

Large Combustion Plant (LCP) BAT assessment:

Conclusions on BAT	Applicability Assessment	In place or to be implemented
BAT 1. In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:		
BAT 1	Yes	Heidelberg Materials operates under an ISO 14001:2015 certified EMS. The EMS will be reviewed and updated as necessary to accommodate the additional processes.
BAT 2. BAT is to determine the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the gasification, IGCC and/or combustion units by carrying out a performance test at full load(1), according to EN standards, after the commissioning of the unit and after each modification that could significantly affect the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the unit. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.		
BAT 2	Yes	A performance test will be done at full load.
BAT 3. BAT is to monitor key process parameters relevant for emissions to air and water including those given below.		
BAT 3	Yes	The key parameters for the flue gas i.e. flow, Oxygen, temperature, pressure and water are all monitored for the current process. These parameters will also be monitored for the additional processes. The LCP is integrated into the design of the new plant meaning that the LCP cannot be monitored alone, it will be a combination of several processes. Further justification can be found in the response to the 'not duly made' actions. An additional emission point to water is proposed. Although not directly associated with LCP, runoff water released will be monitored for flow, pH and temperature.
BAT 4. BAT is to monitor emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.		
BAT 4	Yes	The current process requires continuous monitoring of NH ₃ , NO _x and CO. These three parameters will also be monitored continuously for the additional processes. SCR will be installed post LCP and SO ₃ will therefore be monitored periodically.

BAT 5. BAT is to monitor emissions to water from flue-gas treatment with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.		
BAT 5	n/a	There is no waste water from flue gas treatment
BAT 6. In order to improve the general environmental performance of combustion plants and to reduce emissions to air of CO and unburnt substances, BAT is to ensure optimised combustion and to use an appropriate combination of the techniques given below.		
BAT 6	Yes	The LCP will have a burner management system installed and will also be included in the preventative maintenance schedule.
BAT 7. In order to reduce emissions of ammonia to air from the use of selective catalytic reduction (SCR) and/or selective non-catalytic reduction (SNCR) for the abatement of NOX emissions, BAT is to optimise the design and/or operation of SCR and/or SNCR (e.g. optimised reagent to NOX ratio, homogeneous reagent distribution and optimum size of the reagent drops).		
BAT 7	Yes	SCR will be installed and will be optimised to minimise the emission of ammonia to air.
BAT 8. In order to prevent or reduce emissions to air during normal operating conditions, BAT is to ensure, by appropriate design, operation and maintenance, that the emission abatement systems are used at optimal capacity and availability.		
BAT 8	Yes	Emission abatement systems will be designed for the needs of the carbon capture plant and will be included in the preventative maintenance schedule
BAT 9. In order to improve the general environmental performance of combustion and/or gasification plants and to reduce emissions to air, BAT is to include the following elements in the quality assurance/quality control programmes for all the fuels used, as part of the environmental management system (see BAT 1):		
BAT 9	Yes	Natural gas will be supplied from the grid and the specification will be provided.
BAT 10. In order to reduce emissions to air and/or to water during other than normal operating conditions (OTNOC), BAT is to set up and implement a management plan as part of the environmental management system (see BAT 1), commensurate with the relevance of potential pollutant releases, that includes the following elements:		
BAT 10	Yes	An OTNOC management plan will be implemented as part of the EMS
BAT 11. BAT is to appropriately monitor emissions to air and/or to water during OTNOC.		
BAT 11	Yes	Emissions will be monitored during periods of OTNOC

BAT 12. In order to increase the energy efficiency of combustion, gasification and/or IGCC units operated $\geq 1\ 500$ h/yr, BAT is to use an appropriate combination of the techniques given below.		
BAT 12	Yes	Several of the techniques will be used e.g. burner management system for optimising the combustion, preheating of the combustion air by using kiln flue gas in the CHP and minimising energy consumption by sourcing energy efficient equipment.
BAT 13. In order to reduce water usage and the volume of contaminated waste water discharged, BAT is to use one or both of the techniques given below.		
BAT 13	Yes	Runoff water retained in the pond will be used in the process to reduce the amount of water extracted. Contaminated waste water will not be produced.
BAT 14. In order to prevent the contamination of uncontaminated waste water and to reduce emissions to water, BAT is to segregate waste water streams and to treat them separately, depending on the pollutant content.		
BAT 14	Yes	Effluents produced in the carbon capture process will be segregated and will be used in the cement plant. Bunds will be managed to prove uncontaminated before release to the pond
BAT 15. In order to reduce emissions to water from flue-gas treatment, BAT is to use an appropriate combination of the techniques given below, and to use secondary techniques as close as possible to the source in order to avoid dilution.		
BAT 15	n/a	Refers to direct discharges to a water body
BAT 16. In order to reduce the quantity of waste sent for disposal from the combustion and/or gasification process and abatement techniques, BAT is to organise operations so as to maximise, in order of priority and taking into account life-cycle thinking:		
BAT 16	Yes	Effluents produced, which could be defined as waste, will be used in the cement plant. This technique will also reduce the water extraction for the cement process.
BAT 17. In order to reduce noise emissions, BAT is to use one or a combination of the techniques given below.		
BAT 17	Yes	Many of the techniques listed have been included in the design e.g. there are sound enclosures around noisy equipment, low noise equipment has been sourced, etc..
BAT 18 to 39	n/a	Not applicable for natural gas
BAT 40, 41 & 44	Yes	See response 4c of 'Not duly made' actions
BAT 42 & 43	n/a	For gas turbines and engines
BAT 46 to 75	n/a	For other processes