

30th January 2023

Mrs E A Parr
PPC Compliance Assistant
Natural Resources Wales
Rivers House
St Mellons Business Park
St Mellons
CARDIFF
CF3 0EY

Dear Mrs Parr,

RE: Melt Shop EPR Permit TP3639BH 4.2.2. Annual Returns 2022

In accordance with CELSA Manufacturing (UK) Ltd Environmental Permitting Regulations (EPR) Melt Shop Permit TP3639BH, permit condition 4.2.2 requires the following:

4.2.2 For the following activities in schedule 1, table S1.1, A1 to A8. A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31st January (or other date agreed in writing by Natural Resources Wales each year. The report(s) shall include as a minimum:

- 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, and*
- b) the annual production/treatment data set out in Schedule 4 Table S4.2*

1.1 Introduction

CELSA's Manufacturing Mission Statement states we are 'the UK's leading environmentally focused integrated steel manufacturer'. Despite an exceptionally difficult market, CELSA are committed to achieving continual improvement of our environmental performance.

The Melt Shop's environmental performance in 2022 has been reviewed, including the environmental Objectives and Targets which have been set for 2023 in conjunction with senior management. CELSA received 7 complaints via NRW in 2022. 1 complaint concerned noise, and has since been investigated and resolved. The remaining 6 complaints are regarding dust fallout in the local area, and have come from neighbouring businesses and residents. CELSA has carried out improvements and changes to its operations in response to these complaints, including replacing sheeting on the melt shop roof canopy and relocating certain mobile processes further away from sensitive receptors. Projects to further manage any dust emissions remain ongoing and CELSA looks to continuously improve environmental performance in this area. Currently the techniques used for mitigating fugitive dust emissions are in alignment with the most up to date BAT guidance.

1.2 Environmental Performance Review

1.2.1 Production and Energy Consumption

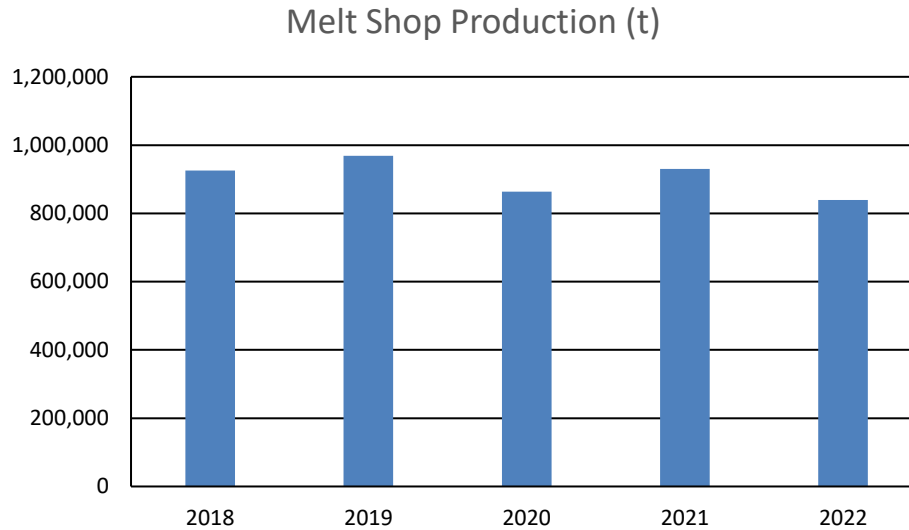


Figure 1: Finished Steel annual production from activity A1. There was a decrease in production of 9.7% from 2021 to 2022.

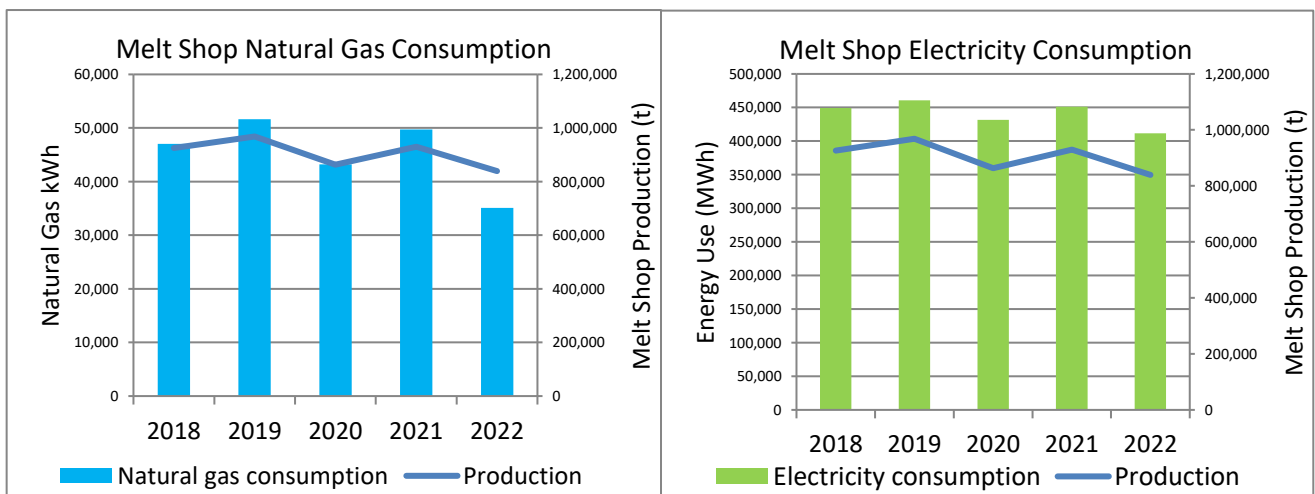


Figure 2: Melt Shop Energy Consumption

Gas and electricity consumption at the Melt Shop decreased by 29.41% and 8.78% respectively in comparison to 2021 usages. The Melt Shop will continue to focus on energy as part of their Objectives and Targets throughout 2023.



Figure 3: Melt Shop Energy Consumption per tonne (MWh/tonne)

From 2021 to 2022, per tonne of steel produced, electricity consumption increased by 1.07% while natural gas use decreased by 20%.

Absolute natural gas and electricity consumption decreased in 2022 to the lowest point in over 5 years. This is largely due to the efforts made in line with CELSA's Net Zero by 2030 strategy. Projects included:

- Transition from using a tundish lining that required drying with natural gas to a cold setting product that requires no natural gas to dry. This is estimated to save more than 63,000m³ of natural gas in 2023.
- Burners are now switched off during the scrap melting process, and are only in operation at the beginning of a melt.
- Optimisation of electrical and oxy patterns to optimise the performance of the furnace arc and reduce electricity consumption.

Melt Shop electricity consumption per tonne increased in comparison to 2021 performance. This is due to challenges faced by energy price volatility throughout the summer months, causing the process to follow a stop-start production pattern with reduced utilisation. When production follows this pattern it is incredibly challenging to maintain a good standard of energy efficiency.

1.2.2 Air emissions

A1 - Melt Shop Air Emissions (kg/production tonne)

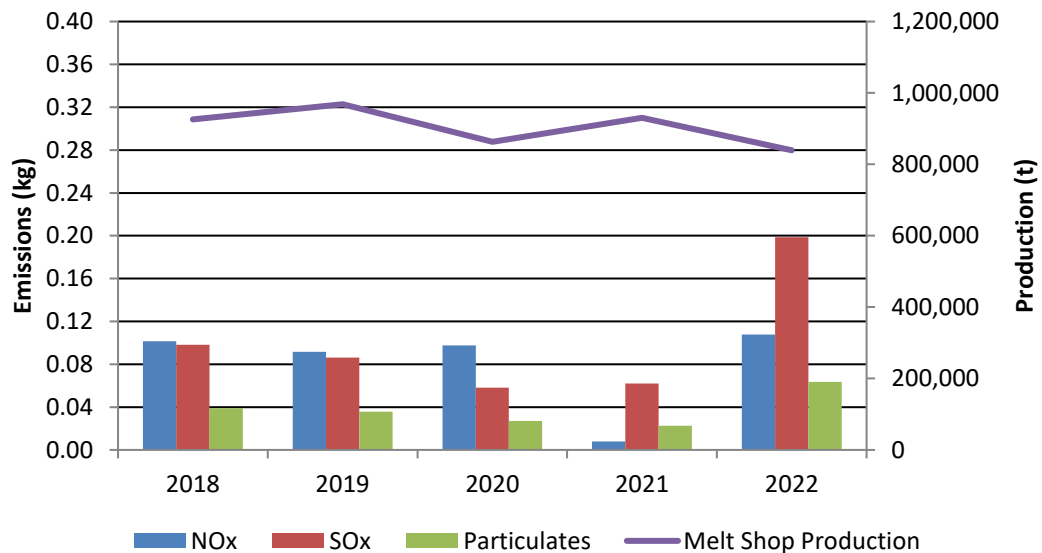


Figure 4: Melt Shop Air Emissions (kg/production tonne)

Emissions figures per tonne increased from 2021 to 2022 based off of results obtained from a spot sample once each year.

1.2.3 Waste Water Quality

S1 - Wastewater Quality

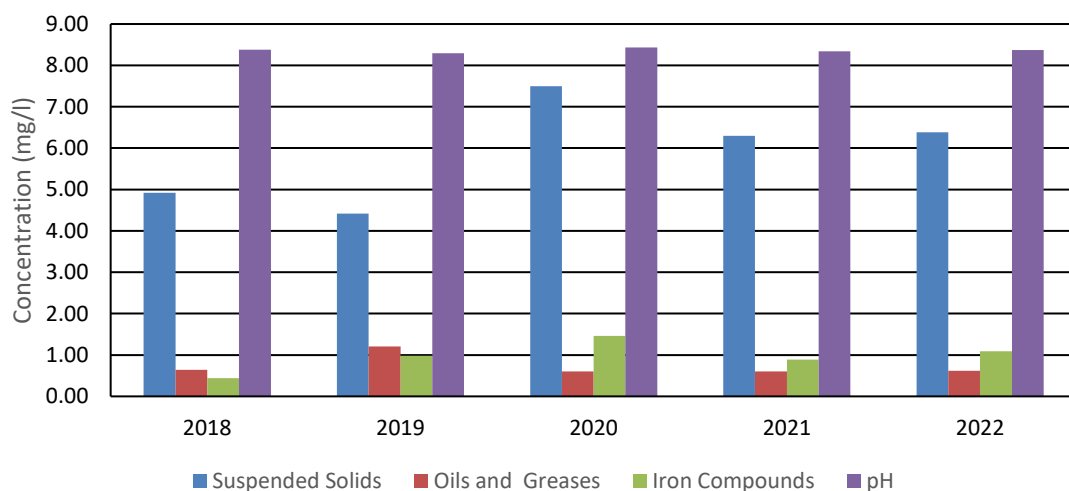


Figure 5: Melt Shop Waste Water Quality (mg/l)

Water Consumption

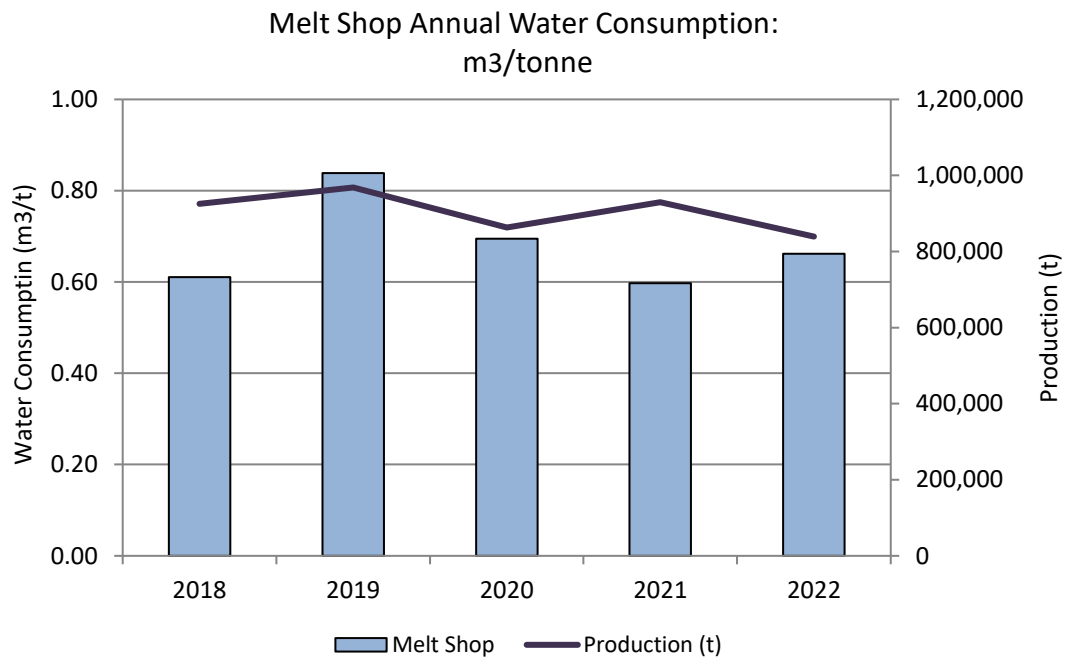


Figure 6: Melt Shop water consumption (m³/tonne)

2022 water consumption in the Melt Shop increased slightly in comparison to 2021 from 0.6m³/t to 0.66m³/t.

1.2.4 Waste Production

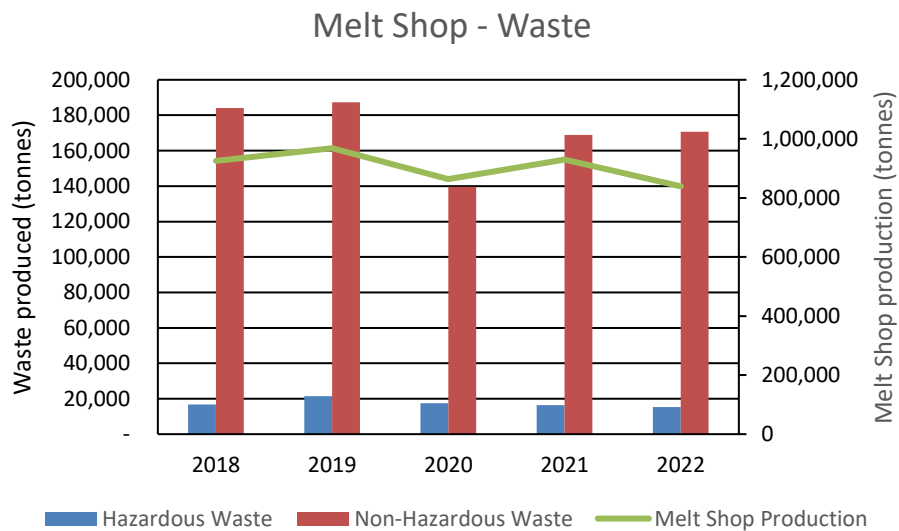


Figure 7: Melt Shop waste production (tonnes)

1.2.5 Fugitive Emissions

Particulates are formed as a consequence of EAF steelmaking and are created from the volatilisation of the steel scrap during the electric arc melting process. Large volumes of fume are generated during the melting process. Fume is drawn off both the electric arc and ladle furnace using extraction fans. The main fume discharge and any fugitive releases in these areas are captured by the roof canopy (total capture system) and conveyed by ducting to the abatement plant (bag house).

CELSA completed a large amount of maintenance work during their maintenance periods which has had a beneficial impact at reducing fugitive emissions and oil leaks, some of this work includes:

- Repairs to Melt Shop roof, replacing with higher quality materials to minimise need for future repair
 - Repairs to cladding on pyramid
 - Repairs to sheeting on east-facing side wall
 - Repairs to cladding on west-facing wall
- Annual planned preventative maintenance of dust abatement system
- Repairs to caster and EAF furnace roofs
- Replacement of hydraulic seals, hoses and pipework throughout process

Slag is produced during the making of steel and is a normal by-product of the EAF process. Slag from the EAF is tipped to flow beneath the furnace onto the slag bed. As this is conducted within the main Melt Shop, any emissions arising from this are captured by the air collection and abatement system. The slag is then moved by a specially adapted bulldozer to an outside intermediate staging area, to blade the material out and allow cooling water to be sprayed onto the slag. The slag is kept in the staging area until a cooled economic load has been assembled. It is then transported via dedicated wagons to the slag reprocessing plant on the other side of the Rover Way.

As part of the secondary steel process an artificial slag is generated on the steel ladle. Subsequent to casting, this slag will be tipped to the ground. When cooled, it is also transported to the slag handling plant across Rover Way. As part of CELSA's circular economy business model, our by-product is sold to our contractor to be used in the Asphalt production process at their on-site plant. The asphalt produced at the plant is used in the construction of new roads.

At the mineral site, where slag is cooled and weathered, BAT techniques are implemented to minimise fugitive dust lift off.

A Schedule 5 form was submitted regarding a reaction in the scrap added to the process on 09/03/2022. This caused a reaction, resulting in an emission of fugitive dust and noise from the Melt Shop structure. A root cause investigation has been undertaken identifying scrap mix as the root cause. New controls have been implemented to address this issue and prevent reoccurrence.

CELSA has two Turnkey Optical Particle Analysis System (TOPAS) monitors in place in the local community. The primary monitor, located at Willows High School, enables CELSA to gain a greater understanding of dust levels in Tremorfa. The TOPAS particulate results are reported to NRW on a quarterly basis. The second reserve monitor is located on the roof of Baden Powell, the local primary school to enhance CELSA's understanding of dust levels in Tremorfa. This also provides us with supplementary data should the Willows High School monitor fail. In 2021 the yearly average for PM10 particulates was 46.03 $\mu\text{g}/\text{m}^3$ compared with 14.36 $\mu\text{g}/\text{m}^3$ in 2022. This is a 68.8% decrease in concentration. The yearly average for total particulate concentration decreased from 57.5 $\mu\text{g}/\text{m}^3$ in 2021 to 20.19 $\mu\text{g}/\text{m}^3$ in 2022, which demonstrates a 64.9% reduction overall.

In 2022 the company purchased an additional 2 particulate monitors to be installed at the material handling site adjacent to the Melt Shop operations on Rover Way. The information that these monitors provide will further aid efforts to minimise fugitive dust emissions from activities on site. Currently, CELSA uses dust mitigation measures in accordance with the most recent Best Available Techniques (BAT) reference document for iron and steel production to manage fugitive dust generated by this activity.

1.2.6 The review of annual production/treatment data set out in Schedule 4 Table S4.2

A1 Monthly Average Concentrations

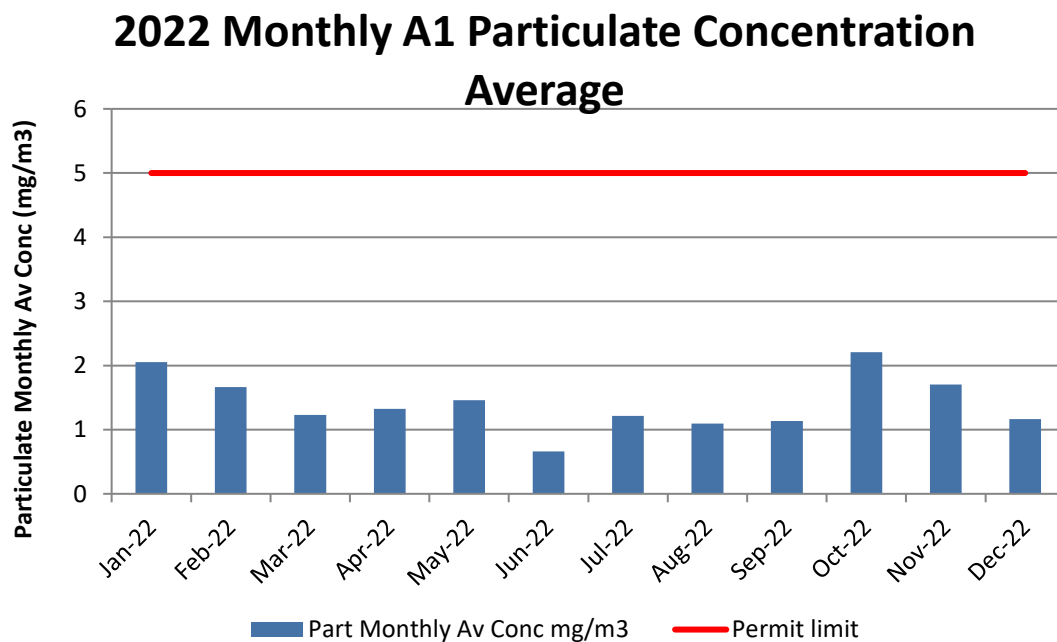


Figure 8: 2022 Melt Shop Monthly Average Concentration of continuous monitoring (mg/m³) – A1

CELSA's A1 continuous emissions are monitored and analysed throughout each shift and discussed in the daily morning meetings with the Melt Shop senior managers, production personnel and engineers. Investigations are conducted in order to identify any issues that could contribute to negative data trends and any permit breaches.

In 2022 on 23rd January, the CEMS daily average exceeded the permit limit of 5.00mg/m³ with a value of 6.59mg/m³. This breach was investigated internally by the Melt Shop to identify a root cause and apply corrective measures, on this instance bag filters in the dust plant had failed and were replaced. Action plans to prevent future occurrence of particulate breaches were immediately implemented including a revised maintenance programme for the extraction system. There were no further CEMS particulate breaches for the A1 stack in 2022 following on from this.

Between 15/07/2023-18/07/2023 no data could be obtained from the CEMS monitor on the A1 stack due to an electrical trip on site on the 15/07/2023. The CEMS PC was rebooted on the 18/07/2023 once the data gap was identified, and the CEMS system has since been set up on a separate electricity supply to prevent likelihood of this event reoccurring. Based off of CEMS data leading up to the incident, and operations during the data gap, it is not thought that any significant emissions occurred during this period.

On 24th February the CEMS particulate monitoring system located on the A5 Asphalt Plant stack exceeded the 20mg/m³ hourly average stated in the permit. The operator of the Asphalt Plant, following an investigation, reported that this breach arose as a malfunction of the CEMS monitor, which has since been rectified.

Conclusion

In summary, improvements have been made in a number of areas, especially natural gas consumption. As CELSA looks to progress on its journey to Net Zero by 2030, ongoing improvements in resource efficiency will be continued. In 2022 challenges posed by the volatile energy market disrupted usual production patterns, impacting the progress that could be made in this area. CELSA's wastewater continues to be monitored and remains within the permitted limits applied by NRW.

The Environmental Induction Training provided to all new members of the company continues to be actively improved upon to ensure that individuals can make educated decisions with respect to environmental matters from their first day with the company onwards. Training refreshers on specific topics are also sent out and communicated once a month to refresh and update existing employees on the importance of the environment, and how their actions can have an impact.

In 2023, CELSA will continue to manage and improve environmental impacts through the Environment Management System and strive to achieve the challenging targets set.

If you require any further information, please do not hesitate to contact the Environmental Department.

Yours sincerely,

A handwritten signature in black ink, appearing to read "H. Mayled".

Hannah Mayled
Environmental Advisor