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UKAS Testing Laboratory No 0144

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: 6th June 2016

Cti Ref: E52053

Customer Ref: PE11114

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MCERTS Registration No.: SIRA MM 05 656
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Signed: T Halliday

Signed: Peter Holdsworth

Date: 11th July 2016



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:

- Re-test emissions following plant modifications

in accordance with the Site Specific Protocol issued on 26th May 2016 (Cti Ref: E52053SSP).

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 No. 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	Test 3	Emission Limit Value
Concentration:	11 mg m ⁻³	9.8 mg m ⁻³	15 mg m ⁻³	< 15 mg m ⁻³
Mass Release:	150 g hr ⁻¹	150 g hr ⁻¹	140 g hr ⁻¹	-
Uncertainty:	± 0.87 mg m ⁻³	± 0.80 mg m ⁻³	± 0.86 mg m ⁻³	-
Reference Conditions:	273K and 101.3kPa, without correction for water vapour content			
Date:	06/06/16	06/06/16	06/06/16	-
Test Period:	10:45 to 11:01 11:02 to 11:18	11:31 to 11:47 11:52 to 12:08	14:01 to 14:17 14:21 to 14:37	-
Duration:	32 mins	32 mins	32 mins	-
Velocity:	7.4 m s ⁻¹	8.0 m s ⁻¹	5.1 m s ⁻¹	-
Process Status:	Bath in continuous use throughout test period; approx x1 dip every 15 mins			-
	Fan speed 50 Hz		Fan speed 30 Hz	
Visibility:	Periodic short-term visible emission			Free from persistent visible emission
Monitoring Method:	BS EN 13284-1:2002 Determination of low range mass concentrations of dust			
Isokinetic Rate:	96 %	98 %	101 %	95 % to 115 %
Blank Value:	-0.06 mg m ⁻³	-0.06 mg m ⁻³	-0.05 mg m ⁻³	< 10 % ELV
Cti Accreditation for Use of Method:	MCERTS	MCERTS	MCERTS	-
Accreditation Status of Test:	MCERTS	MCERTS	MCERTS	-

3.0 OPERATING INFORMATION

Stack Ref.	Date	Process Type	Fuel	Feedstock	Abatement	Load	Substance	Periodic Monitoring Results	Units
EAG 1	06/06/16	Continuous	N/a	Molten zinc	None	Normal throughput rate. Tests 1 & 2: fan speed 50 Hz Test 3: fan speed 30 Hz	Particulates ^M	11; 9.8; 15	mg m ⁻³

Accreditation Status of test – (M) MCERTS

4.0 MONITORING DEVIATIONS

There were no deviations from planned monitoring methods

SUPPORTING INFORMATION

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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	
Trevor Halliday	SIRA MM 05 656	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 14790:2005	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

APPENDIX II

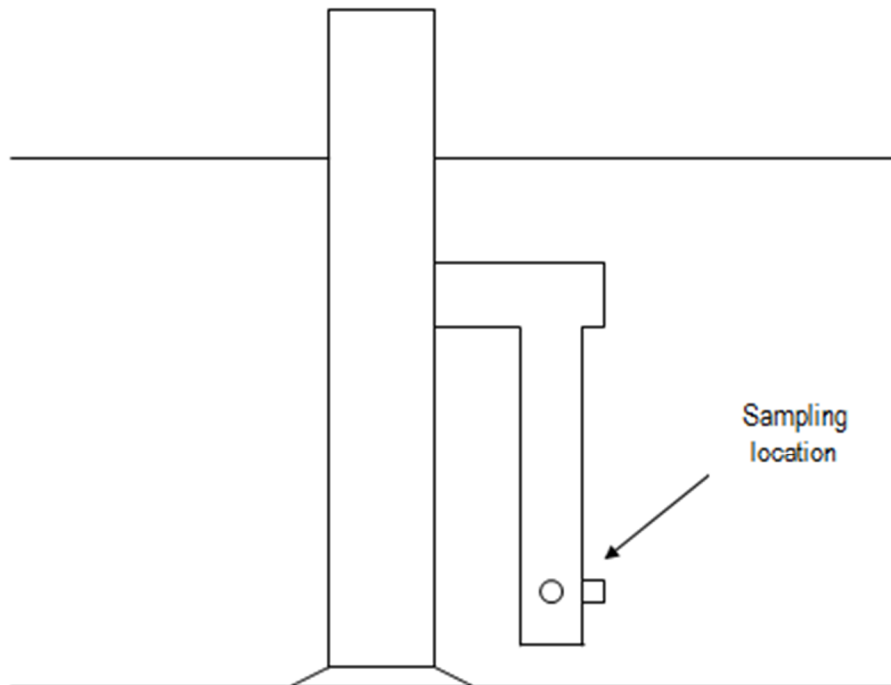
Stack Ref.: EAG 1 Galvanizing Bath

Emission Source EAG 1 Galvanizing Bath

Substances monitored: Particulates

Arrestment: None

Emission Point Description:			13284 Compliant
	Duct dimensions:	0.855 m diameter	-
	Location of sampling plane:	In vertical outlet stack	✓
	Type of sampling port:	2 x 4 " BSP	✓
	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	✓



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PARTICULATES									
Template Version 4 / Feb15 / TH									
Site:	East Anglian Galv. Sawtry	0	Plant:	EAG 1 - Galv Ext.	TESTS 1 and 2	Date:	6-Jun-16		
Stack diameter(Ds):	Units	0.86	0.43						
Stack dimensions(Ds):	m	0.00	0.00						
Stack area(As):	m²	0.574							
Standard 9096 or 13284:		13284							
Filter ID:		1409	1410	1408					
Filter Size 37, 47, 110 or 4:		47	47	47					
Sample Ref:		EAG 1-1	EAG 1-2	EAG 1-B					
Filter weights:									
Tare Test One:		0.14302	Tare Test Two:	0.14362	Blank				
Gross Test One:		0.14954	Gross Test Two:	0.15015	0.14563				
mass collected:		0.00652		0.00654	-0.00007				
Wash Out Weights:									
Tare Test One:		46.93045	Tare Test Two:	47.40089	55.65076				
Gross Test One:		46.93088	Gross Test Two:	47.40105	55.65022				
mass collected:		0.0004		0.0002	-0.0005				
Control Weights:		Test 1	Test 2	Blank					
Mass Change:	Filter:	0.00002	0.00002	0.00002					
Mass Change:	Beaker:	-0.00058	-0.00058	-0.00058					
DGM Cal factor(Yd):		0.9673	0.9673						
Avg Delta H(DH):	Pa	567	657						
Barometric pressure(Pba):	Pa	102150	102100						
Reference pressure(Pr):	Pa	101325							
Avg DGM temp(Tm):	K	273	302.4	306.6					
Reference temp (Tr):	K	273							
Duct O2(Od):	%								
Ref O2(Or):	%								
Moisture(Bws):	%	0.89	0.62						
Gas vol sampled(Vm):	m³	0.77	0.84						
Gas vol corrected(Vc):	m³	0.68	0.74						
Moles Dry Gas(Mdg):	M	30.46	32.92						
Particulates collected (Mass):	mg	7.51	7.27						
Concentration at STP dry(Cm):	mg/m³	11	10	9.9					
Concentration at STP wet(Cw):	mg/m³	11	10	9.8					
Concentration at ref O2(C-O2):	mg/m³	11		9.9					
Minus Blank:	mg	7.6	7.3						
	mg/m³	11	10	9.9					
	mg/m³	11	10	9.9					
	mg/m³	11		9.9					
Overall Test Blank	mg	-0.04	-0.04						
	mg/m³	-0.06	-0.06	-0.06	-0.4%	-0.4%			
	mg/m³	-0.06	-0.06	-0.06	-0.4%	-0.4%			
	mg/m³	-0.06	-0.06	-0.06	-0.4%	-0.4%			
Acetone Blank	mg	0.04	0.04						
	mg/m³	0.06	0.06	0.06					
	mg/m³	0.06	0.06	0.06					
	mg/m³	0.06	0.06	0.06					
Emission Limit:	mg/m³	15							
Test Detection limit:									
Particulates collected (Mass):	mg	0.29	0.29						
Concentration at STP dry(Cm):	mg/m³	0.42	0.39						
Concentration at STP wet(Cw):	mg/m³	0.41	0.38						
Concentration at ref O2(C-O2):	mg/m³	0.42	0.39						
Impinger weights:	g	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6		
Before Test One:		584.9							
After Test One:		589.8							
H2O collected:		4.9	Moles H2O:	0.27					
Before Test Two:		589.8							
After Test Two:		593.5							
H2O collected:		3.7	Moles H2O:	0.21					
Test DGM readings:	m³								
Before Test One:		566.662	Before Test Two:	567.442	Imperial Apex 572				
After Test One:		567.433	After Test Two:	568.287	Meter				
Sampled vol:		0.771		0.844					
% Isokinetic	Test One:		Test Two:						
Nozzle Dia:	"	0.3302	0.3302						
Sample time / point	mins	8	8						
Sample Duration:	mins	32	32						
Theoretical vol @ STP:	m³	0.716	0.760						
% Isokinetic:		96	In Range	96	In Range				
Number of traverses:		2	2						
Theoretical Number of Traverses:		2	2						
Theoretical Points / Traverse		2	2						
Actual Points / Traverse		2	2						
Standard Uncertainty	+/-	0.4	mg/m³	0.4					
Expanded Uncertainty	+/-	0.87	mg/m³	0.80					
% of ELV		5.815940376		5.337264605					

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PARTICULATES					
Template Version 4 / Feb15 / TH					
Site:	East Anglian Galv. Sawtry		0	Plant:	EAG 1 - Galv Ext - TEST 3
Date:	6-Jun-16				
	Units				
Stack diameter(Ds):	m	0.86	0.43		
Stack dimensions(Ds):	m	0.00	0.00		
Stack area(As):	m²	0.574			
Standard 9096 or 13284:		13284			
Filter ID:		1411		1408	
Filter Size 37, 47, 110 or 4:		47		47	
Sample Ref:		EAG I-3		EAG I-B	
Filter weights:				Blank	
Tare Test One:		0.14517		0.14570	
Gross Test One:		0.15675		0.14563	
mass collected:		0.01158		-0.00007	
Wash Out Weights:				Blank	
Tare Test One:		46.81146		55.65076	
Gross Test One:		46.81165		55.65022	
mass collected:		0.0002		-0.0005	
Control Weights:		Test 1		Blank	
Mass Change:	Filter:	0.00002		0.00002	
Mass Change:	Beaker:	-0.00058		-0.00058	
DGM Cal factor(Vd):		0.9631			
Avg Delta H(DH):	Pa	767			
Barometric pressure(Pat):	Pa	102100			
Reference pressure(Pr):	Pa	101325			
Avg DGM temp(Tm):	K	295.9			
Reference temp (Tr):	K	273			
Duct O₂(O₂D):	%				
Ref O₂(O₂r):	%				
Moisture(Bes):	%	0.79			
Gas vol sampled(Vm):	m³	0.91			
Gas vol corrected(Vc):	m³	0.82			
Moles Dry Gas(Mdg):	M	36.80			
Particulates collected, (Mass):	mg	12.34			
Concentration at STP dry(Cm):	mg/m³	15			
Concentration at STP wet(Cw):	mg/m³	15			
Concentration at ref O₂(C-O₂):	mg/m³	15			
Minus Blank:	mg	12			
	mg/m³	15			
	mg/m³	15			
	mg/m³	15			
Overall Test Blank:	mg	-0.04			
	mg/m³	-0.05		-0.3%	-0.4%
	mg/m³	-0.05		-0.3%	-0.4%
	mg/m³	-0.05		-0.3%	-0.4%
Acetone Blank:	mg	0.04			
	mg/m³	0.05			
	mg/m³	0.05			
	mg/m³	0.05			
Emission Limit:	mg/m³	15			
Test Detection limit:					
Particulates collected, (Mass):	mg	0.29	0.29		
Concentration at STP dry(Cm):	mg/m³	0.35	0.39		
Concentration at STP wet(Cw):	mg/m³	0.34	0.39		
Concentration at ref O₂(C-O₂):	mg/m³	0.35	0.39		
Impinger weights:	g	Imp 1	Imp 2	Imp 3	Imp 4
Before Test One:		593.5			
After Test One:		598.8			
H₂O collected:		5.3	Moles H₂O:	0.29	
Test DGM readings:	m³				
Before Test One:		588.292			
After Test One:		589.236			
Sampled vol :		0.914			
% Isokinetic:	Test One:				
Nozzle Dia:	"	0.4360			
Sampl time / point:	mins	8			
Sample Duration:	mins	32			
Theoretical vol @ STP:	m³	0.826			
% Isokinetic:		101	In Range		
Number of traverses:		2			
Theoretical Number of Traverses:		2			
Theoretical Points / Traverse		2			
Actual Points / Traverse		2			
Standard Uncertainty	+/-	0.4	mg/m3		
Expanded Uncertainty:	+/-	0.86	mg/m³		
% of ELV		5.753442838			