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REPORT OF PERIODIC MONITORING OF EMISSIONS TO AIR

Part A2 Process: A09/09

EAST ANGLIAN GALVANIZING LTD.

Old North Road
Sawtry
Cambridgeshire
PE28 5XN

Monitoring Date: 18th January 2018

Cti Ref: E62981
Customer Ref: PE13718

Report Written By: Peter Holdsworth
MCERTS Registration No.: SIRA MM 04 563
Function: Monitoring Consultant

Signed: Peter Holdsworth

Report Approved By: Trevor Halliday
MCERTS Registration No.: SIRA MM 05 656
Function: Monitoring Consultant

Signed: T Halliday

Date: 14th February 2018

Advanced Manufacturing Research Centre

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EXECUTIVE SUMMARY REPORT

1.0 MONITORING OBJECTIVES

Sampling of emissions at East Anglian Galvanizing was undertaken at the request of Mr Mark Hammond.

The aim of the monitoring campaign was to:

- undertake periodic compliance monitoring.

in accordance with the Site Specific Protocol issued in January 2018 (Cti Ref: E62981SSP).

The company is regulated as a Part A2 Process. The available guidance note applicable to the process is:

Sector Guidance Note IPPC SG5 Secretary of State's Guidance for the A2 Galvanising Sector

Emission limits given in the results tables are taken from the requirements given in permit number A09/09.

Tests were performed to quantify the levels of emissions from the following process:

Stack Ref	Emission Source	Substances Monitored
EAG 1	Galvanizing Bath	Particulates

There were no special requirements applicable to the monitoring.

2.0 MONITORING RESULTS

Note: Uncertainty figures quote in this section represent the uncertainty at the 95% confidence level

Stack Ref.: EAG 1 Galvanizing Bath

Particulates	Test 1	Test 2	Emission Limit Value
Concentration:	21 mg m^{-3}	13 mg m^{-3}	< 15 mg m^{-3}
Mass Release:	340 g hr^{-1}	210 g hr^{-1}	-
Uncertainty:	± 1.2 mg m^{-3}	± 0.92 mg m^{-3}	-
Reference Conditions:	273K and 101.3kPa, without correction for water vapour content		
Date:	18/01/18	18/01/18	-
Test Period:	11:20 to 11:36 11:38 to 11:54	12:48 to 13:04 13:05 to 13:21	-
Duration:	32 mins	32 mins	-
Velocity:	7.7 m s^{-1}	7.7 m s^{-1}	-
Process Status:	Dipping as normal	Dipping as normal	-
Visibility:	Faint white emission on occasion	Faint white emission on occasion	Free from persistent visible emission
Monitoring Method:	BS EN 13284-1:2002 Determination of low range mass concentrations of dust		
Isokinetic Rate:	103 %	104 %	95 to 115 %
Blank Value:	- 0.41 mg m^{-3}		< 10 % ELV
Cti Accreditation for Use of Method:	MCERTS	MCERTS	-
Accreditation Status of Test:	MCERTS	MCERTS	-

3.0 OPERATING INFORMATION

Stack Ref.	Date	Process Type	Fuel	Feedstock	Abatement Type & operational status if abnormal	Load	Substance	Periodic Monitoring Result	Units
EAG 1	18/01/18	Continuous	Not applicable	Molten Zinc	None	Normal	Particulates [M]	17	mg m^{-3}

Accreditation Status of test – (M) MCERTS

4.0 MONITORING DEVIATIONS

There were no deviations from the planned monitoring methods.

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APPENDIX I

GENERAL INFORMATION

A) Monitoring Organisation Staff Details

The following Cti staff were involved in the monitoring work reported:

Name	MCERTS Registration	Personnel Competency					Function
			TE1	TE2	TE3	TE4	
Peter Holdsworth	SIRA MM 04 563	L2	✓	✓	✓	✓	Monitoring Consultant

B) Monitoring Organisation Method Details

The following methods were used for the monitoring work reported:

Substance	Standard Method	Cti OP	Accreditation
All	-	300, 303, 310	-
Moisture (Water Vapour)	BS EN 14790:2017	334	MCERTS
Velocity, Temperature & Pressure	BS EN ISO 16911-1:2013	311, 331 – 336, 361, 396	MCERTS
Particulates	BS EN 13284-1:2002	311, 331 – 336, 361	MCERTS

C) Monitoring Organisation Equipment Check List References

Specific equipment items used were recorded on site sampling datasheets during the monitoring campaign which are held in the Cti environmental monitoring files alongside the associated report.

D) Sub-contract Analysis Details

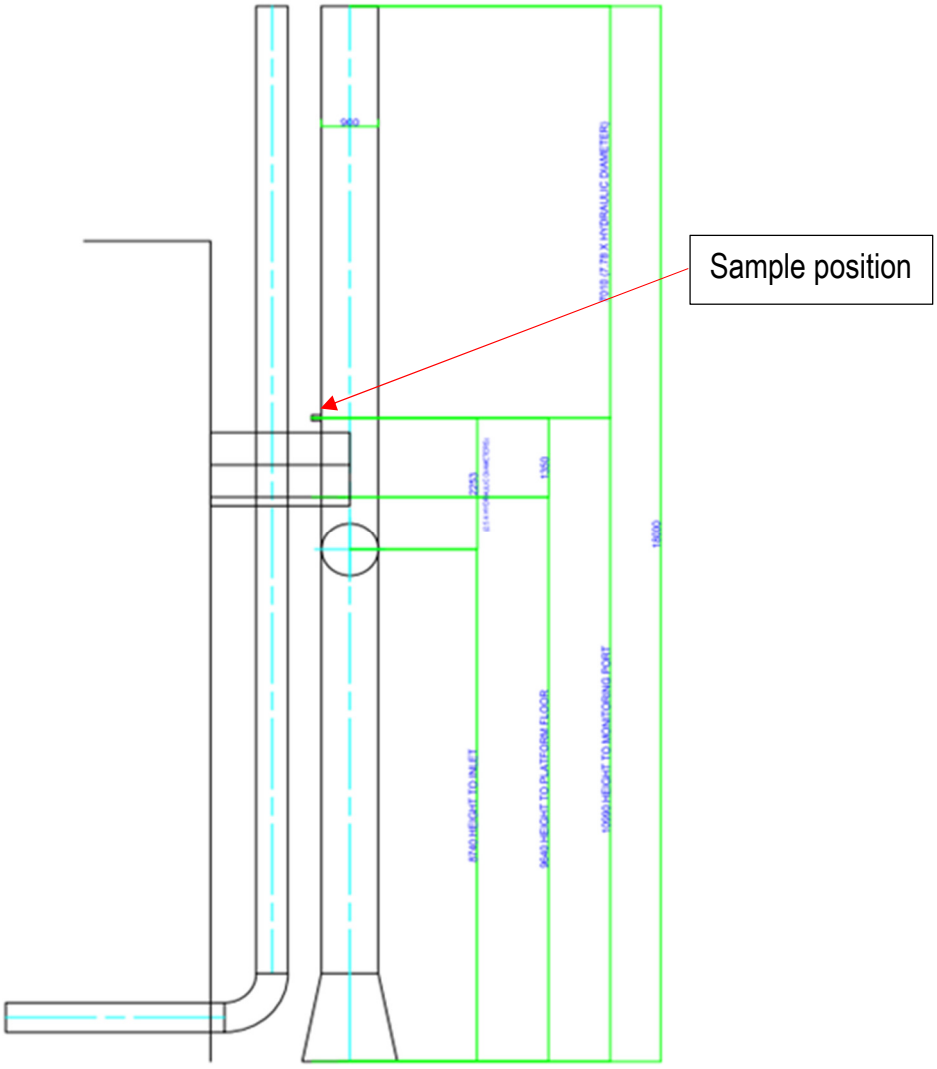
There is no sub-contract analysis applicable to this report.

APPENDIX II

Stack Ref.: EAG 1 Galvanizing Bath

Emission Source	EAG 1	Galvanizing Bath
Substances monitored:	Particulates	
Arrestment:	None	

	Emission Point Description:		13284 Compliant
	Duct dimensions:	0.90 m diameter	-
	Location of sampling plane:	In vertical outlet stack	✓
	Type of sampling port:	Currently 2 x 8 bolt BS10 flanges	✓
	Number of sample lines:	Two	✓
	Arrangement of sample lines:	90°	✓
	Orientation of sample lines:	Horizontal	✓
	Gas flow parameters	Flow: angle < 15°, > 5Pa, Ratio < 3:1, no –ve flow	✓



PARTICULATES		QAF 462. Template Version 2 / Sep17 / TH										
VELOCITY CALCULATION												
Site: East Anglian Galvanizing		Plant:	*EAG 1 Galvanizing extraction*			Date:	18/01/2018					
	Units											
Stack diameter(Ds):	m	0.90										
Stack dimensions(L,W):	m			0.00								
Stack area(As):	m^2	0.636										
Reference temp(Tr):	K	273										
Reference Pressure (Pr):	Pa	101300										
Barometric Pressure (Pb):	mb	1000	100000	Pa								
Static Pressure (Ps):	"H_2O		0	Pa								
	mmH_2O	4.5	44	Pa								
Pitot coefficient(Cp):		0.809	Note: Use 1 if raw data corrected									
TEST ONE:										STP		
	Delta Hs (mm)	Pitot mm H_20	Pa	Stack Temp, ℃	DGM in	DGM out	V(m/s)	Vol Flow m^3/s	V(m/s)	Vol Flow m^3/s	Vol Flow m^3/min
	92.1	9.0	57.8	17	19	19	7.7	4.9	7.0	4.5	268
	92.1	9.0	57.8	23	20	19					
	20.5	2.0	12.8	17	20	19					
	20.5	2.0	12.8	23	20	19		Vol Flow		Vol Flow	
	43.5	4.4	28.2	26	18	19		cfm		cfm	
	42.5	4.3	27.6	18	18	18					
	82.1	8.3	53.3	23	19	18		10325		9457	
	84.1	8.5	54.6	24	19	18					
		Mean	38.1	21.4		18.9					
		Std	18.6	3.3							
			Pa	Temp, ℃		DGM					
TEST TWO:												
Barometric Pressure (Pb):	mb	1000	100000	Pa								
Static Pressure (Ps):	"H_2O		0	Pa								
	mmH_2O	4.5	44	Pa								
Pitot coefficient(Cp):		0.809										
										STP		
	Delta Hs (mm)	Pitot mm H_20	Pa	Temp, ℃	DGM in	DGM out	V(m/s)	Vol Flow m^3/s	V(m/s)	Vol Flow m^3/s	Vol Flow m^3/min
	43.7	4.5	28.9	26	13	13	7.7	4.9	7.1	4.5	270
	49.8	5.0	32.1	19	14	13					
	75.8	7.8	50.1	26	15	13					
	79.7	8.0	51.3	18	15	13		Vol Flow		Vol Flow	
	97.6	9.8	62.9	19	16	13		cfm		cfm	
	85.5	8.8	56.5	26	16	13					
	20.9	2.1	13.5	18	16	13		10436		9534	
	20.4	2.1	13.5	25	16	13					
		Mean	38.6	22.1		14.1					
		Std	18.0	3.7							
			Pa	Temp, ℃		DGM					

PARTICULATES		Template Version 4 / Feb15 / TH										
Site: East Anglian Galvanizing			Plant:	EAG 1 Galvanizing extraction				Date:	18-Jan-18			
	Units											
Stack diameter(Ds):	m	0.90	0.45									
Stack dimensions(Ds):	m	0.00	0.00									
Stack area(As):	m^2	0.636										
Standard 9096 or 13284:		13284										
Filter ID:		2621		2622		2623						
Filter Size 37, 47, 110 or 4:		47		47		47						
Sample Ref:		EAG 1-1		EAG 1-2		EAG 1-B						
Filter weights:						**Blank**						
Tare Test One:		0.14666	*Tare Test Two:*	0.14717		0.14784						
Gross Test One:		0.16123	*Gross Test Two:*	0.15633		0.14787						
mass collected:		0.0146		0.00915		0.00003						
Wash Out Weights:						**Blank**						
Tare Test One:		66.48002	*Tare Test Two:*	47.40167		48.37610						
Gross Test One:		66.47948	*Gross Test Two:*	47.40138		48.37542						
mass collected:		-0.0005		-0.0003		-0.0007						
Control Weights:		**Test 1**		**Test 2**		**Blank**						
Mass Change:	***Filter:***	0.00000		0.00000		0.00000						
Mass Change:	***Beaker:***	-0.00036		-0.00036		-0.00036						
DGM Cal factor(Yd):			1.0090		1.0090					**Mass Emission without blank correction**		
Avg Delta H(DH):	Pa		585		580							
Barometric pressure(Pba):	Pa		100000		100000							
Reference pressure(Pr):	Pa	101325								21	13	
Avg DGM temp(Tm):	K		291.9		287.1							
Reference temp (Tr):	K	273								Mass Emission		
Duct O2(Od):	%									Test One	Test Two	
Ref O2(Or):	%											
Moisture(Bws):	%		0.69		0.62					94	60	mg/s
Gas vol sampled(Vm):	m^3		0.73		0.73							
Gas vol corrected(Vc):	m^3		0.68		0.69					337	215	g/hr
Moles Dry Gas(Mdg):	M		30		31							
										2696	1716	g/8 hr day
Particulates collected, (Mass):	mg		14		9							
Concentration at STP dry(Cm):	mg/m^3		21	17	13					13	8.6	kg/5 day week
Concentration at STP wet(Cw):	mg/m^3		21	17	13							
Concentration at ref O2(C-O2):	mg/m^3		21		13					647	412	kg/48 week year
Minus Blank:	mg		15		10							
	mg/m^3		22	18	14							
	mg/m^3		21	18	14							
	mg/m^3		22		14							
								% of limit Value				
Overall Test Blank	mg		-0.28		-0.28							
	mg/m^3		-0.41	-0.41	-0.41			-2.8%	-2.7%			
	mg/m^3		-0.41	-0.41	-0.40			-2.7%	-2.7%			
	mg/m^3		-0.41		-0.41			-2.8%	-2.7%			
Acetone Blank	mg		-0.32		-0.32							
	mg/m^3		-0.46	-0.46	-0.46							
	mg/m^3		-0.46	-0.46	-0.45							
	mg/m^3		-0.46		-0.46							
Emission Limit:	mg/m^3	15										
Test Detection limit:												
Particulates collected, (Mass):	mg		0.29		0.29							
Concentration at STP dry(Cm):	mg/m^3		0.42		0.41							
Concentration at STP wet(Cw):	mg/m^3		0.42		0.41							
Concentration at ref O2(C-O2):	mg/m^3		0.42		0.41							
Impinger weights:	g	**Imp 1**										
Before Test One:		585.1										
After Test One:		588.9										
H2O collected:		3.8	*Moles H_2O:*	0.21								
		Imp 1										
Before Test Two:		588.9										
After Test Two:		592.4										
H2O collected:		3.5	*Moles H_2O:*	0.19								
Test DGM readings:	l											
Before Test One:		4837.15	*Before Test Two:*	5605.72	Metric Millenium Inst							
After Test One:		5564.46	*After Test Two:*	6332.90	Meter							
Sampled vol :		727.31		727.18								
% Isokinetic		*Test One:*		*Test Two:*								
Nozzle Dia:	"	0.3125		0.3125								
Sampl time / point	mins	8		8								
Sample Duration:	mins	32		32								
Theoretical vol @ STP:	m^3	0.667		0.672								
% Isokinetic:		103	In Range	104	In Range							
Number of traverses:		2		2								
Theoretical Number of Traverses:		2		2								
Theoretical Points / Traverse		2		2								
Acuual Points / Traverse		2		2								
Standard Uncertainty	+/-	0.58	mg/m3	0.46								
Expanded Uncertainty:	+/-	1.2	mg/m^3	0.92								
% of ELV		7.7		6.2								