IQE Europe performance review 2018.
Environmental Operating Permit
EPR/KP3235SS

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2019

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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 second report submitted by IQE since the issue of the consolidated operating permit by the regulator on 25th July 2017 and as such it may continue to evolve as future iterations are submitted.

VCSEL demand has continued to grow throughout 2018. G5+ reactor is in operation at IQE EU in research & development mode.

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.

Emissions to Air			
Emission Point	Substance/Parameter	Emission Limit Value	Result[1]
A1	Ammonia(7)	10 mg/m^3	0.42mg/m^3
A1	Hydrogen Chloride	10 mg/m^3	0.10mg/m^3
A3	Arsine(6)	0.42 mg/m^3	0.067mg/m^3
A3	Phosphine(6)	0.42 mg/m^3	0.208mg/m^3
A3	Ammonia(7)	9 mg/m^3	0.14mg/m^3

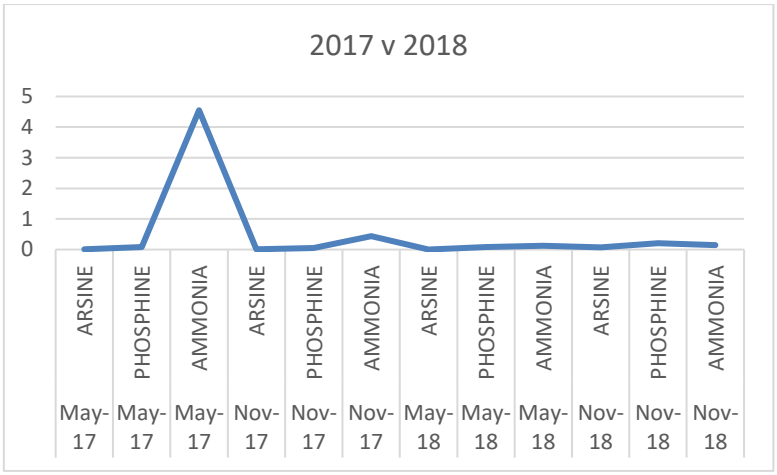
With the commissioning of the G5+ tool there are subsequent emissions of ammonia and hydrogen chloride via emission point 1 from FAB1 area of IQE EU. As there was no data for 2017 no year on year comparison could be made. A comparison will be made in 2019, this will also include a data review of emission point A1 and will include charts as per emission point A3.

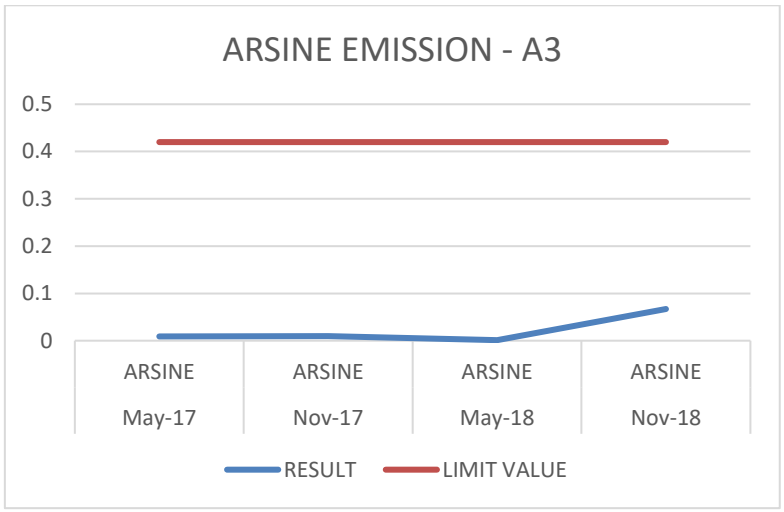
As we can see from the data table above IQE EU remains significantly lower than the emission limit value of 10mg/m^3.

Data Review

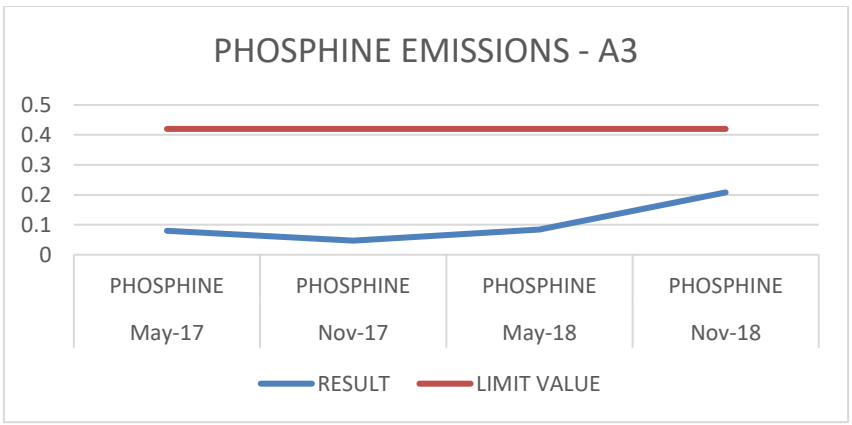
Evaluation of 2018 monitoring results for arsine emissions via point A3 against 2017 show an increase in emissions from 0.00947mg/m^3 to the current result of 0.067mg/m^3 obtained on 8th November 2018.

This increase is primarily attributable to the continued production ramp where more arsine is required to produce VCSELS a continuation of the demand initially shown in 2017. Emissions remain significantly lower than the emission limit value of 0.42 mg/m^3. This is evidenced in the charts on the following pages.

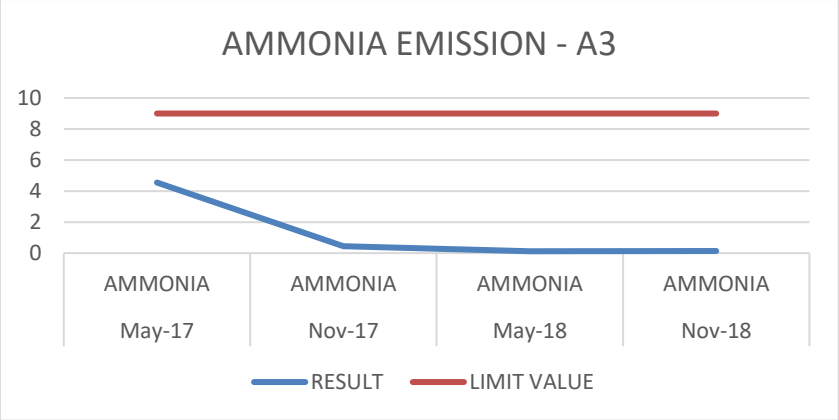




As a direct result of the increase in VCSEL demand IQE previously transferred some of its material growth operations where phosphine is required to facilities throughout the group. The EU facility continues to operate up to three production tools where phosphine is required. Phosphine emissions have steadily increased throughout 2018 but remain well within limits set as evidenced in the chart below.



Throughout 2018 Ammonia emissions from the facility have remained steady and at low levels. Showing no signs of further spikes as noted in the report of 2017. Emissions to air remain below the prescribed limit.



As required under permit condition 4.2.2 (table S4.2) for the period 01/01/18 – 31/12/18 the annual amount of raw ammonia used was 408.65kg / 0.40 tonnes.

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.