2018 Annual Performance Report for

Tarmac Cement & Lime Ltd

Aberthaw Works

January 2019

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Tarmac Cement and Lime Aberthaw Works

Introduction

Tarmac Cement & Lime Ltd (the “Operator"), company registration number 66558, whose registered office is Portland House, Bickenhill Lane, Solihull, B37 7BQ operate a cement manufacturing installation at Aberthaw Cement Plant, East Aberthaw, Barry, CF62 3ZR.

The cement manufacturing activities carried out at the above installation are authorised by Permit EPR/BL3986ID issued by Natural Resources Wales which includes permission to burn waste derived fuels (WDFs).

Condition 4.2.2 of the Permit requires the Operator to submit an annual performance report on the functioning and monitoring of the process. This report gives an account of the running of the process and the emissions into air and water compared with the emission standards in the permit.

Plant Description

The main purpose of the activities at the installation is the production and grinding of cement clinker to produce various cement products. Tarmac Cement & Lime operate one dry preheater process cement kiln at the Aberthaw site, which has the capacity to produce 565,000 tonnes of clinker per year. Tarmac Cement UK maintains registration to the ISO14001 environmental management system. Certification ISO 50001 was achieved in November 2013.

Aberthaw Cement Plant uses traditional fossil fuels (coal, pet coke and oil) and waste derived fuels (WDFs) Polymer chip, end of life whole tyres and Solid Recovered Fuel (SRF). Polymer chip was first used as a fuel in February 2013. Whole tyres were introduced in July 2012 and SRF was first used in May 2013.

Polymer chip and SRF are introduced into the kiln along with a pulverised coal via a firing pipe at the front end of the kiln. Whole tyres are burnt in the kiln at the back end via the pre-heater tower and kiln hearth.

The WDFs replace some of the fossil fuels that are traditionally used to produce cement clinker. The use of WDFs has a number of environmental benefits including:

- Practical solution to the disposal of waste products, which are currently disposed of via conventional waste disposal methods, whilst at the same time producing a valuable product;
- Reduction in the use of finite fossil fuels;
- Contribution towards carbon reduction commitments.

No additional residues are produced as a result of using WDFs at Aberthaw Works. The fuels are combusted at approximately 1450°C at which temperature all residues are incorporated into the cement clinker.

Plant Performance

Aberthaw Cement Plant has one cement kiln, which has run throughout the year in accordance with it's Environmental Permit to operate.

Planned maintenance was held from mid January to mid February, with an additional maintenance stop late June 2018. .

Fuel usage and the percentage substitution rate of WDFs are regularly monitored. This data is submitted to NRW on the appropriate form quarterly as required by the Environmental Permit, and is summarised below. The table shows the tones used of fossil fuels and WDFs, and the relative thermal input of each WDF as a percentage.

Fuel	Quantity burned Tonnes	Average calorific value MJ/kg
Coal	41,674	26.63
Petroleum coke		
Distillate fuel oil	442	43.88
MBM		
Tyres	5489	27.50
SRF 1	7314	17.54
Polychip	3065	34.31

Plant Monitoring – Emissions to Air

Two types of air emission monitoring are carried out at the main release point (stack) from the kiln. Automatic instruments (CEMs) as required by the permit to continuously monitor some emission species. A list of the CEMS used at the site is contained in Appendix I.

An independent accredited external test body monitors other emissions species every six months. The tables below summarises those species that are continuously monitored and those that are periodically monitored.

Pollutants measured	Continuously	Periodically
Particulates	x	
Oxides of Nitrogen	x	
Sulphur Dioxide	x	
Carbon Monoxide	x	
Total Organic Carbon	x	
Hydrogen Chloride	x	
Ammonia	x	
Mercury		x
Cadmium and Thallium		x
Group III Metals		x
Dioxins and Furans		x
Hydrogen Fluoride		x

Continuously monitored species are controlled to a limit based on the average of a 24-hour period (12:00-12:00). The daily averages are compared to the 24-hour limit and reported to NRW on a quarterly basis.

During the combustion of WDFs the continuous monitoring equipment at Aberthaw Works was operating normally for 100% of the kiln operating time.

Summary emissions data from the continuous monitoring system is attached as Appendix I; this is based on the same data that is supplied to NRW on a quarterly basis.

Periodically monitored species are tested using techniques and procedures that meet European and National Standards. These include all species listed above and also particulates on the cement mills. The results of this monitoring are compared directly to the limit prescribed in the permit and are reported to NRW. Routine extractive monitoring was carried out in May and November 2017 by independent, UKAS & MCERTS accredited third party organisations.

The gaseous CEMs were subject to a full BS EN 14181 QAL 2 calibration in November 2015, all components passed the requirements of the standard and no follow on work is required. A QAL 2 calibration was scheduled for H2 2018, however due to kiln stability issues during test team visits, we have, with the permission of NRW postponed the QAL 2 until after the 2019 maintenance shutdown (scheduled for March 2019).

Zero and span checks (QAL3) are made at site level on a weekly and monthly basis to ensure that the analysers are performing within the specified ranges and that they continue to operate effectively. Trained personnel conduct these checks and the records are kept on site.

Plant Monitoring – Emissions to Water

Monthly samples of water are taken from the site's operational discharge point (W1) and are sent to an external UKAS accredited laboratory for analysis for suspended solids, pH and oils and greases. The results of the analysis are compared to the ELVs specified in the permit.

Plant Compliance

Aberthaw cement plant submitted 10 schedule 5 notifications during the course of 2018, discussions are ongoing with NRW as to the number of these that will result in permit non conformities.

Availability of Information

Copies of this report may be requested from Tarmac by contacting Kara Bennett, Environment Coordinator on telephone number 07483 324144 or via email at Kara.Bennett@tarmac.com

Further information can be requested directly from Natural Resources Wales by calling the general enquiries line, 0300 065 3000.

Public Registers are available online at The Environment Agency Online Public Registers website:
http://www.environment-agency.gov.uk/research/library/publicregisters/default.aspx
Information on Tarmac can be found on the company website: http://www. tarmac.com/

Appendix I

Continuous Emissions Monitors

TARMAC CEMENT UK ABERTHAW WORKS – ENVIRONMENTAL PERMIT EPR/BL3986ID

SUMMARY OF CEMS

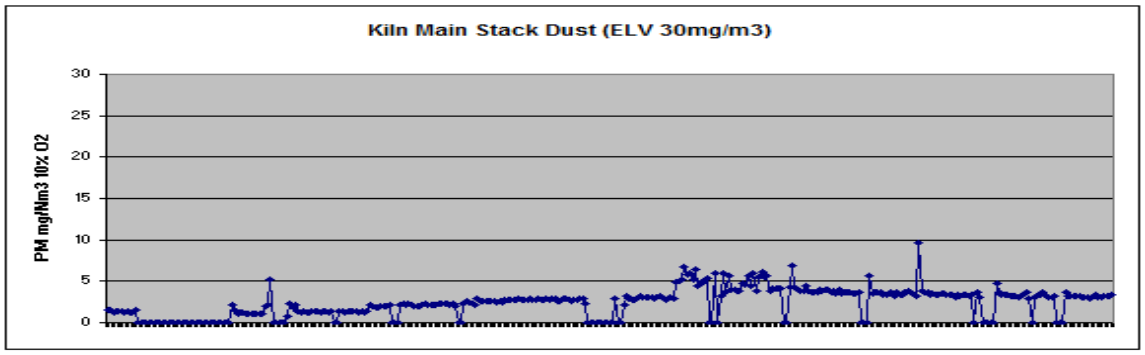
LOCATION	MAKE	MODEL	MCERTS CERTIFICATE	STATUS
A1 (KILN)	ABB Automation Products (Duty Gaseous CEM)	Advance CEMAS FTIR-NT (ACF-NT)	Sira MC 030016/09	Last compliance check: 10th – 12th October 2018 (last AST 22nd November 2017)
	ABB Automation Products (Standby Gaseous CEM)	Advance CEMAS FTIR-NT (ACF-NT)	Sira MC 030016/09	Last compliance check: 10th – 12th October 2018 (last AST 22nd November 2017)

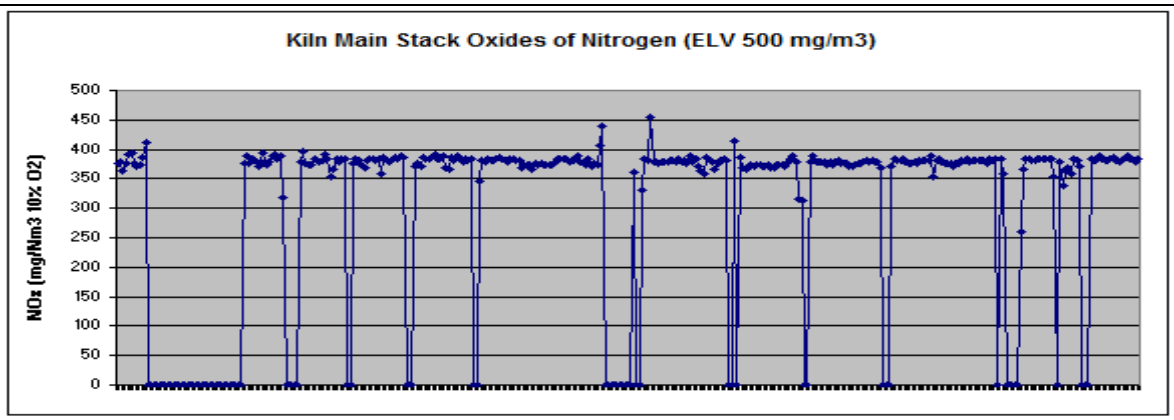
	SICK MAIHAK GmbH Particulate CEM	RM210	Sira MC 040043/01	Last compliance check: 11th September 2018 (last AST May 2017)
A2 (CEMENT MILL)	PCME Particulate CEM	DT990	Sira MC 050049/03	Last compliance check: 11th September 2018 (last AST May 2017)
A3 (CEMENT MILL)	Durag Particulate CEM	DR800	Sira MC080123/02	Last compliance check: 11th September 2018 (last AST May 2017)

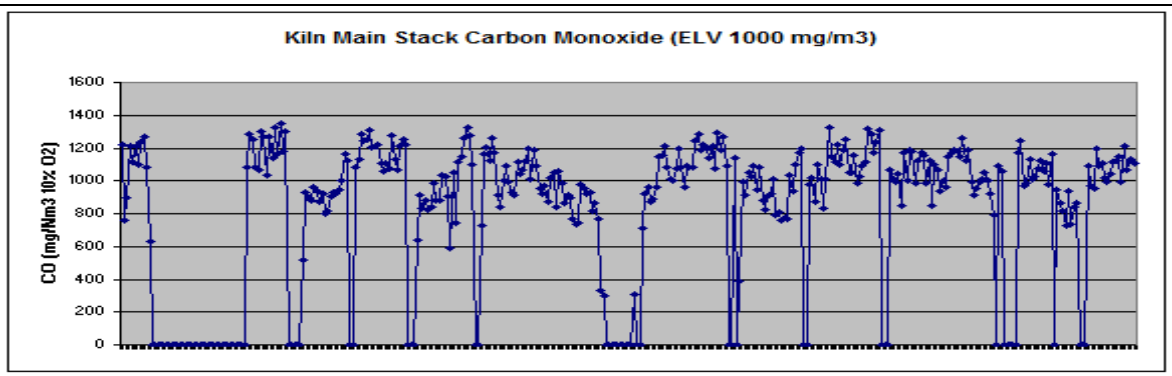
*Following the particulate QAL 2 performed on the kiln stack (A1) in 2010 and in accordance with Technical Guidance Note M20 section 3.7, the particulate emission profile remains below 30% of the Emission Limit Value, the emission profile is currently too low to derive a valid calibration function and an AST is performed annually instead of a QAL 2 exercise.

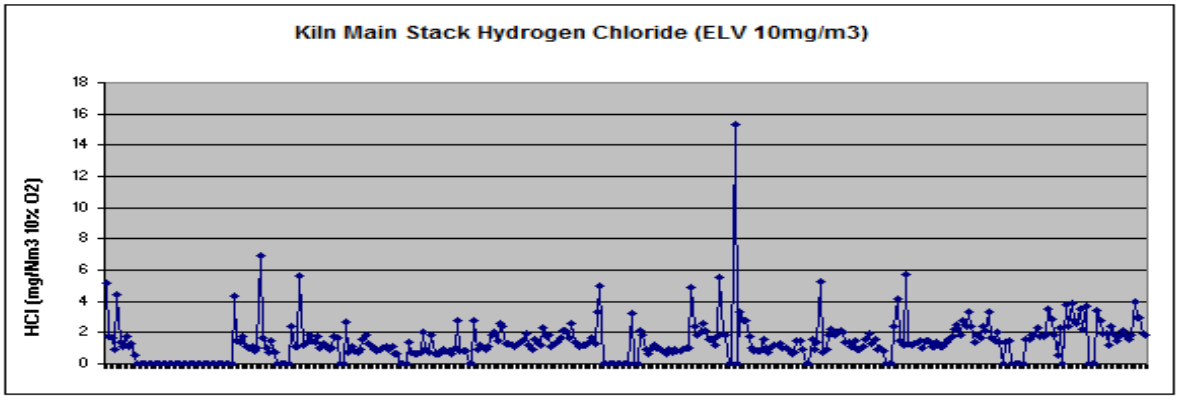
Appendix II

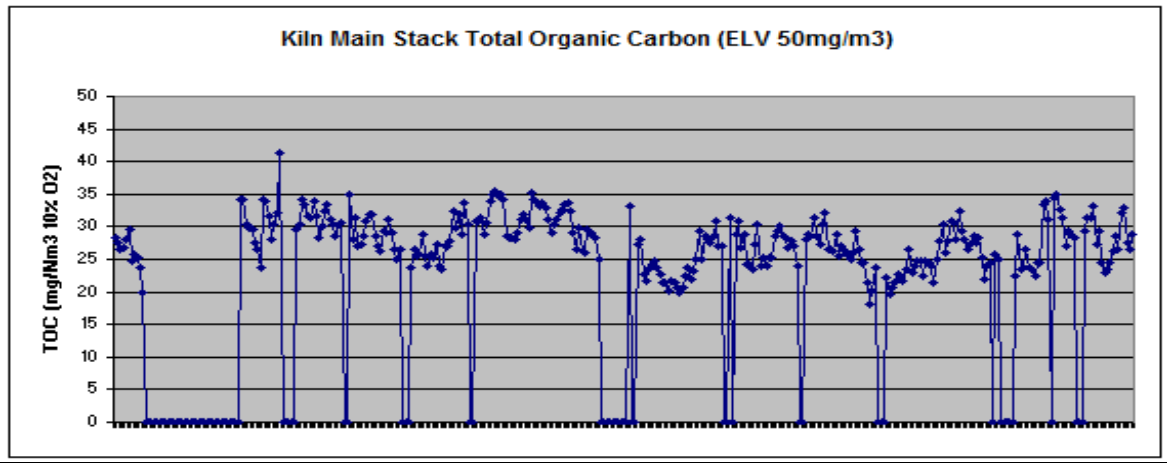
Continuous Emissions Monitor Results

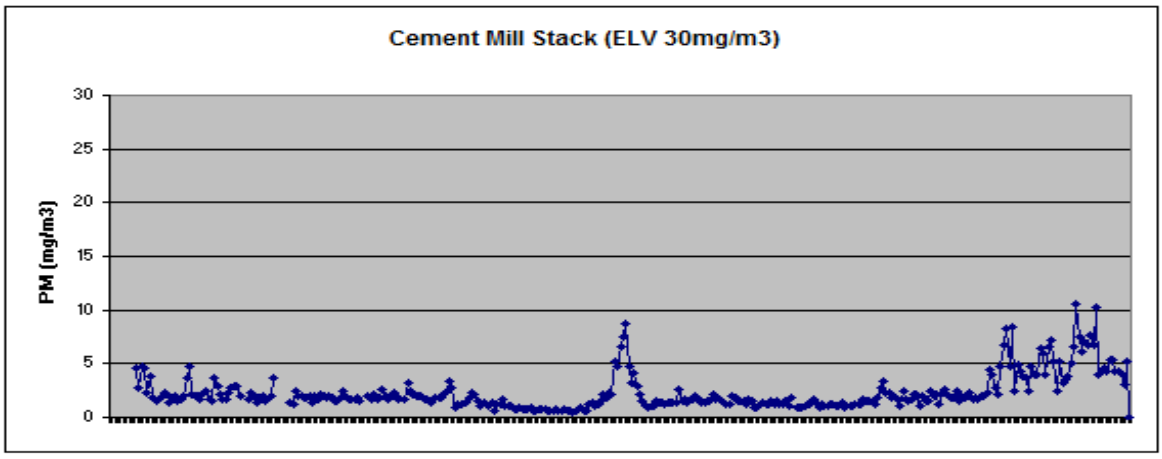


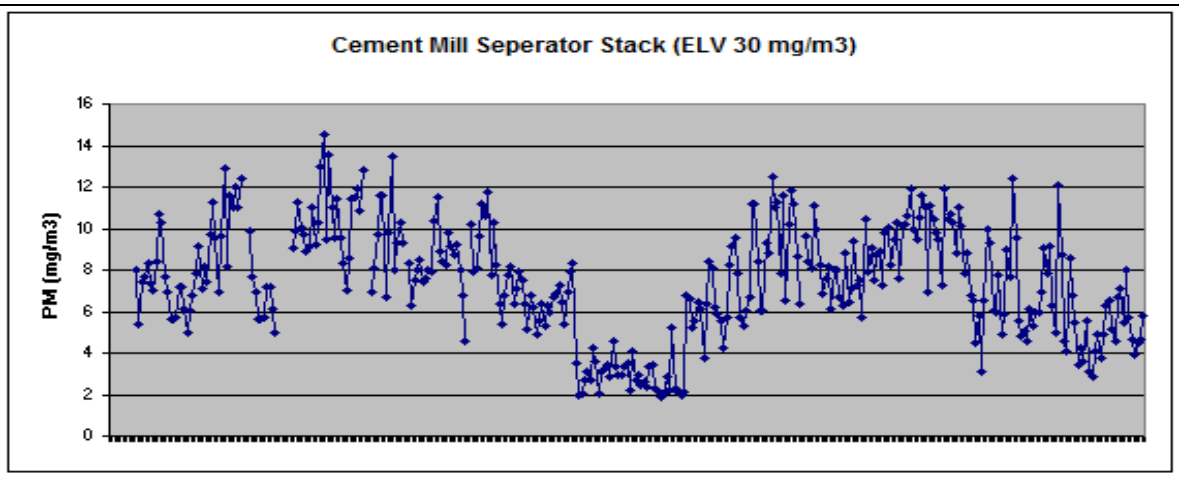


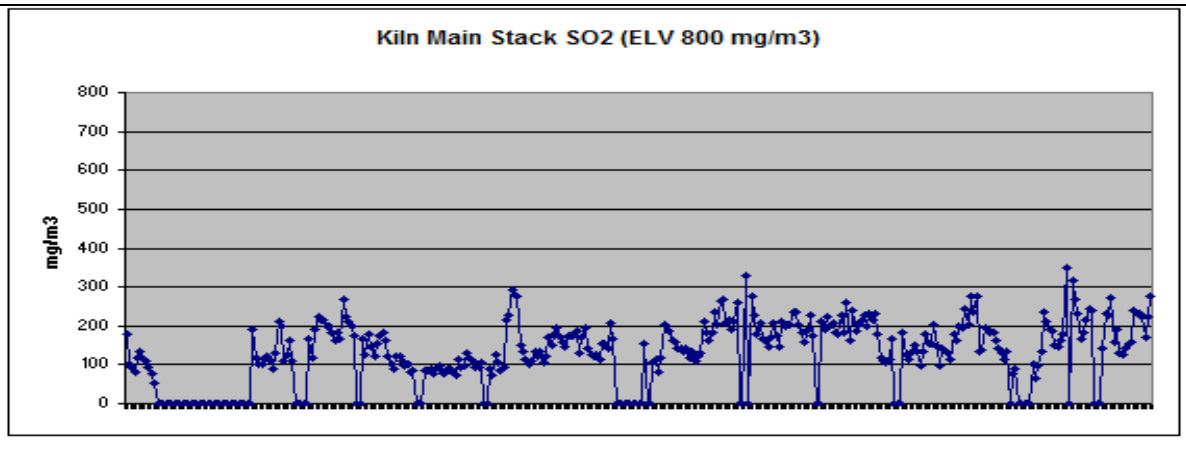





Kiln Main Stack Total Organic Carbon (ELV 50mg/m3)
TOC (mg/Nm3 10% O2)
50
45
40
35
30
25
20
15
10
5
0


Cement Mill Stack (ELV 30mg/m3)
PM (mg/m3)
30
25
20
15
10
5
0


Cement Mill Seperator Stack (ELV 30 mg/m3)
PM (mg/m3)
16
14
12
10
8
6
4
2
0


Kiln Main Stack SO2 (ELV 800 mg/m3)
mg/m3
800
700
600
500
400
300
200
100
0

Appendix III

Periodic Monitoring Results

Species	Limit mg/m3	Kiln 1 Test 1 mg/m3	Kiln 1 Test 2 mg/m3
Mercury	0.05	0.002	0.009
Cadmium and Thallium	0.05	0.006	0.003
Group III Metals	0.5	0.009	0.040
Hydrogen Fluoride	1	0.1	0.1
Dioxins and Furans	0.1*	0.00101	0.00038

* Dioxin and Furan results in ng/m3 NATO I TEQ

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