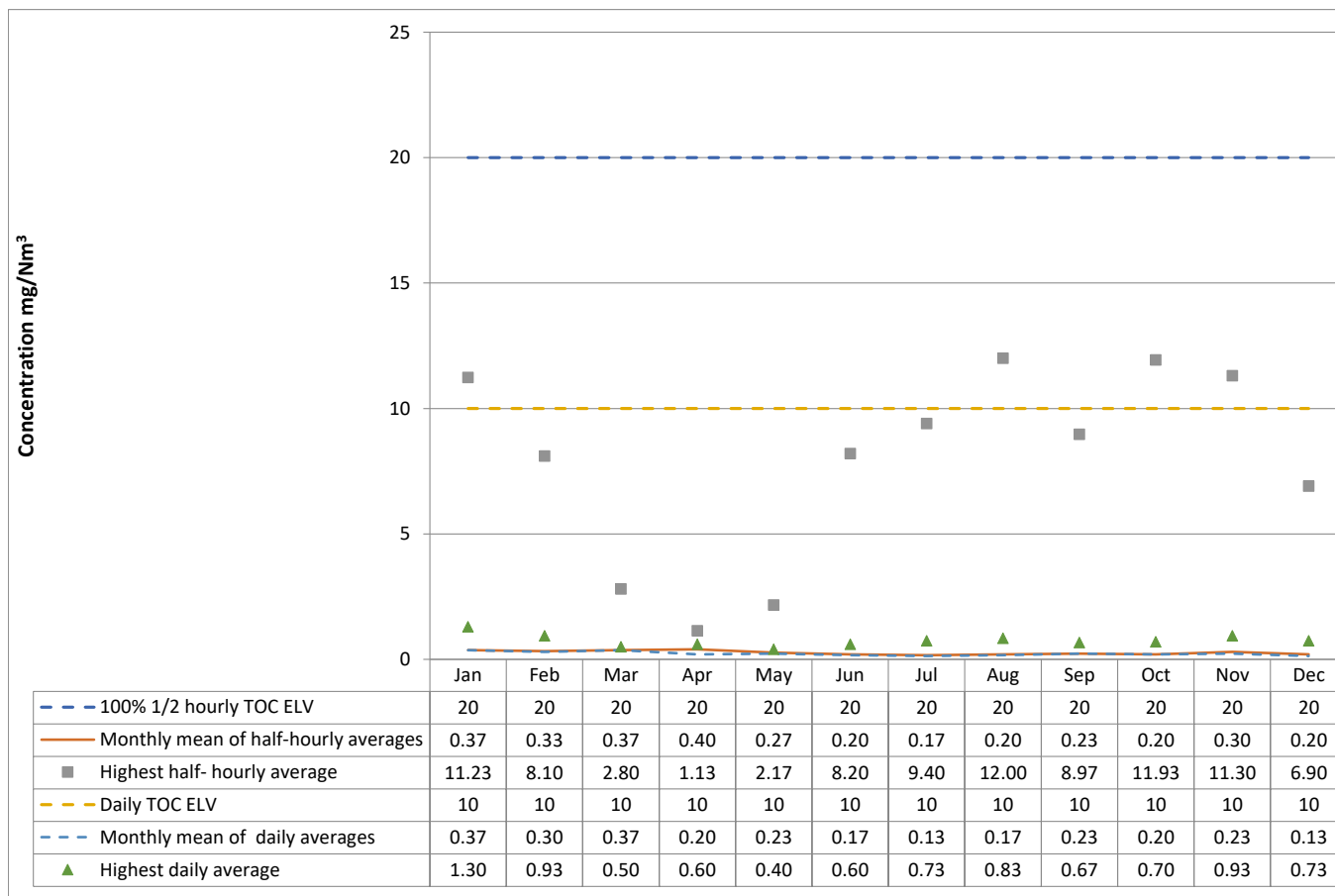


Comments :

Monitoring of Total organic carbon emissions Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	100% 1/2 hourly TOC ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily TOC ELV	Monthly mean of daily averages	Highest daily average
Jan	20	0.37	11.23	10	0.37	1.30
Feb	20	0.33	8.10	10	0.30	0.93
Mar	20	0.37	2.80	10	0.37	0.50
Apr	20	0.40	1.13	10	0.20	0.60
May	20	0.27	2.17	10	0.23	0.40
Jun	20	0.20	8.20	10	0.17	0.60
Jul	20	0.17	9.40	10	0.13	0.73
Aug	20	0.20	12.00	10	0.17	0.83
Sep	20	0.23	8.97	10	0.23	0.67
Oct	20	0.20	11.93	10	0.20	0.70
Nov	20	0.30	11.30	10	0.23	0.93
Dec	20	0.20	6.90	10	0.13	0.73



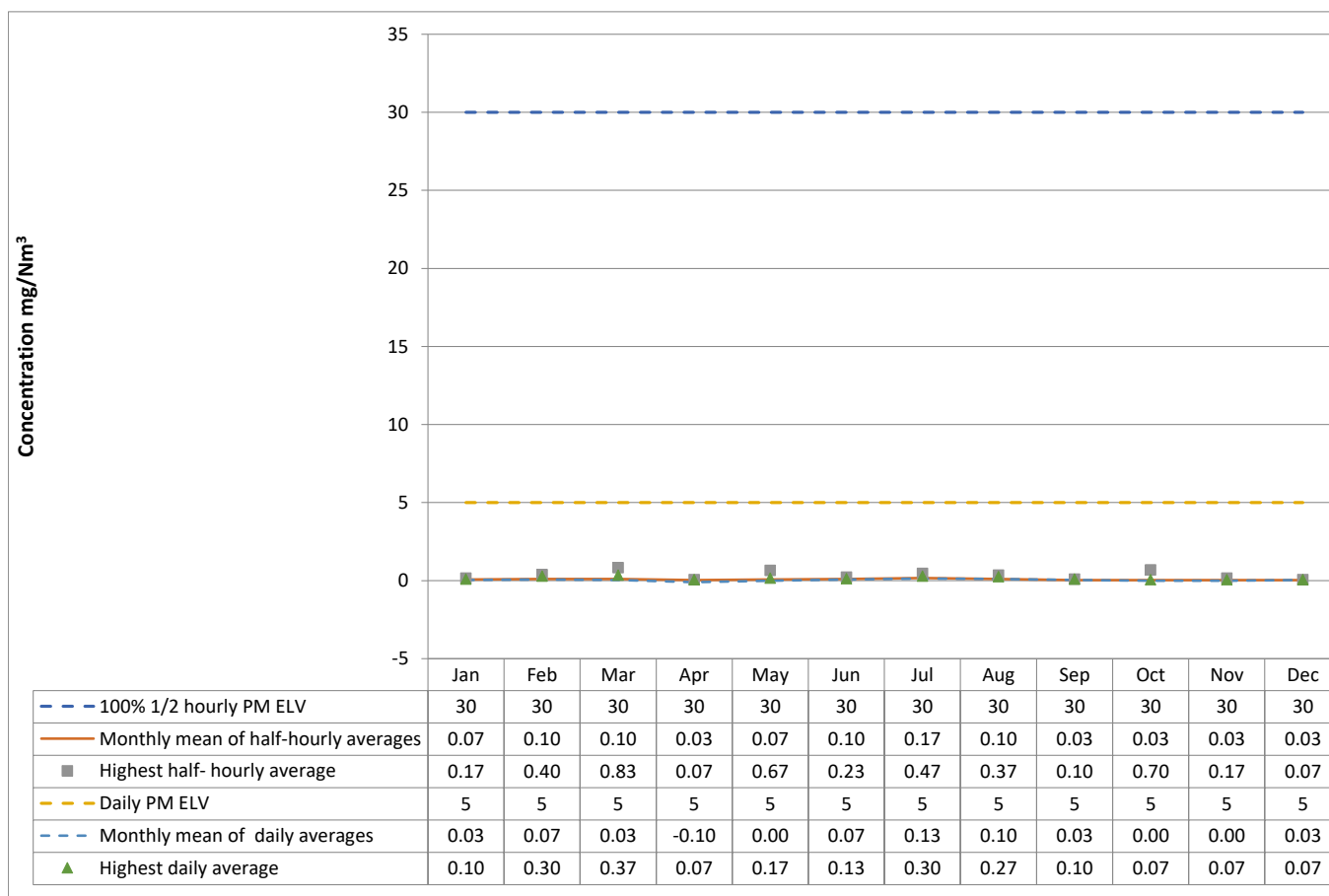
Comments :

Monitoring of Particulate matter emissions

Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	100% 1/2 hourly PM ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily PM ELV	Monthly mean of daily averages	Highest daily average
Jan	30	0.07	0.17	5	0.03	0.10
Feb	30	0.10	0.40	5	0.07	0.30
Mar	30	0.10	0.83	5	0.03	0.37
Apr	30	0.03	0.07	5	-0.10	0.07
May	30	0.07	0.67	5	0.00	0.17
Jun	30	0.10	0.23	5	0.07	0.13
Jul	30	0.17	0.47	5	0.13	0.30
Aug	30	0.10	0.37	5	0.10	0.27
Sep	30	0.03	0.10	5	0.03	0.10
Oct	30	0.03	0.70	5	0.00	0.07
Nov	30	0.03	0.17	5	0.00	0.07
Dec	30	0.03	0.07	5	0.03	0.07



Comments :

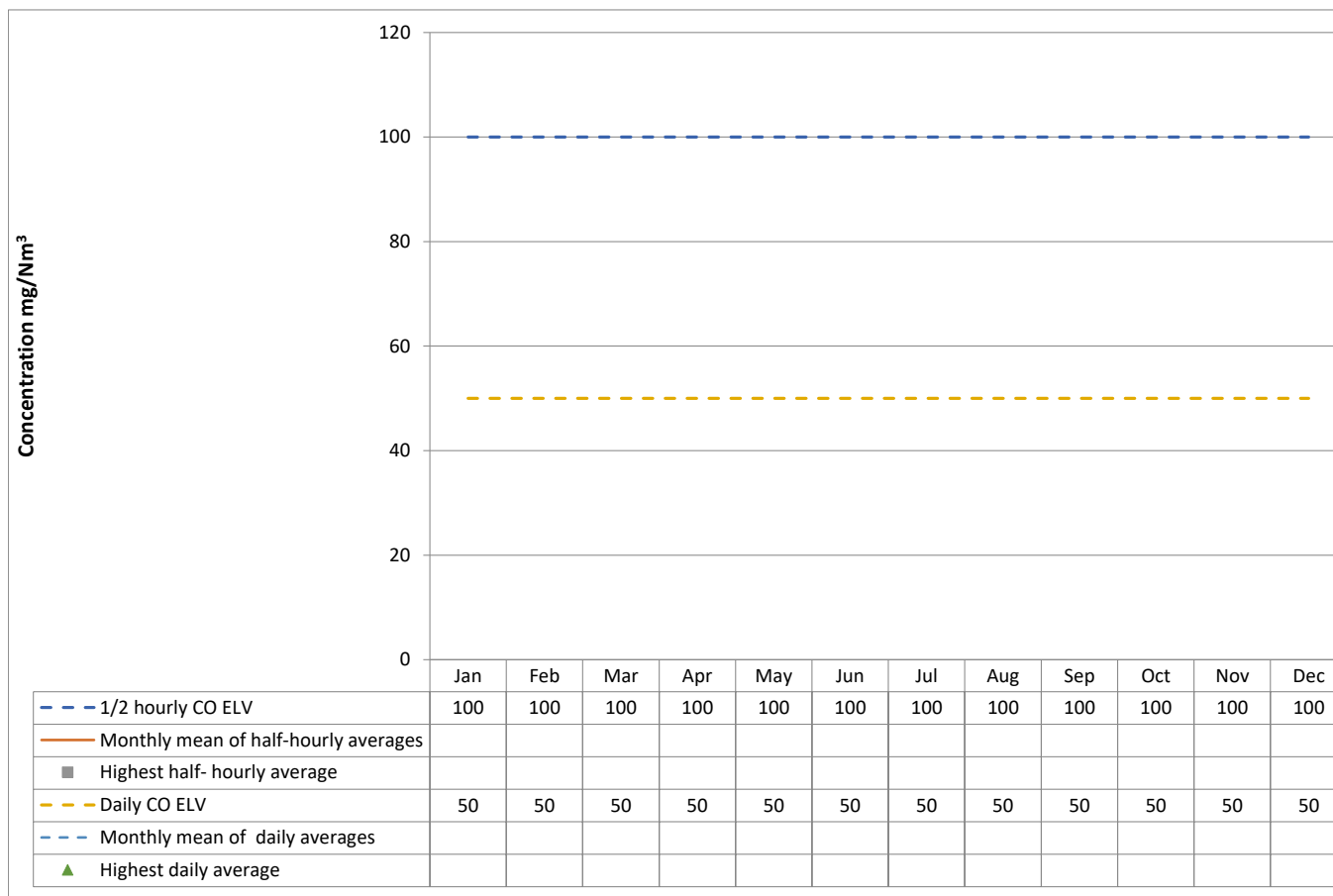
Monitoring of Carbon Monoxide (half hourly)

Whole Installation

See Notes in Cell Q3

Please complete this tab for your plant if you have 1/2 hourly CO ELVs; otherwise, leave it blank and complete the CO 95% 10 min tab

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	1/2 hourly CO ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily CO ELV	Monthly mean of daily averages	Highest daily average
Jan	100			50		
Feb	100			50		
Mar	100			50		
Apr	100			50		
May	100			50		
Jun	100			50		
Jul	100			50		
Aug	100			50		
Sep	100			50		
Oct	100			50		
Nov	100			50		
Dec	100			50		



Comments :

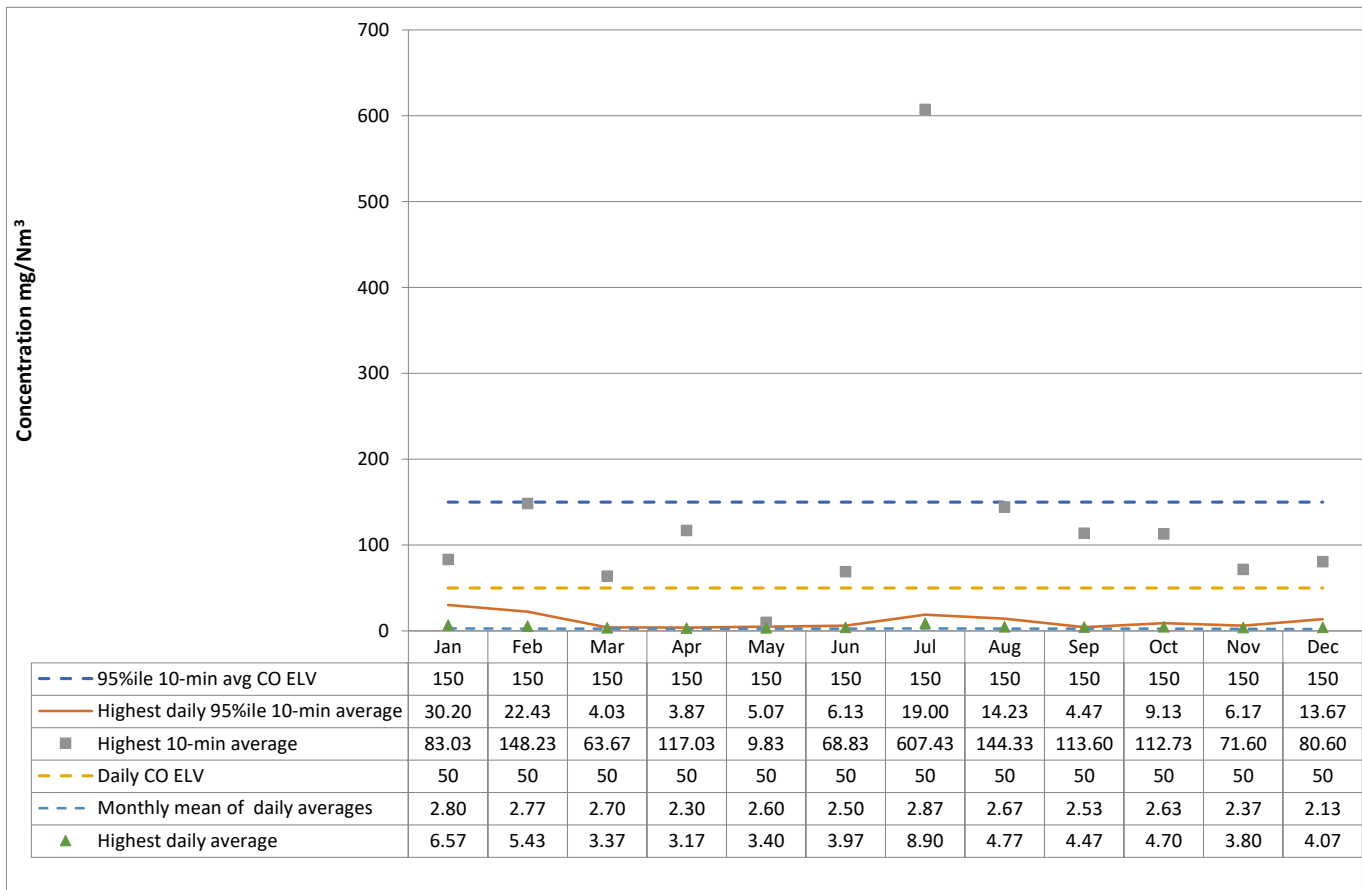
Monitoring of Carbon Monoxide (10-minute avg)

Whole Installation

See Notes in Cell S3

Please complete this tab for your plant if you have 10-minute average CO ELVs; otherwise, leave it blank and complete the CO 0.5 hourly tab

2024	10-minute Reference Periods				Daily Reference Periods		
mg/Nm ³	95%ile 10-min avg CO ELV	Highest daily 95%ile 10-min average	Monthly mean of 10-min averages	Highest 10-min average	Daily CO ELV	Monthly mean of daily averages	Highest daily average
Jan	150	30.20	2.80	83.03	50	2.80	6.57
Feb	150	22.43	2.87	148.23	50	2.77	5.43
Mar	150	4.03	2.73	63.67	50	2.70	3.37
Apr	150	3.87	2.43	117.03	50	2.30	3.17
May	150	5.07	2.60	9.83	50	2.60	3.40
Jun	150	6.13	2.53	68.83	50	2.50	3.97
Jul	150	19.00	2.87	607.43	50	2.87	8.90
Aug	150	14.23	2.70	144.33	50	2.67	4.77
Sep	150	4.47	2.57	113.60	50	2.53	4.47
Oct	150	9.13	2.67	112.73	50	2.63	4.70
Nov	150	6.17	2.40	71.60	50	2.37	3.80
Dec	150	13.67	2.17	80.60	50	2.13	4.07



Comments :

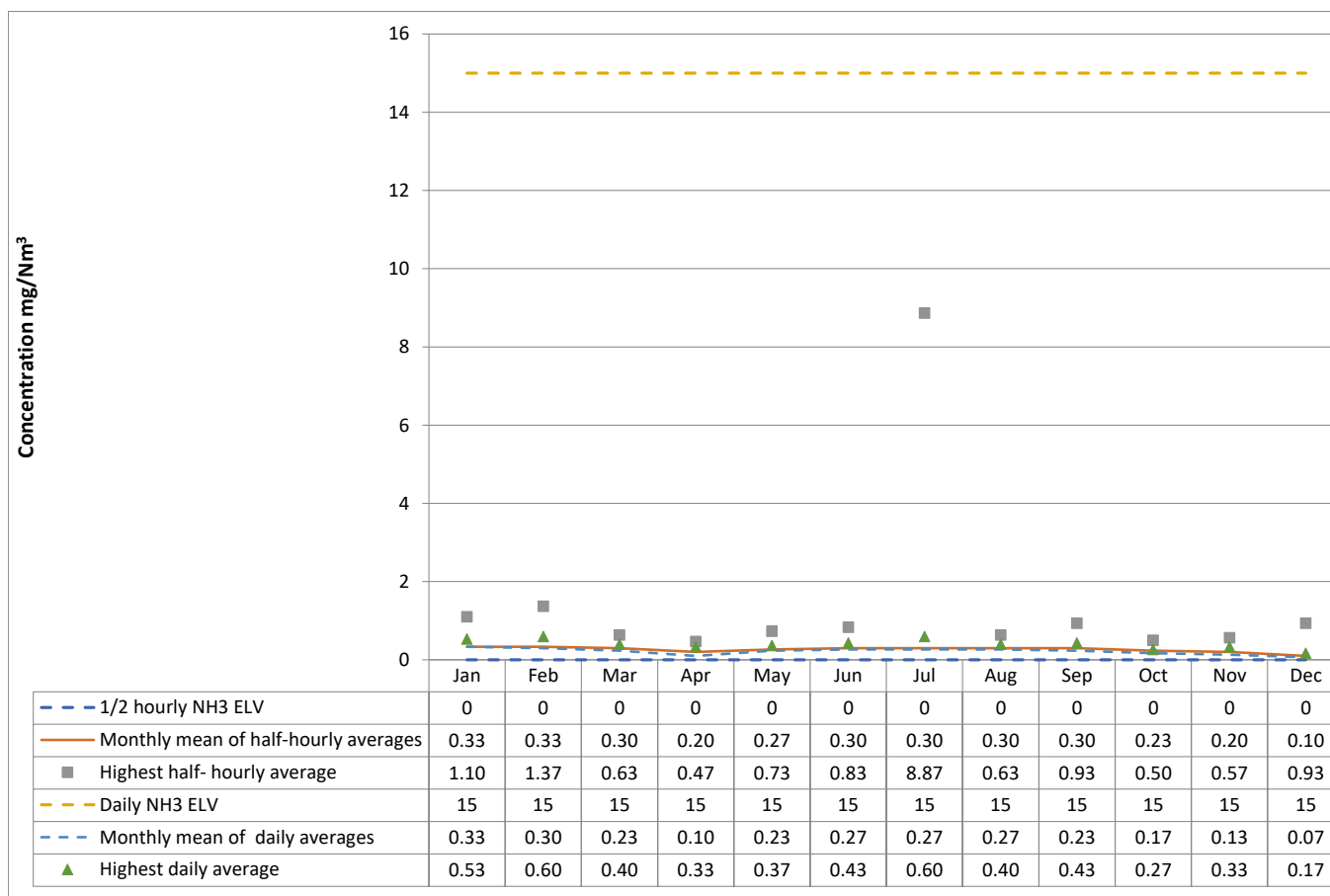
Environment Agency explanatory note: The 10-minute average ELV is based on the "95th percentile". In this case this means that 95% of the 10 minute averages in the relevant 24-hour period (i.e. 137) must be below 150 mg/Nm³, and 5% (i.e. 7) are allowed to be any value above 150 mg/Nm³. Whilst we expect operators to minimise CO emissions at all times, it is perfectly acceptable for the value of the maximum 10-minute average to be above 150 mg/Nm³, provided the 95th percentile ELV has been met for that period.

Monitoring of Ammonia emissions

Whole Installation

See Notes in Cell Q3

2024	1/2 Hourly Reference Periods			Daily Reference Periods		
mg/Nm ³	1/2 hourly NH3 ELV	Monthly mean of half-hourly averages	Highest half-hourly average	Daily NH3 ELV	Monthly mean of daily averages	Highest daily average
Jan	None	0.33	1.10	15	0.33	0.53
Feb	None	0.33	1.37	15	0.30	0.60
Mar	None	0.30	0.63	15	0.23	0.40
Apr	None	0.20	0.47	15	0.10	0.33
May	None	0.27	0.73	15	0.23	0.37
Jun	None	0.30	0.83	15	0.27	0.43
Jul	None	0.30	8.87	15	0.27	0.60
Aug	None	0.30	0.63	15	0.27	0.40
Sep	None	0.30	0.93	15	0.23	0.43
Oct	None	0.23	0.50	15	0.17	0.27
Nov	None	0.20	0.57	15	0.13	0.33
Dec	None	0.10	0.93	15	0.07	0.17



Comments :

An indicated ELV value of zero in the table above means that no ammonia limit is/was set in the permit.

Log of changes to f

Date
16/01/2024
23/09/2024
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08/01/2024

template (Environment Agency use only)

Description of change
Air (periodic) tab: corrected default O2 reference from 6 to 11%
Air (periodic) tab: corrected symbol for Thallium to Tl
Air (periodic) tab: removed last year's references to different emission limit values applying from 03/12/23 and updated all relevant ELVs
Tabs for continuously monitored pollutants (HCl, SO2 etc.): changed terminology in table headings to improve clarity
Tabs for continuously monitored pollutants (HCl, SO2 etc.): removed last year's references to different emission limit values applying from 03/12/23 and updated all relevant ELVs
Perf 1 tab: updated formula for water usage to report m3 rather than litres and corrected error with formula copying operator name
Operational Summary tab: table added on start-up's and shut-downs
Operational Summary tab: table added on dioxins and mercury protocols
Operational Summary tab: table added on AST, QAL 2 and calibration functions
CO2 N2O tab: various changes made to notes to reflect the fact that most plants should now have calibrated CEMS and flow meters + some have C14 samplers and more up to date industry data
CO2 N2O tab: Changed the N2O CO2 equivalence factor from 298 to 265 in line with recently updated government greenhouse gas figures: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024
CO2 N2O tab: Added an additional requirement for municipal EfW plants to state the yearly average biogenic percentage of the waste by mass, and reference to a document which sets out a methodology for calculating NCV of waste from the results of C14 sampling.
Permit Compliance tab: Two additional columns added + explanatory notes to the table entitled "Summary of non-compliances under the permit" to allow CCS scores to be stated where relevant.
Residue Quality tab: Note added explaining application of TOC and LOI limits and asking operators to report both metrics where measured.

New version number and date
Version 23.5a (for incinerators) - 16/01/2024
Version 24a (for incinerators) - 23/09/24
Version 24.1a (for incinerators) - 08/11/24