



Hydro Aluminium Deeside

Environmental Permit No. BK3638IF

2019 Performance Report

January 2020

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1. Introduction

- 1.1 Condition 4.2.2 of the Environmental Permit for Hydro Aluminium Deeside requires a report on the performance of our activities over the previous year.
- 1.2 As required by condition 4.2.2, the following sections detail:
 - (a) a review of the results of the monitoring and assessment carried out in accordance with the permit, including an interpretive review of that data;
 - (b) the annual production / treatment data set out in Schedule 5, Table S5.2; and
 - (c) the performance parameters set out in Schedule 5, Table S5.3 using the forms specified in Table S5.4 of that Schedule.
- 1.3 There have been no major process changes following the completion of the modification of the casting system to allow "single drop" casting, as detailed in the 2019 performance report.
- 1.4 The site experienced a hydraulic oil fire on 12/04/19, returning to full production in July 2019 after recovery works had been completed. This was reported to NRW via email on 12/04/19 with further information sent via Schedule 5 notification on 24/04/19.
- 1.5 There were 272 production days in 2019 and a total output of 46945 tonnes of aluminium extrusion ingot.

2. Emissions to Air

- 2.1 Particulate emissions to air from points A1, A12 and A13 are monitored using a PCME model DT780 continuous emissions monitor (an MCERTS-certified CEM). The results of continuous monitoring have been reported each quarter to Natural Resources Wales using permit reporting form Air1a.
- 2.2 Proprietary "Dust Monitor" software enables analysis of the data collected by the CEM. The maximum readings from 2019 for each emission point are detailed in the table below.

Table 2.1. Summary of PCME monitoring results for 2019

Emission Point	Limit	Max daily average in 2019
A1	10 mg/m ³ daily average	7.71 mg/m ³ (23/02/19)
A12	10 mg/m ³ daily average	1.43 mg/m ³ (14/03/19)
A13	10 mg/m ³ daily average	0.35 mg/m ³ (14/05/19)

Emission Point	Limit	Max result, average of daily average values
A1	5 mg/m ³ monthly average	1.32 mg/m ³ (February)
A12	5 mg/m ³ monthly average	0.46 mg/m ³ (October)
A13	No limit set	0.43 mg/m ³ (August)

- 2.3 No breaches of the emission limits for particulates were recorded in 2019. Results for release point A1 were higher than usual on 23/02/19 due to a breakdown of the new screw conveyor that transports waste lime to the bulk waste silo. This was quickly repaired and dust levels returned to normal low levels.
- 2.4 Operational procedures have been reviewed and are deemed satisfactory to ensure continued data collection and analysis (site procedure OPL2905), and investigation of equipment alarms that may indicate a fault or limit breach (site procedure OPL2103). Alarms on the CEM are set at 3 mg/m³ and 4.75 mg/m³ to ensure that action is taken if the emission limit value of 5 mg/m³ (monthly average limit) is in danger of being breached. Internal audits include checks that PCME alarms are being reported and acted upon.
- 2.5 Extractive sampling of particulates was undertaken between 26 – 28 November 2019 by Socotec UK Ltd (MCERTS accredited) to enable calibration of the CEM.
- 2.6 The Environmental Permit for the site requires twice-yearly extractive monitoring of stacks A1 and A12, and annual extractive monitoring of stack A13. A1 and A12 were tested between 17 – 18 June 2019, with A13 included in the monitoring conducted between 26 – 28 November 2019. All monitoring was undertaken by Socotec (job numbers LNO 15088 and LNO 15346).
- 2.7 The results of extractive monitoring have been reported to Natural Resources Wales using permit reporting forms Air1b, Air1c and Air1d. Analysis of these results shows that all results are below the emission limit values detailed in the permit, for both sampling exercises conducted in 2019.

3. Emissions to Water

- 3.1 Emissions to water from discharge point W1 are monitored up to four times per year when the casting pit cooling water system is emptied. In 2019 this occurred in January, February, March and August. The results of this monitoring are summarised below. Results from sampling undertaken prior to start-up in January 2019 are also included.

Table 3.1. Summary of W1 monitoring results

Parameter	ELV	25/01/19	26/02/19	29/05/19	13/08/19	Average
BOD (mg/l)	10	2.03	2.19	2.63	<1	1.94
Suspended solids (mg/l)	35	11.9	6.3	4.8	<2	6.22
COD (mg/l)	125	25.0	25.2	15.7	27.4	23.33
Ammoniacal nitrogen (mg/l)	5	<0.2	0.5	0.27	<0.2	0.29
Aluminium (mg/l)	0.5	0.043	0.054	0.044	0.112	0.06
Total hydrocarbon oil (mg/l)	2	1.1	<1	<1	<1	0.95
pH	6 – 9	7.67	7.97	7.79	7.82	7.81
Temperature (°C)	25	9	9	14	16	12
Flow (l/sec)	No limit	-	-	-	-	-

Notes:

- Flow rate at release point W1 is not measured, following the removal of the v-notch weir during installation of a penstock valve at W1. Agreed with EA that water emission volumes can be calculated from cooling water bleed-off and casting pit emptying (see EA Compliance Assessment Report no. I/110329/BK3638).

- 3.2 These results show that all releases are within the permitted limits, with some results being below the limit of detection in some cases (indicated by a "<" symbol in the table).

4. Environmental Noise

- 4.1 An environmental noise survey was conducted on 11 – 13 November 2019. Results from this are as follows, with the results from previous surveys included for comparison.

Table 4.1. Noise survey results

	Day, dB(A)						Night, dB(A)					
	2014	2015	2016	2017	2018	2019	2014	2015	2016	2017	2018	2019
Measured noise (Factory operating)	48	49	49	50	47	46	46	43	42	46	46	42
Residual noise (Factory not operating)	46	47	48	47	46	45	42	38	37	42	43	41
Specific noise at nearest property	43	44	41	46	39	38	39	40	39	43	42	34
Background noise (L ₉₀)	42	42	43	45	42	42	41	35	35	42	42	38

- 4.2 The results of the 2019 noise survey indicate that the likelihood of complaints during the daytime and night time would be unlikely, with a difference of +2 dB over the background noise.
- 4.3 No noise complaints were received in 2019. The last such complaints were received between April – July 2017 as recorded in the 2017 Performance Report.
- 4.4 Noise reduction measures continue to be applied. The automated laydown station (where aluminium logs are placed after their removal from the casting pit) has removed the chiming created by rolling logs by hand along the old laydown station. The automated laydown station has also removed the need for logs to be turned through 90 degrees when suspended vertically, thereby avoiding noise created from logs hitting the turning frame and colliding with each other. The “anti-twist device” remains in use on the load hook of the overhead crane used to remove logs from the casting pit, helping to reduce chiming during the transfer from Caster to Laydown. With Single Drop casting, removing logs from the casting pit now occurs 6-7 times every 24 hours rather than 12-14 times, further reducing the potential for noise from this activity. Noise from sawing operations continues to be minimised, with sawing of logs and discharge of butt ends taking place within an acoustic enclosure. Cut logs are picked-up and carried by automated equipment to the packing area, in contrast to the old saw where logs rolled under gravity to a manual banding station. Preventative maintenance includes condition monitoring on all fans, including those serving the automated homogeniser and air cooling station. “White noise” reversing alarms are in use on all site vehicles to further reduce tonal noise emanating from on-site activities.

5. Operational Performance

5.1 Annual production data required by Table S5.2 is as follows.

Secondary aluminium produced	46,945 tonnes
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5.2 Additional performance parameters are reported using permit reporting forms WaterUsage1, Energy1 and Performance1. These are included below.

Permit Number: EA/EPR/BK3638IF/V002

Operator: Hydro Aluminium Limited

Facility: Wrexham Aluminium Works

Form Number: WaterUsage1

Reporting of Water Usage for the year 2019

Water Source	Usage (m ³ /year)	Specific Usage (m ³ /unit output)
Mains water	25,019 m ³	0.53 m ³ per tonne of aluminium produced
TOTAL WATER USAGE	25,019 m ³	0.53 m ³ per tonne of aluminium produced

Operator's comments:

Broadly in line with 2018 result. Slight increase of 0.01 m³ per tonne of aluminium produced compared to 2018.

SignedJoel Priest.....
(authorised to sign as representative of Operator)

Date.....30/01/2020.....

Permit Number: EA/EPR/BK3638IF/V002

Operator: Hydro Aluminium Limited

Facility: Wrexham Aluminium Works

Form Number: Energy1

Reporting of Energy Usage for the year 2019

Energy Source	Energy Usage		
	Quantity	Primary Energy (MWh)	Specific Usage (MWh/unit output)
Electricity *	6294.7 MWh (cf 6720.1 in 2018)	16366.22 MWh	0.35 MWh per tonne of aluminium produced (cf 0.312 in 2018)
Natural Gas	57,521.7 MWh (cf 65,887 in 2018)		1.22 MWh per tonne of aluminium produced (cf 1.175 in 2018)
TOTAL	-	73,894 MWh (cf 83,359 MWh in 2018)	1.57 MWh per tonne of aluminium produced (cf 1.49 in 2018)

* Conversion factor for delivered electricity to primary energy = 2.6

Operator's comments:

2019 saw increased energy consumption across the 12 months of 2019 compared to 2018. This was caused by spikes in January due to commissioning new casting equipment as the Single Drop Project was completed, and in April to June due to inefficient operations following recovery from the fire on-site in April. Full production from July onwards saw greater energy efficiency of 1.45 MWh per tonne of aluminium produced, a 2.7% improvement on 2018.

Signed Joel Priest
(Authorised to sign as representative of Operator)

Date.....30/01/2020.....

Permit Number: EA/EPR/BK3638IF/V002

Operator: Hydro Aluminium Limited

Facility: Wrexham Aluminium Works

Form Number: Performance1

Reporting of other performance indicators for the period 01/01/2019 to 31/12/2019

Parameter	Tonne	Tonne / Tonne Product
Total raw material used (tonnes of primary aluminium)	9,911 (13,245 in 2018)	0.21 (0.24 in 2018)
Dross and skimmings, used filters and swarf produced	2,402 (3,012 in 2018)	0.05 (0.05 in 2018)
Bag plant residues and waste lime	72.42 (99.92 in 2018)	0.0015 (0.002 in 2018)

Operator's comments:

Total prime use has reduced in-line with reduced production in 2019, with consumption per tonne of finished product slightly less than in 2018.
Both total dross production and bag plant residues have reduced, though comparable to 2018 on a per tonne basis.

Signed Joel Priest
(Authorised to sign as representative of Operator)

Date.....30/01/2020.....