



Annual Performance and Monitoring review

EPR Permit JP3632ZH

Cogen Plant - Dow Silicones UK Ltd

This report is to fulfil ERP permit JP3632ZH condition 4.2.2

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

Contents

Summary	2
Incidents.....	2
Air monitoring	3
CEMS data	3
Periodic extractive sampling.....	5
Fuel and Subsequent Emissions.....	7
Heat vs Electrical Efficiency	8
Running Hours.....	8
CHP efficiency.....	9

Summary

The report includes details of our performance during 2019 . SPC charts have been used for all CEMS monitoring we carry out for NOX and CO for the last 3 years. SPC charts have been used for extractive sampling we have carried out since 2008.

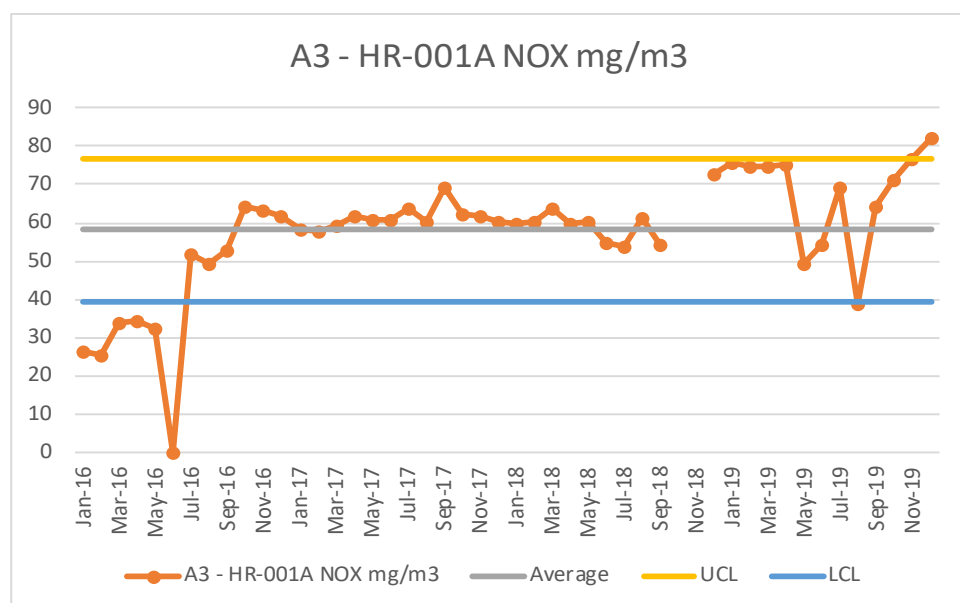
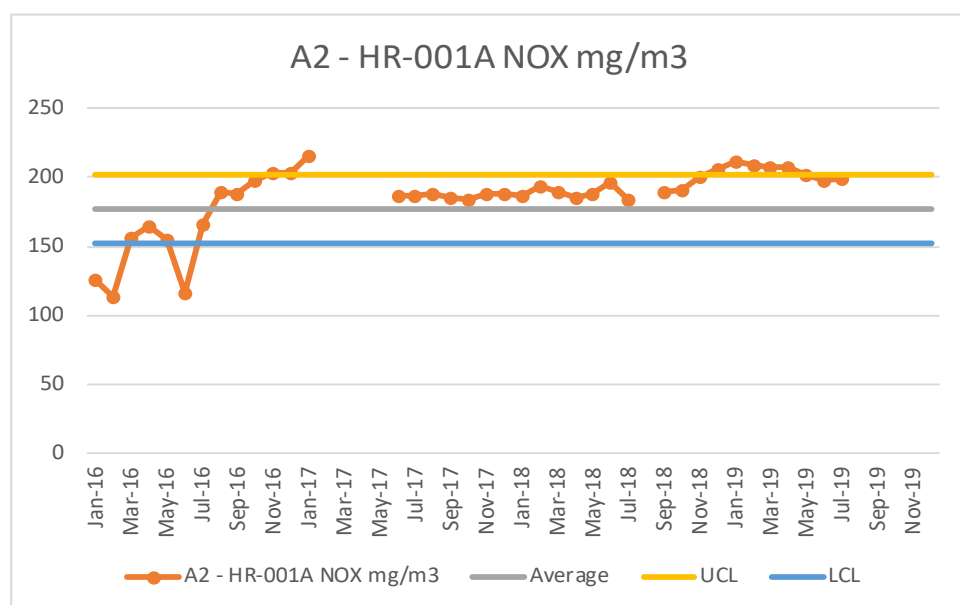
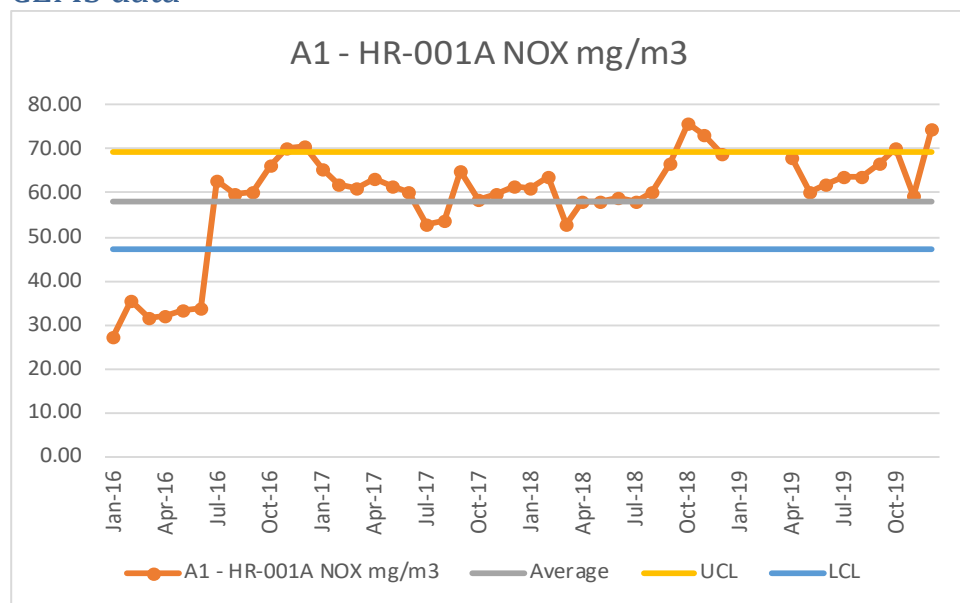
Points of interest for 2019 :

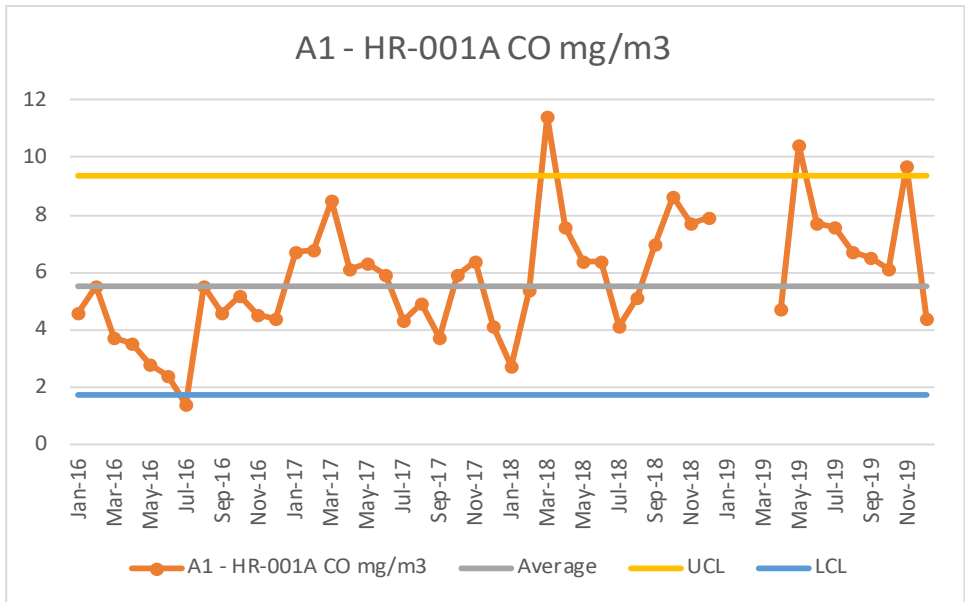
- April was the site turnaround so units ran much
- A unit was off January till March
- FB was off August till December
- B unit ran all year
- Both GT's were out of action for January till May
- The steam turbine ran intermittently between January and May at low generation rate
- The whole site was shutdown at the end of November due to an electrical issue at the air plant.

Incidents

There were no permit breaches reported in 2019 and no reports due to invalid hours.

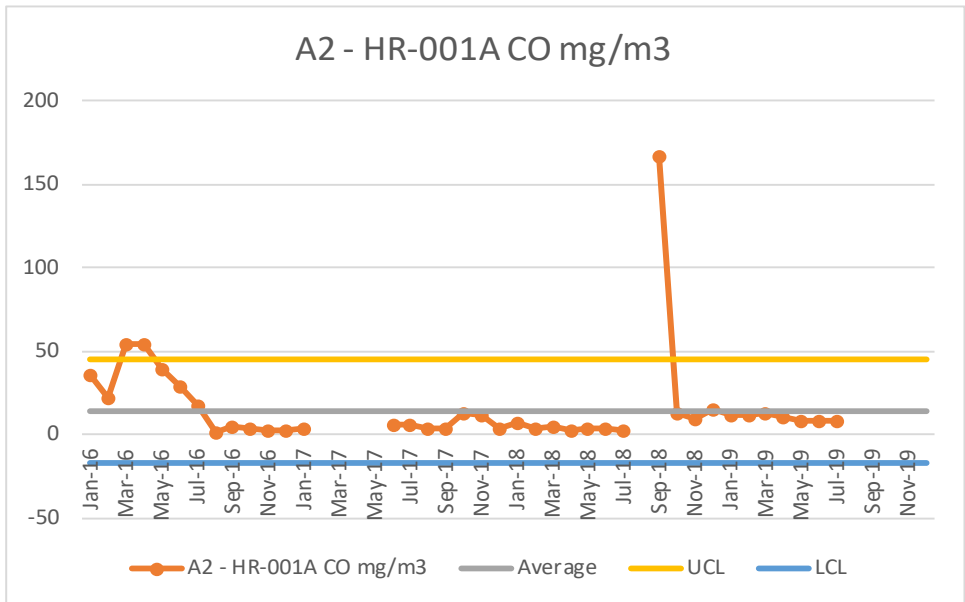
Air monitoring CEMS data





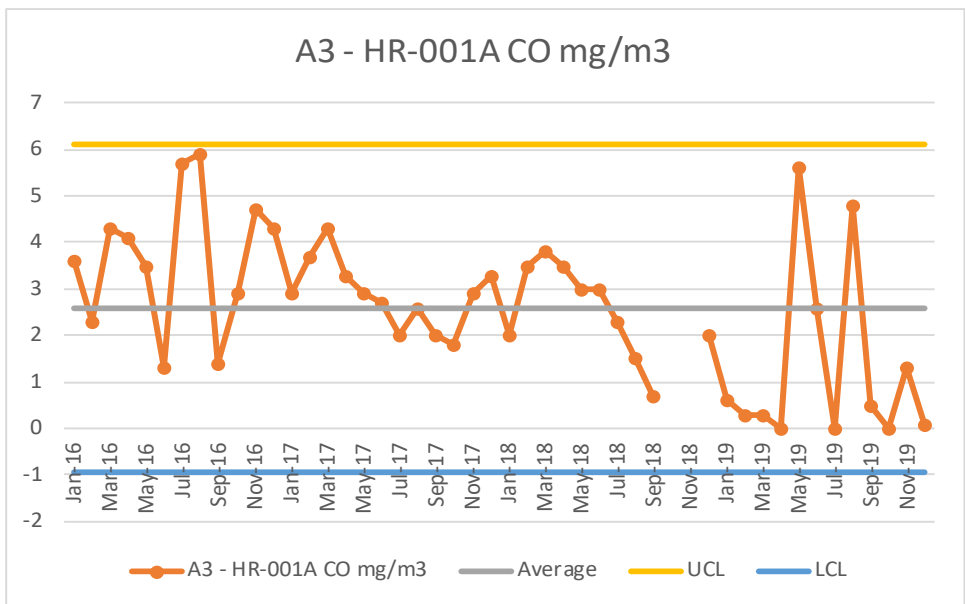
Results within permit limit (80mg/m3).
*O2 ref 15%

No results Jan-Mar as unit not running



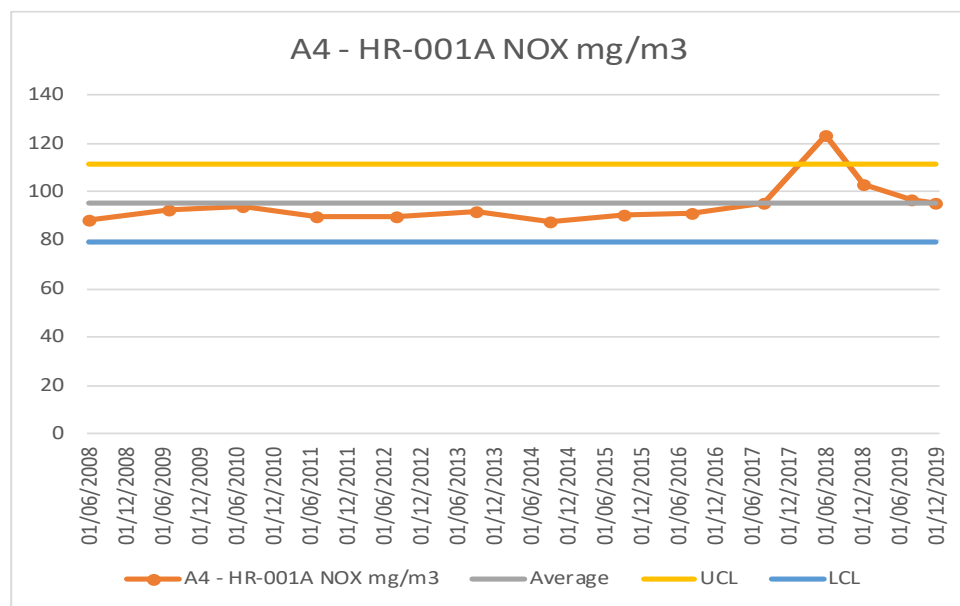
Results permit limit (110mg/m3).
*O2 ref 3%

No results Aug – Dec as unit not running.

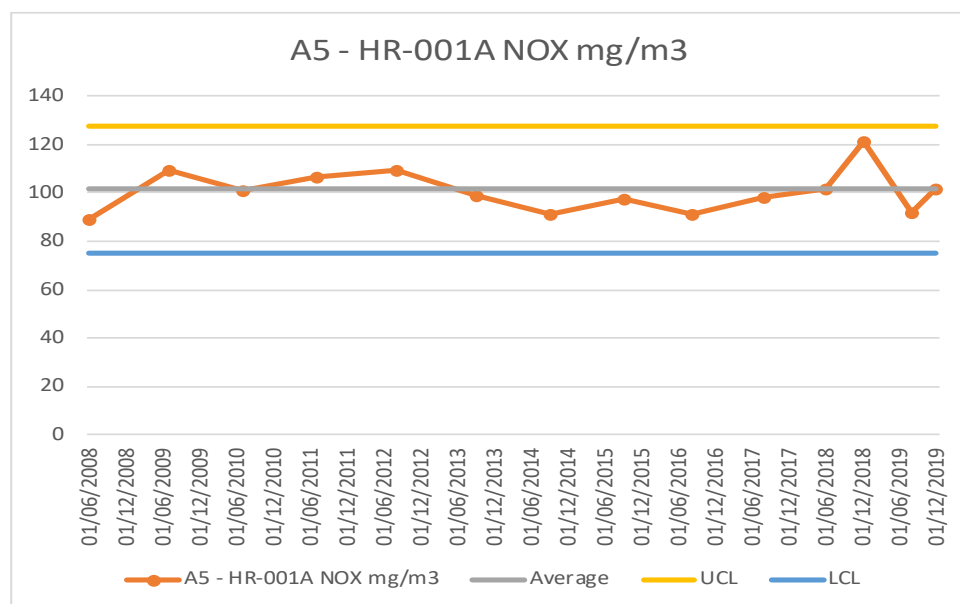


Results within permit limit (80mg/m3).
*O2 ref 15%

Periodic extractive sampling

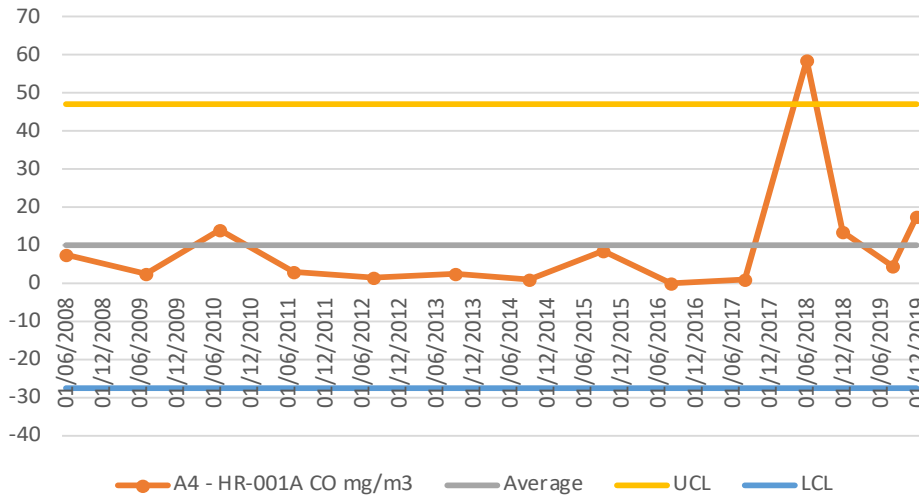


Results within permit
limit (135mg/m3).
*O2 ref 3%



Results within permit
limit (135mg/m3).
*O2 ref 3%

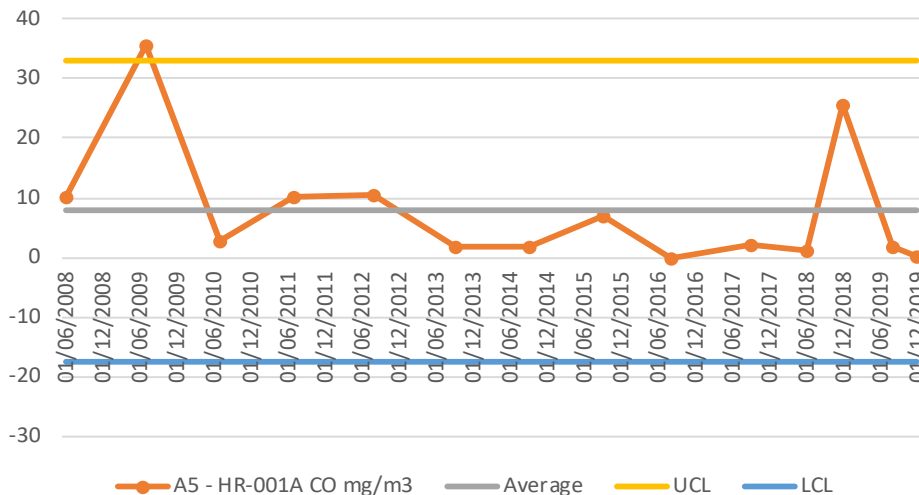
A4 - HR-001A CO mg/m3



Results within permit limit (200mg/m3).
*O2 ref 3%

June result out of control – but low again in December, Will continue to monitor this.

A5 - HR-001A CO mg/m3



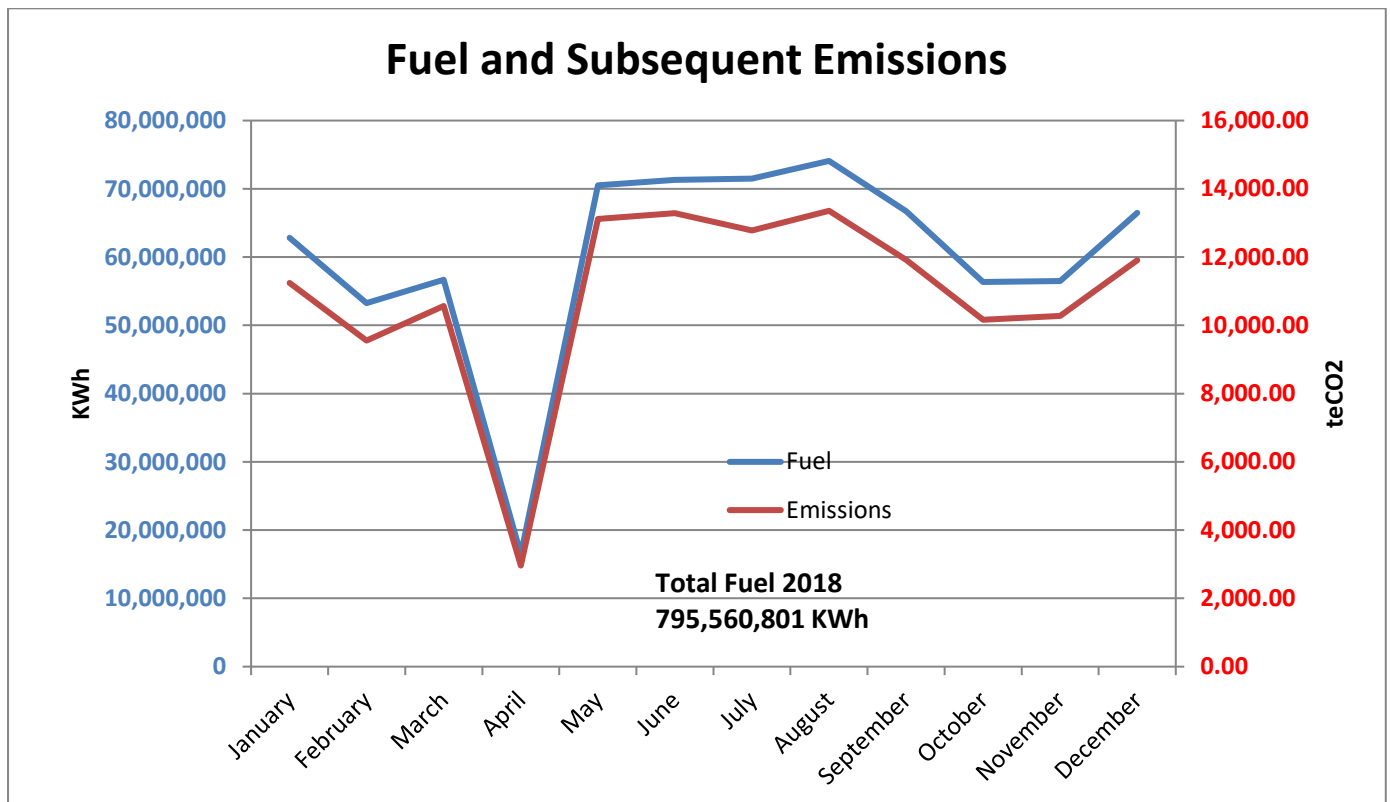
Results within permit limit (200mg/m3).
*O2 ref 3%

June result in control but December result out of control. Will continue to monitor this.

Fuel and Subsequent Emissions

Fuel and emissions was down in 2019 in comparison to 2018. Significant maintenance was carried out on Unit A and the Fired Boiler during 2019. There was also a large site shutdown during April.

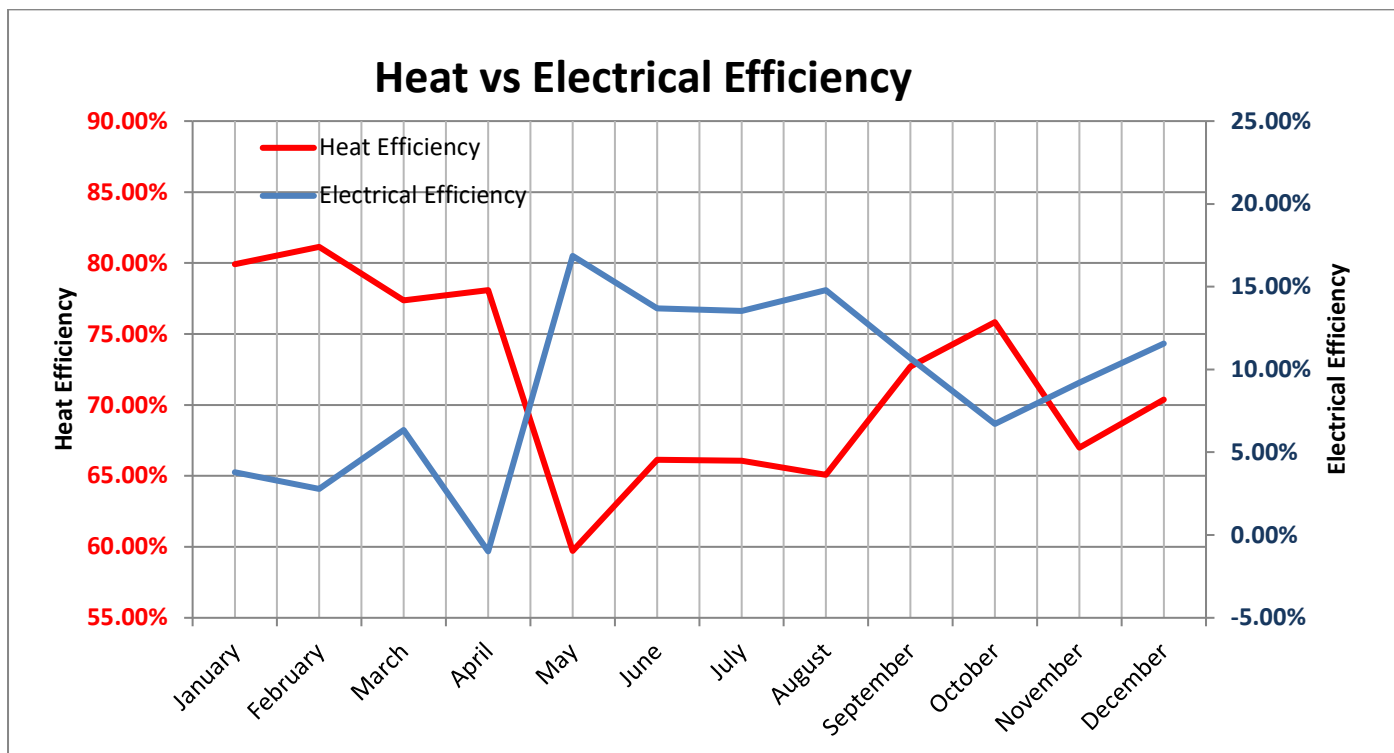
Average fuel consumption for the years was 60,220 MWh per month compared to 66,297 MWh per month for 2018.



Heat vs Electrical Efficiency

The heat efficiency was high for the first 4 month of the year, due to not being able to run the GT's and the ST to generate electricity for export.

The electrical efficiency increased from 2018 due to being able to use the GT's for a portion of the year.



Running Hours

Year:	2019	A1 (hours)	A2 (hours)	A3 (hours)	A4 (hours)	A5 (hours)
Annual Operating Hours		4326	2269	6425	4365	5118

From the annualised hours, it can be seen that they reflect a general running philosophy that the gas turbines and heat recovery units are used as base generating units for both electricity and steam, with the fired boiler taking up the rest of the plant demand.

The MP boiler hours data here is measured in a slightly different way. They are kept ready to go at all times should they be needed (these hours reflect this)

CHP efficiency

CHP efficiency was variable during the year and at its lowest during the site shutdown in April when Dow Silicones needed less steam. The CHP efficiency is comparable to previous years in spite of being unable to export electricity.

