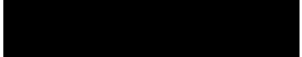


IQE Europe performance review 2024.  
Environmental Operating Permit  
EPR/KP3235SS

January 31

2025

Prepared on behalf of IQE Europe Ltd.

  
IQE Group HSE Manager.

**Introduction**

This report has been prepared for Natural Resources Wales “the regulator” in line with the requirements of IQE EU “the operator” environmental operating permit EPR/KP3235SS to satisfy permit condition 4.2.2.

**General Information**

This is the 8th report submitted by IQE since the issue of the consolidated operating permit by the regulator on 25<sup>th</sup> July 2017. Last year we announced that this facility was moving away from production and into an innovation space for future product development. In the past year it has been decided that both sites should be operating under a single management team and this site should be used for production as well.

There have been significant changes to the executive leadership team across IQE with a new interim CEO appointed as well as several key members of the old ELT remaining in position. This does not look to change how effective our management system works and we still have representation at the ELT level through the legal ESG and through our reporting line in operations.

During 2024 IQE sites across South Wales have engaged with Achilles to maintain accreditation to ISO 14064-1 with a recertification due in 2025.

Work at IQE in South Wales had dropped off somewhat in 2024 resulting in us not producing the same quantity of wafers. This has had a negative impact on some of our metrics due to the fact that our energy usage stays constant as the majority of the energy used in reactors is used to keep it in standby, the actual production aspect doesn’t significantly increase the energy use. This will be discussed further in the data review section.

**Monitoring Results (Condition 4.2.2 (a))**

The table below summarises the results from the latest round of emission monitoring conducted in line with the requirements of permit condition 3.3.1 (a) and table S3.1 of KP3235SS for emission points A1 and A3.

<b>Emissions to Air</b>			
<b>Emission Point</b>	<b>Substance/Parameter</b>	<b>Emission Limit Value</b>	<b><u>Result</u><sup>[1]</sup></b>
A1	<u>Ammonia</u> <sup>(7)</sup>	10 mg/m <sup>3</sup>	0.29mg/m <sup>3</sup>
A1	Hydrogen Chloride	10 mg/m <sup>3</sup>	0.04mg/m <sup>3</sup>
A3	<u>Arsine</u> <sup>(6)</sup>	0.42 mg/m <sup>3</sup>	0.0010mg/m <sup>3</sup>
A3	<u>Phosphine</u> <sup>(6)</sup>	0.42 mg/m <sup>3</sup>	0.0026mg/m <sup>3</sup>
A3	<u>Ammonia</u> <sup>(7)</sup>	9 mg/m <sup>3</sup>	0.0050mg/m <sup>3</sup>

**2021 v 2022 Comparison**

<b>Emission Point</b>	<b>Substance</b>	<b>Emission Limit Value</b>	<b>2023 Result</b>	<b>2024 Result</b>	<b>+ / - Balance</b>
A1	Ammonia	10mg/m <sup>3</sup>	0.017mg/m <sup>3</sup>	0.29mg/m <sup>3</sup>	-0.273mg/m <sup>3</sup>
A1	Hydrogen Chloride	10mg/m <sup>3</sup>	0.04mg/m <sup>3</sup>	0.04mg/m <sup>3</sup>	+0.0mg/m <sup>3</sup>
A3	Arsine	0.42mg/m <sup>3</sup>	0.013mg/m <sup>3</sup>	0.001mg/m <sup>3</sup>	+0.012mg/m <sup>3</sup>
A3	Phosphine	0.42mg/m <sup>3</sup>	0.002mg/m <sup>3</sup>	0.0026mg/m <sup>3</sup>	-0.0006mg/m <sup>3</sup>
A3	Ammonia	9mg/m <sup>3</sup>	0.014mg/m <sup>3</sup>	0.005mg/m <sup>3</sup>	+0.009mg/m <sup>3</sup>

As we can see from the data table 'Emissions to Air' IQE EU remains significantly lower than the emission limit value of 10mg/m<sup>3</sup> for ammonia & hydrogen chloride for emissions point A1.

Emission point A3 for Arsine, Phosphine & Ammonia limits are also significantly lower than the ELV's.

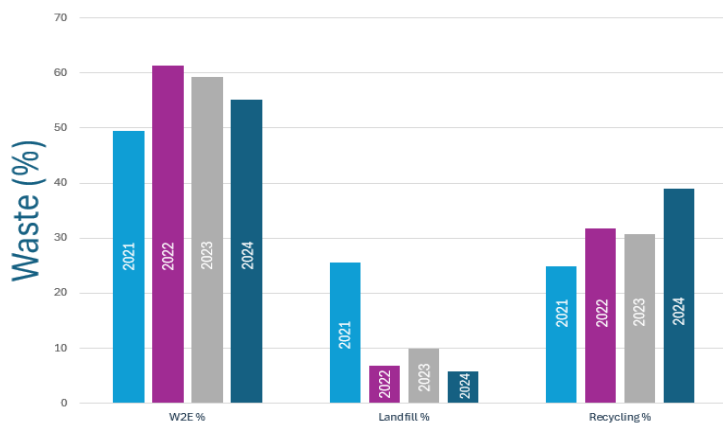
### 2024 Data Review

The results for this year shows that we have had a significant downturn in business from 226,403.59inch<sup>2</sup> down to 105,782inch<sup>2</sup>. This had had a negative effect on our energy per wafer as the reactors are practically at full energy consumption at all times, with production only adding a negligible amount of additional energy use. As the business was slowing down we looked towards ways we could save energy with the added benefit of cost saving. This resulted in one of our Principal Engineers developing a new state for the reactors dubbed "hibernation". This hibernation state cuts the gas flow rates in half and reduces the equipment temperature points by half. This should result in a noticeable reduction in energy usage for the reactors and will be tracked through 2025 in line with energy management objective targets that have been set.

Our machines are pre-qualified for a certain "recipe" so that that particular morphology can only be grown on that reactor. This has an impact on our emissions depending on what recipe that particular reactor is running at a time and due to multi-qualification on reactors this can cause the emissions to vary depending on demand. Compared to 2023 we can see a significant drop of Ammonia from the A1 stacks with a corresponding increase in emissions from the A3 stack. This can be accounted for by a shift in research and production towards GaN wafers that are being developed on G4 reactors, the same as we have in Newport, as we are looking to scale at the Newport site. The drop in A1 shows a move from GaN on the old G3 reactors to better support the GaAs and InP wafer production.

Water usage has stayed constant with the significant user being the wet scrubber system and the on-site amenities.

Waste on site has been affected positively. Year on year we have achieved an increase of approximately 10% of waste to recycling with a reduction in landfill and waste to energy.



Waste routes for IQE Europe.

As required under permit condition 4.2.2 (table S4.2) for the period 01/01/24 – 31/12/24 the annual amount of raw ammonia used was 1400kg which is ~57% increase on the previous year. This is to be expected from the product shift to more GaN architecture which uses high flow rates of ammonia.

All emissions to atmosphere from emission point A3 are significantly below prescribed limits and IQE EU continues to operate in compliance with the conditions laid down in EPR/KP3235SS.