

AWRP Strategic Review CO Exceedances

Introduction

This review was initiated in response to recorded breaches of the permitted Half-Hourly Average limits for Carbon Monoxide (CO) emissions between January 2024 and June 2025, with the aim of understanding the potential causes and identifying potential improvements.

Background

Carbon Monoxide is a critical parameter for assessing combustion efficiency and environmental compliance. Understand the causes of breaches is essential to ensuring that:

- Potential future environmental risks are minimised
- We maintain compliance with our environmental permit
- We ensure that we have robust mitigation strategies in place
- We are able to inform potential engagement with the regulator on permit conditions and compliance methodologies

Environmental Permit Limits

Allerton Waste Recovery Park operates under Environmental Permit EPR/KP3808PN/V003, which identifies emission limits including as per the following extract for CO. Limits are set for half hourly averages for both normal and abnormal operations, and daily averages pertaining to normal operations.

Table S3.1 Point source emissions to air – emission limits and monitoring requirements (activity AR1 Incineration Plant).						
Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
	Carbon monoxide		100 mg/m ³	½-hr average	Continuous	EN 14181
	Carbon monoxide		50 mg/m ³	daily average	Continuous	EN 14181

Table 1 - Environmental Permit emission limits (normal operation)

Below is a summary of CO Schedule 5s in for 2024 and the first quarter of 2025, where Half-Hourly Average or Daily Average CO emissions exceeded the permitted levels.

		CO Breaches under normal conditions	CO Breaches abnormal conditions
		No.	No.
2024	Q2	5	2
	Q3	7	4
	Q4	14	6
2025	Q1	3	3
Total		29	15

Table 2 - Summary of CO breaches

CO Breach Occurrence

High CO levels can be a key indicator of sub-optimal conditions within the furnace and are closely monitored for purposes of process control and permit compliance. In general, deficiency in oxygen levels within the furnace creates elevated CO levels.

Thalia has reviewed the occurrences of CO breaches overall and has concluded that there is no identifiable general commonality.

We have taken the opportunity to review our end-to-end waste processing, taking into consideration waste composition, pre-treatment, incineration conditions, monitoring and control and have identified a number of opportunities for improvement.

Recommendations/Ongoing Actions

- We have reinvigorated our programme of regular review of Standard Operating Procedures including those relating to bunker management, bulky waste processing and, defining and reporting of breaches, abnormal operations and invalids. Updates include regular briefing to relevant staff.
- Implementation of a regular monitoring programme to ensure compliance with the above-mentioned plans
- Review whether an additional shredding shift is required to ensure all bulky waste is shredded in a timely manner to assist feedstock preparation and the combustion process.
- Investigate alternative methods of maintaining clean boiler surfaces, including sonic pulse generator cleaning and P-wave cleaning.
- Investigate optimal boiler tube cleaning regime e.g. 6 monthly or as required on inspection.
- Assess installation of an Eddy Current Separator after the bulky waste shredder.
- Maintain continuing professional development for all EfW operational staff.

All actions have been raised within our EcoOnline system and will be managed to close-out, in accordance with our internal processes.

Review of Half-Hourly Average Performance

A high-level assessment has been conducted to compare Half-Hourly Average breaches against the 10-Minute Average thresholds for the year 2025. This aligns with other EfW Environmental Permits for the industry, as well Thalia's IoW and MKWRP permits.

The analysis indicates that, for each instance where a Half-Hourly Average breach was recorded, had the site been assessed under the 10-Minute Average criteria, no permit breaches would have been reportable.

As a result of this review, the additional action has been identified to prepare and submit a Minor Technical Permit Variation application to request an amendment of CO to 10 Minute Average. Preliminary discussion on this have already been held with the local EA enforcement officer who is supportive of this action.