

Annex G

Investigation Report

Annex G1

Investigation Report – September 2020

Investigation Report of CEMS Exceedances

Date	1 – 30 September 2020
Time	Continuous monitoring throughout September 2020
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Unit (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	<ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> • NO_x and SO₂ in the CHP • NO_x and NH₃ 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	<ul style="list-style-type: none"> • Internal preventative maintenance works, e.g. filter cleaning, re-adjustment, refill oil etc., have been carried out during this reporting period to rectify the exceedances observed at CHP. Supplier of CHP was consulted and aimed to arranging an on-site checking of the CHP to fix the exceedances observed. The Contractor will continue to monitor the emission of CHP and avoid the running of CHPs when biogas loading is lower than optimal performance efficiency in order to prevent further exceedances. The Contractor is planning to establish a routine maintenance schedule with the CHP supplier for the regular maintenance of the CHP in order to reduce the exceedances. • The stripping column has been replaced with a clean one to improve efficiency, with dirty stripping column planned to be cleaned in the next reporting period. For the remaining exceedances, it was arranged with the supplier of ASP to check the performance of the stacks onsite. However the supplier could not travel to

	<p>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 continues to carry out maintenance measures as per the supplier's manual. The Contractor have been exploring various options, e.g. 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. The option to be adopted for the maintenance of ASP will be reported in the next reporting period.</p>
Remedial Works and Follow-up Actions	<p>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.</p>

Prepared by: Bonia Leung, MT Representative
Date 8 October 2020

Annex G2

Investigation Report - October 2020

Investigation Report of CEMS Exceedances

Date	1 - 31 October 2020
Time	Continuous monitoring throughout October 2020
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Centralised Air Pollution Unit (CAPCS) Cogeneration Unit (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	<ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> • Odour (including NH₃ & H₂S) in the CAPCS • NO_x and SO₂ in the CHP • Carbon Monoxide, NO_x, VOC (including methane) and NH₃ 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	<ul style="list-style-type: none"> • The chemical dosing system has completed its resumption to normal working conditions. The Contractor will closely monitor the chemical dosing system and the CAPCS to avoid any exceedance. • 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 also preparing a major spare part list with the CHP supplier to reduce the time needed to wait for the delivery of spare parts for the maintenance of the CHP. • The dirty stripping column has been cleaned during this reporting period. For the remaining exceedances, it was arranged with the supplier of ASP to check the performance of the stacks onsite. However the

	<p>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 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.</p>
Remedial Works and Follow-up Actions	<p>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.</p>

Prepared by: Bonia Leung, MT Representative

Date 9 November 2020

Annex G3

Investigation Report - November 2020

Investigation Report of CEMS Exceedances

Date	1 – 30 November 2020
Time	Continuous monitoring throughout November 2020
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Centralised Air Pollution Unit (CAPCS) Cogeneration Unit (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	<ol style="list-style-type: none"> 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: <ul style="list-style-type: none"> • Odour (including NH₃ & H₂S) in the CAPCS • NO_x in the CHP • Carbon Monoxide, NO_x, VOC (including methane) and NH₃ 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	<ul style="list-style-type: none"> • The chemical dosing system has completed its resumption to normal working conditions. The Contractor will closely monitor the chemical dosing system and the CAPCS to avoid any exceedance. • 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 preparing a major spare part list with the CHP supplier to reduce the time needed to wait for the delivery of spare parts for the maintenance of the CHP. • 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

	<p>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 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.</p>
Remedial Works and Follow-up Actions	<p>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.</p>

Prepared by: Bonia Leung, MT Representative

Date 8 December 2020