

Annex J

Investigation Report

Investigation Report of CEMS Exceedances

Date	1 – 31 May 2019
Time	Continuous monitoring throughout May 2019
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Units (CHP) and Ammonia Stripping Plan (ASP)
Exceedance Description	<ol style="list-style-type: none"> 1. Continuous monitoring was carried out for 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 E) 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; and • Dust, CO, NO_x, SO₂, VOCs, NH₃ and HF in the ASP. 2. According to the Contractor, the plant was receiving around 100 tonnes of SSOW daily and was operated normally. 3. CHP setting was undergoing fine-tuning for performance optimisation which leads to the ineffective removal of NO_x at a certain period of time. 4. According to the Contractor, the SO₂ exceedances recorded in the CHP could be due to the tripping of the desulphurisation column resulting in the incomplete desulphurisation of biogas in previous process. 5. The Contractor explained that the exceedances recorded in Dust, CO, NO_x, SO₂, VOCs, NH₃ and HF in the ASP was because the thermal combustion unit of the ASP still require tuning to optimise the combustion efficiency. In addition, the Contractor reported that the tuning of the thermal combustion unit took longer than anticipated resulting in the many exceedances recorded during the reporting period.
Action Taken / Action to be Taken	<ul style="list-style-type: none"> • Continuous optimisation of CHP and re-adjustment of NO_x control for CHP has been carried out. • Continuous monitoring and routine maintenance of the desulphurisation column to reduce the duration of desulphurisation column tripping. • Tuning of the thermal combustion unit was carried out to optimise the combustion efficiency in order to remove the pollutants in the biogas.
Remedial Works and Follow-up Actions	The Contractor is recommended to closely monitor the processes, including the desulphurisation process, and

	combustion of biogas in the ASP to avoid the reoccurrence of similar problems. MT will carry out follow-up audit regarding the progress next month.
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Prepared by: Bonia Leung, MT Representative

Date: 10 June 2019

Investigation Report of Treated Effluent Leakage

Date	21 May 2019
Time	15:30
Monitoring Location	ORRC1 Treated Effluent Pump Room
Parameter	Treated Effluent
Description	<ol style="list-style-type: none"> 1. Wastewater generated from plant operation is treated onsite and stored in treated effluent tank before its discharge to the public sewage system. The treated effluent pump room is equipped with discharge pumps to discharge the treated effluent to the sewage system or back to the plant as process recycled water. 2. At 15:30 on 21 May 2019, brown liquid was found leaking out of the treated effluent pump room by the staff of the maintenance team (MT). Staff of the operation team (OPS) was informed immediately. MT and OPS checked the pump room and found the brown liquid was leaked from a treated effluent discharge pump. 3. It was identified that the brown liquid was treated effluent. The leaked treated effluent entered the nearby storm water channel and was found in the nullah.
Action Taken / Action to be Taken	<ul style="list-style-type: none"> • The teams stopped the pump and isolated the valves before and after the leaked pump. • Sandbags were put in the storm water channel to block the treated effluent leakage to the nullah. • The means cleaned up the remaining treated effluent in the storm water system using an interceptor. The remaining treated effluent was pumped back to the the plant’s wastewater treatment system. • It was identified that the gasket on the pump was damaged. The damaged gasket was replaced on 21 May 2019. • After the clean-up and the replacement of the gasket, no brown liquid was found at the discharge outlet and the nullah.
Remedial Works and Follow-up Actions	The Contractor is recommended to arrange routine preventative maintenance on discharge pumps to avoid damage of gasket; regular patrol of treated effluent pump room to closely monitor the situation; and put sandbags inside the pump room for easy access.

Prepared by: Bonia Leung, MT Representative
 Date: 21 October 2019

Extract of the Incident Notification Form on Treated Effluent Leakage Prepared by the Contractor

Description of the Process

Wastewater generated from plant operation is treated before discharge to Drainage Service Department (DSD) sewage system. Treated wastewater/ Treated Effluent is temporary stored inside treated effluent tank. Treated effluent pump room is equipped with discharged pumps to discharge the treated effluent to DSD or discharge back to the plant as process recycle water.

Description of the Incident

On 21st May 2019 around 15:30, brown water was found leaked out from the treated effluent pump room by maintenance team (MT) technician. Operation team (OPS) was immediately informed. MT and OPS immediate checked the pump room inside and found that the brown water was leaked from a treated effluent discharge pump (5084PS601). The team immediate stopped the pump and also isolated the valves before and after the pump.

The brown water was treated effluent and was leaked to nearby storm water channel. The teams also immediate put sandbags to block the leakage. A small amount of treated effluent was found leak to the nullah.

The teams then opened the petrol interceptor to clean up the residue treated effluent in the storm waste system and pump back to the plant's wastewater system. A water sample was also taken by on-site EPD representatives at the outlet and preliminary measured result was pH 7.

Figure.1 Brown water was found leak from treated effluent pump room



Figure.2 Leakage Location (photo was taken after the incident)

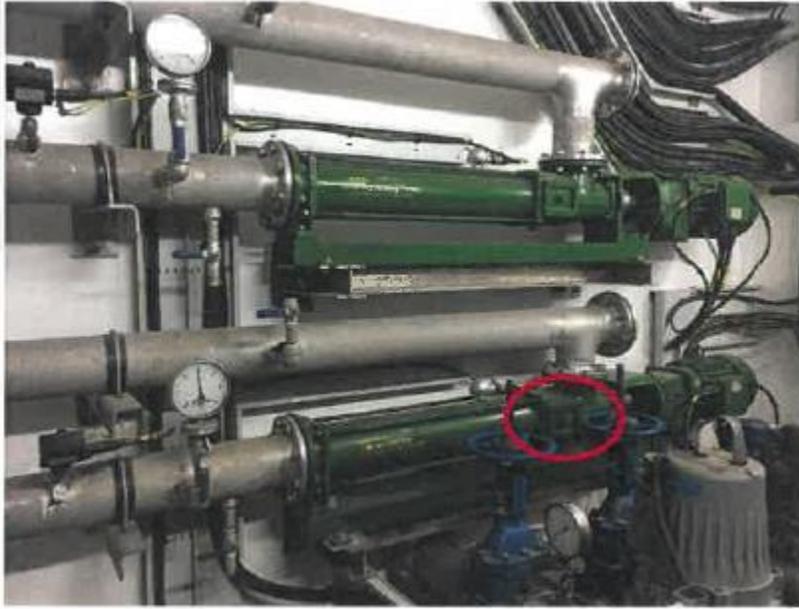


Figure.3 Sandbags were placed at the nearby storm water channel



Figure.4 Brown water was found on the stormwater outlet of the plant



Figure.5 Sample was taken at the discharge outlet



It was found that a gasket on the pump was damaged. MT was then arranged to replace the gasket and the system was resumed to normal on the same day.

There was no brown water found at the discharge outlet and the nullah after the cleanup work completed on the same day.

Root Cause Analysis

1. The gasket on the pump was found damaged.
2. The treated effluent was leaked from the damaged gasket.

Description of Corrective Actions ⁽¹⁾

1. Stopped the discharged pump
2. Isolated the pump by closing the valves before and after the pump
3. Placed sandbags in the storm water channel to block the treated effluent leak to nullah
4. Cleaned up the remaining treated effluent inside the storm water system and pump back to plant's wastewater treatment system

Description of Preventive Actions ⁽²⁾

1. Arrange routine preventive maintenance on the discharge pumps
2. Arrange routine patrol at treated effluent pump room
3. Prepare sandbags inside the pump room in order to have a faster response

(1) The corrective actions have been closed on 21 May 2019

(2) The preventive actions have been closed on 31 May 2019