

Permit Number: EPR/AP3139FT

Operator:

Dwr Cymru Cyfyngedig

Facility: Five Fords WWTW CHP Facility

Form Number: Air1 / 27/01/2017

Reporting of emissions to air for the period from 01/01/2016 to 31/12/2016

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result (t)	Test Method (t)	Sample Date and Times (t)	Uncertainty (t)
A1	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500 mg/m ³	Hourly average	519.03 mg/m ³	BS EN 14792	10/06/2016 13:01 - 14:50	2%
A1	Carbon Monoxide	1400 mg/m ³	Hourly average	829.17 mg/m ³	BS EN 15058	10/06/2016 13:01 - 14:50	3%
A1	Sulphur Dioxide	-	Hourly average	11.36 mg/m ³	BS EN 14791	09/06/2016 11:45 - 12:45	13%
A1	Total VOC's - day1	1000 mg/m ³	Hourly average	1633.79 mgC/m ³	BS EN 12619	09/06/2016 12:45 - 13:44	2%
A1	Total VOC's - day2	1000 mg/m ³	Hourly average	1397.99 mgC/m ³	BS EN 12619	10/06/2016 12:54 - 13:53	3%
A1	NM/VOC's	-	Hourly average	4.75 mg/m ³	BS EN 13649	09/06/2016 13:00 - 14:00	16%
A2	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500 mg/m ³	Hourly average	710.90 mg/m ³	BS EN 14792	10/06/2016 10:30 - 11:29	2%
A2	Carbon Monoxide	1400 mg/m ³	Hourly average	882.28 mg/m ³	BS EN 15058	10/06/2016 10:30 - 11:29	3%
A2	Sulphur Dioxide	-	Hourly average	9.91 mg/m ³	BS EN 14791	09/06/2016 14:30 - 15:30	13%
A2	Total VOC's - day 1	1000 mg/m ³	Hourly average	1685.09 mgC/m ³	BS EN 12619	09/06/2016 15:31 - 16:30	2%
A2	Total VOC's - day2	1000 mg/m ³	Hourly average	1427.35 mgC/m ³	BS EN 12619	10/06/2016 10:40 - 11:39	3%
A2	NM/VOC's	-	Hourly average	2.12 mg/m ³	BS EN 13649	09/06/2016 15:50 - 16:50	15%
A3 (operating on Biogas)	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500 mg/m ³	N/A	-	BS EN 14792	N/A	N/A
A3 (operating on Biogas)	Carbon Monoxide	1400 mg/m ³	N/A	-	BS EN 15058	N/A	N/A

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result (1)	Test Method (2)	Sample Date and Times (3)	Uncertainty (4)
A3 (operating on Biogas)	Sulphur Dioxide	-	N/A	-	BS EN 14791	N/A	N/A
A3 (operating on Biogas)	Total VOC's	1000 mg/m ³	N/A	-	BS EN 12619 BS EN 13526	N/A	N/A
A3 (operating on Biogas)	NMVOC's	-	N/A	-	BS EN 13649	N/A	N/A
A3 (operating on Natural Gas)	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	-	Not tested*	-	BS EN 14792	-	-
A3 (operating on Natural Gas)	Carbon Monoxide	-	Not tested*	-	BS EN 15058	-	-

*Boiler could not be tested as there was not enough demand for the boiler to fire during the survey.

- [1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum - maximum' measured values.
- [2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
- [3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
- [4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed 
(Authorised to sign as representative of Operator)

Date 07/02/2017

ANDREW DIXON
ENERGY OPS MANAGER (GENERATION)

Permit Number: EPR/AP3139FT

Operator:

Dwr Cymru Cyfyngedig

Facility: Five Fords WWTW CHP Facility

Form Number: Air1 / 24/01/2017

Reporting of other performance indicators for the period 01/01/2016 to 31/12/2016

Parameter	Units
Fuel input to installation (biogas)	3,783,744.63 m ³
Fuel input to installation (Natural Gas)	158,299 m ³ or 106 Tonnes
CHP engine efficiency	35 %
Hours of operation for both engines and hours that engines operated in CHP mode	8,741 Hours all CHP mode
Hours run on biogas (boiler)	0 Hours
Hours run on Natural gas (boiler)	6,466 Hours
Operational hours of waste gas burner	38 h <10% of time < 876 Hours
Biogas burnt by waste gas burner	7,834 m ³

Operator's comments :

There are ongoing investigations and a revised H1 assessment forthcoming to identify the significance of the breaches of VOC permit conditions. Significant improvements have been seen since the 2015 returns showing the engines perform much better when loaded at 100%. This is not always possible due to the lower gas yields from the conventional digestion plant and future proposed developments for Five Fords may improve site performance further. Investigation work in June also concluded that combustion temperature settings can affect the emissions, however, incoming sludges and digester temperature can also cause increases in VOCs within the raw biogas. The engines have run efficiently during 2016 frequently lasting more than 1,000 operational hours between oil changes.

Signed

(Authorised to sign as representative of Operator)

Date 24/01/2017

ANDREW DIXON

ENERGY OPS MANAGER (GENERATION)

