



January 22

IQE Europe performance review 2017.
Environmental Operating Permit
EPR/KP3235SS

2018

Prepared on behalf of IQE Europe Ltd.
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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 first 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.

The general trading outlook within the business remains positive. During H2 of 2017 IQE has seen 50% growth in VCSEL demand with continued growth forecast for 2018.

The G5 production tool which was the subject of the variation submitted by the operator in 2017 has yet to be commissioned. The installation of supporting infrastructure for this machine is close to completion and IQE fully expects to start commissioning and testing of this equipment during the latter part of quarter two.

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.

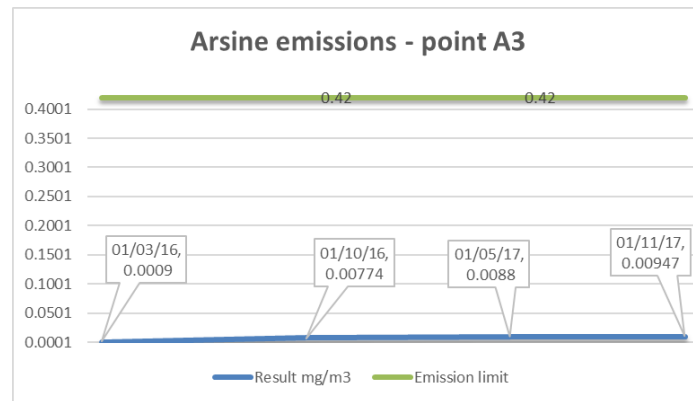
Emissions to Air			
Emission Point	Substance/Parameter	Emission Limit Value	Result
A1	Ammonia	10 mg/m ³	N/A
A1	Hydrogen Chloride	10 mg/m ³	N/A
A3	Arsine	0.42 mg/m ³	0.00947mg/m ³
A3	Phosphine ⁽⁶⁾	0.42 mg/m ³	0.04719mg/m ³
A3	Ammonia	9 mg/m ³	0.44mg/m ³

As discussed previously the G5 tool has yet to be commissioned and therefore there are currently no emissions of ammonia or hydrogen chloride to atmosphere via emission point A1 from the FAB1 area of the facility.

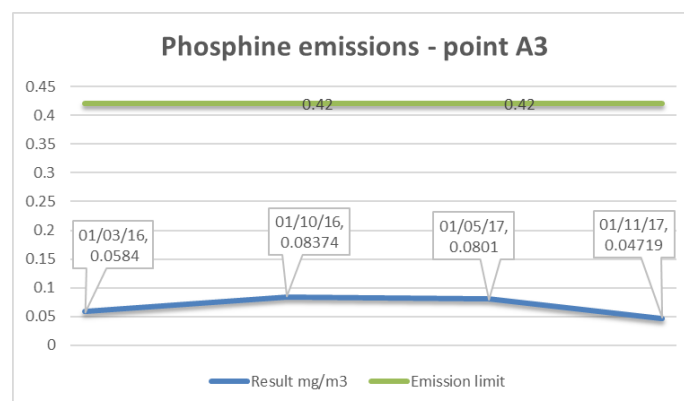
Data Review

Evaluation of 2017 monitoring results for arsine emissions via point A3 against 2016 show a slight increase in emissions from 0.0009mg/m³ to the current result of 0.00947mg/m³ obtained in November 2017.

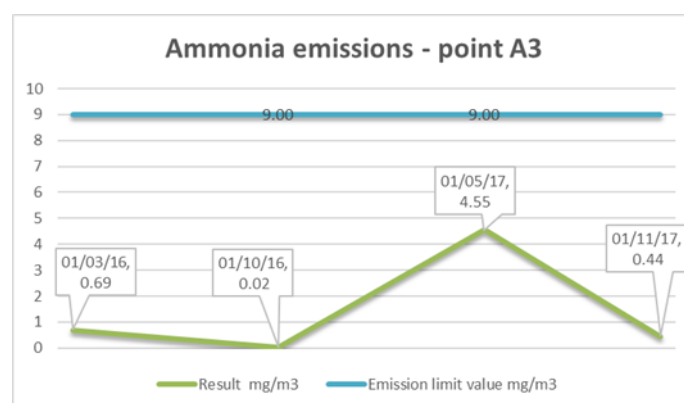
This increase is attributable to the significant production ramp during the second half of the year where more arsine is required to produce VCSELS but emissions remain significantly lower than the prescribed limit of 0.42 mg/m³. This is evidenced in the chart on the following page.



As a direct result of the increase in VCSEL demand IQE has transferred some of its material growth operations where phosphine is required to facilities throughout the group. The EU facility is currently operating only three production tools where phosphine is required and this reduction in phosphine consumption and subsequent emissions is evidenced in the table below.



Ammonia emissions from the facility have returned to previous norms following the spike reported in May 2017. As discussed with the regulator previously the results of ammonia monitoring can be affected by the relative humidity at the time of monitoring. Emissions to air remain below the prescribed limit.



As required under permit condition 4.2.2 (table S4.2) for the period 01/01/16 – 31/12/17 was 0.098 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.