

Annex F

Investigation Report

Investigation Report of CEMS Exceedances

Date	1 - 31 May 2022
Time	Continuous monitoring throughout May 2022
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Units (CHP) and the Ammonia Stripping Plant (ASP)
Exceedance Description	<p>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:</p> <ul style="list-style-type: none"> • SO₂ in CHPs and ASP • NO_x in CHP 3 • CO, NO_x, SO₂, VOCs, NH₃ and HF in the ASP <p>2. The Contractor has investigated the cause of the exceedance and identified that</p> <ul style="list-style-type: none"> • The exceedances of SO₂ from CHPs and the ASP occurred due to failure of a column in the de-sulphurisation system caused by the cleaning activities of the columns. • The exceedances of NO_x from CHP 3 in early May 2022 occurred due to insufficient feedstock. • Other exceedances from ASP occurred due to system instability caused by the ongoing performance optimisation of the ASP. The change of other system parameters has lowered the temperature of the thermal unit of the ASP and resulted in the incomplete combustion of biogas.
Action Taken / Action to be Taken	<p>For the SO₂ exceedance, the Contractor inspected the column and the pipes and pumps of the systems when exceedance and malfunctioning of the system were observed. Isolation of the affected system and maintenance of the columns were carried out. The performance of the system resumed to normal in late-May 2022.</p> <p>For the other exceedances from the ASP, the Contractor will continue to carry out maintenance and optimisation measures to restore the combustion efficiency so that the concerned pollutants will be effectively destroyed.</p>
Remedial Works and Follow-up Actions	The Contractor will replace the activated carbon filter in the de-sulphurisation system in the coming reporting period to improve the SO ₂ removal efficiency.

	<p>The Contractor is recommended to closely monitor the processes, including the modification works and follow-up emission monitoring of the ASP to avoid exceedance.</p> <p>The Contractor should review the routine inspection and maintenance schedule of the ASP and conduct preventative maintenance to avoid similar re-occurrence of the equipment failure.</p>
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Date 14 June 2022