

IED RTA 1

V.3.1 Dec 2015

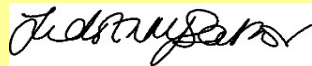
Releases of IED Pollutants to Air**Operational Summary for the year****Q4****Operator:** Dow Silicones UK Ltd**Site Location:** Barry Cogeneration Plant**Original permit number:** EPR/JP3632ZH **LCP:** 60.

Note: beginning 1 January 2016, a return is required for each LCP within 28 days of the end of each quarter

Emissions	SO2	NOx	Dust
	(tonnes)	(tonnes)	(tonnes)
January		4.52	
February		4.59	
March		4.26	
Total for Quarter 1	0.	13.37	
April		3.39	
May		3.08	
June		2.48	
Total for Quarter 2	0.	8.96	
July		2.3	
August		2.24	
September		1.66	
Total for Quarter 3	0.	6.2	
October		1.82	
November		1.38	
December		0.56	
Total for Quarter 4	0.	3.76	
Annual Total	0	32.29	

I confirm that this data is not knowingly reported with any omissions, errors or misrepresentation. All measurement equipment used to generate the data has been appropriately calibrated and maintained regularly; this includes calibration against traceable international measurement standards where available. The data is supported by appropriate record keeping. IT is designed, documented, tested, implemented, controlled and maintained to ensure reliable, accurate and timely processing of data; data handling and calculations have been appropriate; data has been checked for false and unusual measurements. The annual report of emissions for the above participating large combustion plant has been verified in accordance with the requirements of the Transitional National Plan Regulations.

Name of the operator staff responsible for the quality of data supplied to the Register in accordance with the principles above.



Judith Sartor, Environmental Specialist

Date 25th January 2022

**RELEASES TO AIR
QUARTERLY RETURN**

MONTHLY MEAN, MAXIMUM DAILY MEAN, ANNUAL MEAN AND ANNUAL PERCENTILE CONCENTRATIONS (a),(b),(c)

OPERATING MODE:

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V004

Form: IED/LCPBREF CON2
(Gas Turbines)
Vers/date: V3.0 Mar 2021

Year: 2021	A1 / LCP 60					
	NOx (mg/m3)			CO (mg/m3)		
Month	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean
January	40.4	82.5		6.5	23.2	
February	42.5	48.3		6.	12.1	
March	42.2	46.7		6.9	15.5	
April	41.9	47.3		7.4	18.8	
May	44.5	76.9		5.7	12.	
June	56.7	74.6		4.5	9.6	
July	50.6	71.98		5.09	47.41	
August	34.01	68.64		6.93	17.1	
September	-	-		-	-	
October	-	-		-	-	
November	-	-		-	-	
December	-	-		-	-	
Monthly ELV & Daily ELV (f)	75.	80.		80.	80.	
	Annual mean (d)	Annual ELV		Annual mean (d)	Annual ELV	
Annual Mean & ELV (g)		55.			30.	
	Annual percentile (d)	Annual ELV		Annual percentile (d)	Annual ELV	
Annual 95th Percentile & ELV (h)		125.			80.	

NOTES:

(a) All concentration data, at 15% O₂, dry, 273K, 101.3 kPa, are based on validated hourly mean concentrations, excluding start-up and shut-down, periods of Malfunction or Breakdown of abatement equipment or Black Start operation.

(b) Daily, Monthly and Annual means, and Annual percentile concentrations, are calculated from the validated hourly means defined in (a). CCGT qualifying periods for Hourly, Daily, Monthly and Annual averages are 40m, 6h, 72h or 3d, and 500h, respectively. OCGT qualifying periods are the same apart from the Hourly qualifying period which is reduced to 20m of normal operation. Annual averages, for plants with an Annual ELV, and Annual percentile concentrations, are submitted with the final return (Quarter 4).

(c) Extend report to cover the required number of LCP on each site and repeat report for each separately regulated Operating Mode as required, e.g., Combined Cycle, Open Cycle, Supplementary firing, Auxiliary firing

(d) Averages determined at loads in the range E-DLN < Load ≤ 100% ISO base load and above (where E-DLN is the Effective-DLN load point).

(e) Averages determined in the range MSUL* < Load ≤ 100% ISO base load and above. (* For a 3 parameter approach, from the point of Start-Up to the point of Shut-down).

(f) When there is an in-year change of ELV, record both ELVs in consecutive rows. For example, compliance with the LCP BREF begins in August 2021 therefore replace 'Period 1' with 'Jan - Jul' and 'Period 2' with 'Aug - Dec'. Otherwise, replace 'Period 1' with 'Jan - Dec' and delete or blank out the row containing 'Period 2'.

(g) For plants with an Annual ELV, for each pollutant, report the Annual mean in the first column and the Annual ELV in the second column. Annual ELVs are not applicable, and are not entered on the form, when the plant operates less than 1500 hours within the reporting year or for plant with a 1500 h/yr five-year rolling average derogation. Otherwise, reporting of the Annual mean begins in 2021 but compliance assessment with the Annual ELV begins in 2022 (incorporating plant operation from 1 January 2022); the Annual ELV is therefore not entered on the form for 2021 reporting

(h) For each pollutant, report the Annual 95th percentile of hourly means in the first column and the Annual 95th percentile ELV in the second column. However, if there is an in-year reduction of the percentile ELV then it is not mandatory to enter the ELV as compliance assessment will commence in the following year

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

25th January 2022

**RELEASES TO AIR
QUARTERLY RETURN**

MONTHLY MEAN, MAXIMUM DAILY MEAN, ANNUAL MEAN AND ANNUAL PERCENTILE CONCENTRATIONS (a),(b),(c)

OPERATING MODE:

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V004

Form: IED/LCPBREF CON2
(Gas Turbines)
Vers/date: V3.0 Mar 2021

Year: 2021	A2 / LCP60					
	NOx (mg/m3)			CO (mg/m3)		
Month	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean
January	215.6	221.8		7.8	10.5	
February	215.4	233.9		8.9	14.6	
March	187.4	187.4		8.4	8.4	
April	-	-		-	-	
May	-	-		-	-	
June	-	-		-	-	
July	118.6	105.1		0.9	5.0	
August	116.0	109.9		2.6	71.8	
September	106.1	106.7		20.0	88.3	
October	-	-		-	-	
November	-	-		-	-	
December	-	-		-	-	
Monthly ELV & Daily ELV (f)	100.	110.		80.	80.	
	Annual mean (d)	Annual ELV		Annual mean (d)	Annual ELV	
Annual Mean & ELV (g)		100.			30.	
	Annual percentile (d)	Annual ELV		Annual percentile (d)	Annual ELV	
Annual 95th Percentile & ELV (h)		200.			80.	

NOTES:

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QUARTERLY RETURN**

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(Gas Turbines)
Vers/date: V3.0 Mar 2021

Year: 2021	A3 / LCP60					
	NOx (mg/m3)			CO (mg/m3)		
Month	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean	Monthly Mean	Max Daily Mean	Part Load Max Daily Mean
January	28.5	72.4		7.8	23.6	
February	27.5	31.6		3.1	12.6	
March	23.	28.1		7.3	16.7	
April	22.4	28.1		9.2	15.7	
May	30.6	80.1		7.2	15.2	
June	-	-		-	-	
July	72.	74.3		7.2	39.8	
August	40.3	76.8		2.3	22.6	
September	25.8	31.4		17.1	76.8	
October	29.2	33.6		0.8	3.9	
November	55.2	79.5		0.7	2.5	
December	26.1	30.3		2.2	7.1	
Monthly ELV & Daily ELV (f)	75.	80.		80.	80.	
	Annual mean (d)	Annual ELV		Annual mean (d)	Annual ELV	
Annual Mean & ELV (g)		55.			30.	
	Annual percentile (d)	Annual ELV		Annual percentile (d)	Annual ELV	
Annual 95th Percentile & ELV (h)		125.			80.	

NOTES:

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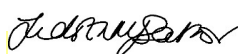
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Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

25th January 2022

RELEASES TO AIR
QUARTERLY RETURN
2021
Q4
CUMULATIVE ROLLING MALFUNCTION AND BREAKDOWN HOURS (12 MONTH PERIOD)(a), (b)
OPERATING MODE:
Operator:
DOW
Location:
Barry Cogeneration Plant
Permit/Variation Number:
EPR/JP3632ZH/V004
Form:
IED/LCPBREF BD1
Version/date:
V.3.1 31 Dec 2015

Year: 2022	A1 / LCP 60			
	NOx (mg/m3)		CO (mg/m3)	
Month	Malfunction (hours)	Breakdown (hours)	Malfunction (hours)	Breakdown (hours)
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April				
May				
June				
July				
August				
September				
October				
November				
December				
Annual total (hours)				
Annual cap (hours)	120.	120.	120.	120.

NOTES:

(a) Cumulative rolling malfunction and breakdown hours (12 month period) updated monthly

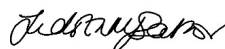
(b) Data Acquisition and Handling Systems without the capability to report Black Start hours separately may incorporate Black Start hours on this form provided that a

(c) Insert the relevant months for the preceding 12 month period, e.g., starting with March 2016

(d) Gas turbines with CO abatement only (columns may be deleted for other plant types)

(e) Plants with HCl abatement only (columns may be deleted for other plant types)

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

26th April 2022

No confidence adjustment

RELEASES TO AIR
QUARTERLY RETURN
2021
Q4
CUMULATIVE ROLLING MALFUNCTION AND BREAKDOWN HOURS (12 MONTH PERIOD)(a), (b)
OPERATING MODE:
Operator:
DOW
Location:
Barry Cogeneration Plant
Permit/Variation Number:
EPR/JP3632ZH/V004
Form:
IED/LCPBREF BD1
Version/date:
V.3.1 31 Dec 2015

Year: 2022	A2 / LCP 60			
	NOx (mg/m3)		CO (mg/m3)	
Month	Malfunction (hours)	Breakdown (hours)	Malfunction (hours)	Breakdown (hours)
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April				
May				
June				
July				
August				
September				
October				
November				
December				
Annual total (hours)				
Annual cap (hours)	120.	120.	120.	120.

NOTES:

(a) Cumulative rolling malfunction and breakdown hours (12 month period) updated monthly

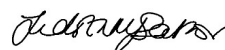
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Date of return:

26th April 2022

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RELEASES TO AIR
QUARTERLY RETURN
2021
Q4
CUMULATIVE ROLLING MALFUNCTION AND BREAKDOWN HOURS (12 MONTH PERIOD)(a), (b)
OPERATING MODE:
Operator:
DOW
Location:
Barry Cogeneration Plant
Permit/Variation Number:
EPR/JP3632ZH/V004
Form:
IED/LCPBREF BD1
Version/date:
V.3.1 31 Dec 2015

Year: 2022	A3 / LCP 60			
	NOx (mg/m3)		CO (mg/m3)	
Month	Malfunction (hours)	Breakdown (hours)	Malfunction (hours)	Breakdown (hours)
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April				
May				
June				
July				
August				
September				
October				
November				
December				
Annual total (hours)				
Annual cap (hours)	120.	120.	120.	120.

NOTES:

(a) Cumulative rolling malfunction and breakdown hours (12 month period) updated monthly

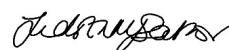
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Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

26th April 2022

No confidence adjustment

RELEASES TO AIR
RETURN OF DISCONTINUOUS MONITORING RESULTS

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V004

Form: IED PM1
Version: V.11 Mar 2016

Year - 2021	LCP 60 (A1 & A3 HR-001A & B)				
Six months to -31/12/21					
Measurement approach	NO _x	SO ₂	CO	Hg	Dust
Time					
Date					
Measurement 1 (mg/m ³) ^(b)					
Measurement 2 (mg/m ³) ^(b)					
Measurement 3 (mg/m ³) ^(b)					
Alternative approach ^(c)					
Method ^(d)		FS			DF
Calculation (mg/m ³)		0.24			0
Operational data ^(a)					
Load (%MCR)					
Fuel 1 Natural Gas (%)		100			100
Fuel 2 name (%)					
Fuel 3 name (%)					
Daily Emission Limit Value					
(mg/m ³)					

NOTES:

- (a) Operational data for the test period (measurement approach) or the six month period to date (Alternative approach)
 (b) Reference conditions for mg/m³ are 15% O₂ CCGT, 6% O₂ solid fuels, 3% O₂ for oil and gas, dry, 0°C, 101.325 kPa
 (c) Alternative approach to discontinuous monitoring by agreement with the Competent Authority
 (d) Use abbreviation: NF for agreed NO_x factor, FS for fuel sulphur content, CS for agreed CO factor, DF for agreed dust factor

Signed on behalf of the Operator by: Judith Sartor, Environmental Specialist



Date of return: 25th January 2022

RELEASES TO AIR
RETURN OF DISCONTINUOUS MONITORING RESULTS

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V004

Form: IED PM1
Version: V.11 Mar 2016

Year - 2021	LCP 60 (A2 FB-001)				
Six months to -31/12/21					
Measurement approach	NO _x	SO ₂	CO	Hg	Dust
Time					
Date					
Measurement 1 (mg/m ³) ^(b)					
Measurement 2 (mg/m ³) ^(b)					
Measurement 3 (mg/m ³) ^(b)					
Alternative approach ^(c)					
Method ^(d)		FS			DF
Calculation (mg/m ³)		0.72			0
Operational data ^(a)					
Load (%MCR)					
Fuel 1 Natural Gas (%)		100			100
Fuel 2 name (%)					
Fuel 3 name (%)					
Daily Emission Limit Value					
(mg/m ³)					

NOTES:

- (a) Operational data for the test period (measurement approach) or the six month period to date (Alternative approach)
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Date of return: 25th January 2022

RELEASES TO AIR
RETURN OF DISCONTINUOUS MONITORING RESULTS

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V004

Form: IED PM1
Version: V.11 Mar 2016

Year - 2021	LCP 60 (A4 FB-002A)				
Six months to -31/12/21					
Measurement approach	NO _x	SO ₂	CO	Hg	Dust
Time	15:00		15:00		
Date	18/10/2021		18/10/2021		
Measurement 1 (mg/m ³) ^(b)	100.35		37.51		
Measurement 2 (mg/m ³) ^(b)					
Measurement 3 (mg/m ³) ^(b)					
Alternative approach ^(c)					
Method ^(d)		FS			DF
Calculation (mg/m ³)		0.72			0
Operational data ^(a)					
Load (%MCR)					
Fuel 1 Natural Gas (%)	100	100	100		100
Fuel 2 name (%)					
Fuel 3 name (%)					
Daily Emission Limit Value					
(mg/m ³)	110	38.5	100		5.5

NOTES:

- (a) Operational data for the test period (measurement approach) or the six month period to date (Alternative approach)
 (b) Reference conditions for mg/m³ are 15% O₂ CCGT, 6% O₂ solid fuels, 3% O₂ for oil and gas, dry, 0°C, 101.325 kPa
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Date of return: 25th January 2022

RELEASES TO AIR
RETURN OF DISCONTINUOUS MONITORING RESULTS

Operator: Dow Silicones UK Ltd
Location: Barry Cogeneration Plant
Permit/Variation Number: EPR/JP3632ZH/V004

Form: IED PM1
Version: V.11 Mar 2016

Year - 2021	LCP 60 (A5 FB-002B)				
Six months to -31/12/21					
Measurement approach	NO _x	SO ₂	CO	Hg	Dust
Time	15:45		15:45		
Date	15/11/2021		15/11/2021		
Measurement 1 (mg/m ³) ^(b)	100.72		2.42		
Measurement 2 (mg/m ³) ^(b)					
Measurement 3 (mg/m ³) ^(b)					
Alternative approach ^(c)					
Method ^(d)		FS			DF
Calculation (mg/m ³)		0.72			0
Operational data ^(a)					
Load (%MCR)					
Fuel 1 Natural Gas (%)	100	100	100		100
Fuel 2 name (%)					
Fuel 3 name (%)					
Daily Emission Limit Value					
(mg/m ³)	110	38.5	100		5.5

NOTES:

- (a) Operational data for the test period (measurement approach) or the six month period to date (Alternative approach)
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Date of return: 25th January 2022

IED AR1

V.3.1 Dec 2015

IED Reporting - Energy Usage & Emissions for the year:

Q4

Operator:

Dow Silicones UK Ltd

Site Location:

Barry Cogeneration Plant

Permit/Variation number:

EPR/JP3632ZH/V004

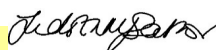
LCP:

60.

LCP Net Rated Thermal Input Capacity (MW):

Parameter	TOTAL	By Fuel							
		Coal	Lignite	Peat	Biomass	Other solid fuels	Liquid fuels	Natural gas	Other gases
Annual energy input (TJ)	2521.01							2521.01	
Total Annual SO ₂ emission (tonnes)									
Total Annual NO _x emission (tonnes)	32.29								
Total Annual Dust (PM) emission (tonnes)									

Signed on behalf of the Operator



Judith Sartor, Environmental Specialist

Date

25th January 2022

NOTES:

- (a) Annual energy input must be reported in TJ to 1 decimal places
- (b) Annual emissions to air must be reported to 2 decimal places and exclude start-up and shut-down
- (c) All forms must be saved in the format IED AR1—DEFRA IED LCP Number - Inventory Year i.e. IED AR1-XXX-2013
- (d) No PDF documents shall be accepted
- (e) Upload Forms held on GOV.UK will be accepted other variants of the forms will be automatically rejected which may impact their statutory obligations to report on time

**RELEASES TO AIR
ANNUAL RETURN
OPERATING HOURS**

Operator:
Location:
Permit/Variation Number:

**Dow Silicones UK Ltd
Barry Cogeneration Plant
EPR/JP3632ZH/V004**

Form: IED HR1
Version/date: V.3.1 31 Dec 2015

Year: 2021	A1 (hours)	Bypass (hours)	A2 (hours)	Bypass (hours)	A3 (hours)	Bypass (hours)	LCP4 (hours)	Bypass (hours)
Annual Operating Hours (a), (b)	3966	29.45	1137	NA	5489	41.77		
Cumulative Operating Hours (c), (d)								
Derogated Annual Hours (e)								
Five year rolling average (f)								

NOTES:

- (a) Annual operating hours for every LCP from 1-Jan in calendar year. (For gas turbines with a Bypass stack, include the Bypass stack operating hours during normal operation even though these are reported separately).
- (b) For gas turbines with a Bypass stack, report Bypass operating hours from 1-Jan in calendar year, excluding Start-Up and Shut-down, in the adjacent column (labelled Bypass) which may be deleted if not applicable.
- (c) Cumulative operating hours from 1-Jan-2016 for LCP subject to a Limited Lifetime Derogation or a 10,000h monitoring derogation. (For gas turbines with a Bypass stack, include the Bypass stack operating hours during normal operation even though these are reported separately).
- (d) For gas turbines with a Bypass stack, report Bypass Cumulative operating hours from 1-Jan-2016 if subject to a separate 10,000h monitoring derogation, in the adjacent column (labelled Bypass).
- (e) Annual operating hours in calendar year from entry date (in first year as applicable) or from 1-Jan in calendar year, for each 1,500h ELV derogated Unit/LCP only.
- (f) Five year running average from entry date for each 1,500h derogated Unit/LCP only.
- (g) General note: hours are reported as a decimal number to two decimal places.

Signed on behalf of the Operator by:



Judith Sartor, Environmental Specialist

Date of return:

25th January 2022