Annex G

Investigation Reports

Annex G1

Investigation Report – December 2020

Investigation Report of CEMS Exceedances

Date	1 – 31 December 2020
Time	Continuous monitoring throughout December 2020
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Unit (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • NO_x in the CHP • NO_x, VOC (including methane) and NH_3 in the ASP. 2. According to the Contractor, the plant was receiving around 100 tonnes of SSOW daily and was operated normally. 3. The Contractor explained that exceedances recorded in the CHP was due to the low biogas loading which results in the poor performance efficiency in CHP. Exceedances in ASP was caused by unstable column temperature in biogas combustion.
Action Taken / Action to be Taken	• The supplier of the CHP has conducted an on-site investigation and checking during this reporting period. The Contractor is negotiating a routine maintenance contract with the CHP supplier to allow the CHP supplier to rectify any exceedances. The Contractor is in the process of finding better and more feedstock for the system in order to increase biogas loading. • Improvement has been observed in ASP emission performance. A local site engineer was arranged to find tune and test the ASP three days a week during this reporting period. It was arranged with the supplier of ASP to check the performance of the stacks onsite. However the supplier could not travel to Hong Kong during this reporting period due to restrictive travel arrangement. Communication with supplier was maintained and fine-tuning of equipment was performed according to supplier's instructions. The Contractor is in the process to arrange for remote fine-tuning of the ASP with the overseas contractor. The

	Contractor continues to carry out maintenance measures as per the supplier's manual. The Contractor has started to establish a regular communication channel with the ASP supplier, to overcome the fact that the supplier cannot travel to Hong Kong due to travel restriction.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the modification work and follow-up emission monitoring of the CHP and ASP to avoid exceedance. MT has advised that the issue of emission exceedances should be prioritised in up-coming meetings. MT will carry out follow-up audit regarding the progress next month.

Prepared by: Bonia Leung, MT Representative
Date 11 January 2021

Annex G2

Investigation Report – January 2021

Investigation Report of CEMS Exceedances

Date	1 – 31 January 2021
Time	Continuous monitoring throughout January 2021
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Unit (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • Dust, NO_x and HCl in the CHP • Carbon Monoxide, NO_x, VOC (including methane) and NH_3 in the ASP. 2. According to the Contractor, the plant was receiving around 100 tonnes of SSOW daily and was operated normally. 3. The Contractor explained that exceedances recorded in the CHP was due to the low biogas loading which results in the poor performance efficiency in CHP. Exceedances in ASP was caused by unstable column temperature in biogas combustion.
Action Taken / Action to be Taken	• Onsite adjustment was completed during this reporting period. The Contractor is negotiating a routine maintenance contract with the CHP supplier to allow the CHP supplier to rectify any exceedances. The Contractor is in the process of finding better and more feedstock for the system in order to increase biogas loading. • Improvement has been observed in ASP emission performance. A local site engineer was arranged to find tune and test the ASP three days a week during this reporting period. It was arranged with the supplier of ASP to check the performance of the stacks onsite. However the supplier could not travel to Hong Kong during this reporting period due to restrictive travel arrangement. Communication with supplier was maintained and fine-tuning of equipment was performed according to supplier's instructions. The Contractor arranged for remote fine-tuning of the ASP with the overseas contractor during this reporting

	period. The Contractor continues to carry out maintenance measures as per the supplier's manual. The Contractor has started to establish a regular communication channel with the ASP supplier, to overcome the fact that the supplier cannot travel to Hong Kong due to travel restriction.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the modification work and follow-up emission monitoring of the CHP and ASP to avoid exceedance. MT has advised that the issue of emission exceedances should be prioritised in up-coming meetings. MT will carry out follow-up audit regarding the progress next month.

Prepared by: Bonia Leung, MT Representative
Date 4 February 2021

Annex G3

Investigation Report – February 2021

Investigation Report of CEMS Exceedances

Date	1 – 28 February 2021
Time	Continuous monitoring throughout February 2021
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Unit (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • NO_x and SO_2 in the CHP • NO_x and NH_3 in the ASP. 2. According to the Contractor, exceedance is observed to occur mainly at CHPs operated at loading with 40-60% of the optimal loading (1400KW) 3. The Contractor explained that exceedances recorded in the CHP was due to the low biogas loading which results in the poor performance efficiency in CHP. Exceedances in ASP was caused by unstable column temperature in biogas combustion.
Action Taken / Action to be Taken	• The Contractor will actively liaise with EPD with an aim to increase the quantity of SSOW that can be treated daily, such that sufficient biogas can be generated for the CHP to be able to operate at optimal efficiency. • The Contractor has established a regular communication channel with the overseas ASP supplier, to overcome the fact that the supplier cannot travel to Hong Kong due to travel restriction. • The Contractor arranged for remote fine-tuning of the ASP with the overseas ASP supplier during this reporting period. • Daily meetings have been held to review ASP operational and emission data. • Improvement has been observed in ASP emission performance with a reduction of no. of hours of exceedance compared with last reporting period. • The Contractor will continue to arrange for remote fine-tuning of the ASP with the overseas contractor in the upcoming reporting period. The Contractor will

	continue to carry out maintenance measures as per the supplier's manual. • The Contractor in consultation with the overseas ASP supplier will investigate the reasons for the occasional equipment tripping that has led to unstable column temperature of the thermal oxidizer. The Contractor may carry out replacement of some ASP equipment and/or increase maintenance frequency, subject to their investigations.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the modification work and follow-up emission monitoring of the CHP and ASP to avoid exceedance. MT has advised that the issue of emission exceedances should be prioritised in up-coming meetings. MT will carry out follow-up audit regarding the progress next month.

Prepared by: Angela Yung, MT Representative
Date 11 March 2021