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Att: CDM Executive Board

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MROBO/MLEH

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Questions raised by CDM Executive Board members

1) The DOE is requested to explain how it has validated that the methodology has been correctly applied and the emission reductions has been correctly calculated, as the energy produced with the recovered waste gas (COG) has not been measured, instead the net quantity of heat supplied to the recipient facility (HGjy) is determined using the volume of COG, the NCV of COG and the efficiency of the retrofitted equipment. Please refer to paragraph 5(a) of the methodology.

Response Summary from DNV

III.Q (Version 04), paragraph 5 (a) states:

5. *The category is applicable under the following conditions:*
(a) *The energy produced with the recovered waste gas/heat/pressure should be measurable;*

Prior to the implementation of the proposed project, coal gas was supplied directly to two sets of glass furnaces, four sets of Lehres, two sets of processing lines, one boiler and five enamel converters. In the project scenario, the coal gas is replaced by coke oven gas which is supplied directly to the above mentioned equipment. As the equipment is unchanged, the coke oven gas will essentially provide the same energy as was previously being supplied by the coal gas. There is no change in the equipment that converts the fuel sources to energy. The energy produced with the recovered waste gas is indirectly measurable by measuring the amount of the coke oven gas used by the equipment and measuring the net calorific value of the recovered coke oven gas.

AMS-III.Q refers to ACM0012 for several aspects. Hence, DNV has also applied requirements of ACM0012 where AMS-III.Q does not provide more detailed guidance.

According to ACM0012 (version 04.0.0), section 3.2.2. (Method-2): "The manufacturer's data for the industrial facility shall be used to estimate the amount of waste energy the industrial facility generates per unit of product manufactured by the process that generates waste energy (either the product of the departmental process or the product of the entire plant, whichever is more justifiable and accurate). In the case that any modification is carried out by the project proponent, or in the case that the manufacturer's data is not available for an assessment, this should be carried out by an independent qualified/certified external expert such as a chartered engineer. This should be based on a conservative quantity of waste energy generated by a plant per unit of product manufactured by the process generating waste energy. The value arrived at, based on above sources of data, shall be used to estimate the baseline cap." In the proposed project activity, as COG is recovered and directly utilized as a fuel of industrial facilities, and there is no detailed historic record of COG, the above method is appropriately employed to calculate the ex-ante baseline cap as supported by the

independent Feasibility Study Report and supplementary report prepared by the Central Mechanical International Engineering Design Institute (see reference /3/ in the Validation Report). Please also refer to the response to the second question below.

Action taken (if relevant)

Validation report has been amended and the PDD has been amended for clarity.

Questions raised by CDM Executive Board members

2) The DOE is requested to explain how it has validated that the monitoring methodology has been correctly applied, as the energy produced with the recovered waste gas (COG) has not been monitored, instead Quantity of COG consumed (QCOG), Net calorific value of COG (NCVCOG) and efficiency of the retrofitted equipment (hpj) are monitored. Please refer to paragraph 17(a) of the methodology..

Response Summary from DNV

III.Q (Version 04), paragraph 17 (a) states:

17. *Monitoring shall consist of:*

(a) Metering the thermal and/or electrical energy produced. In case of thermal energy the enthalpy of the output stream (like steam/heat/hot water) should be monitored;

In the project scenario there are 2 sets of glass furnaces, 4 sets of lehrs, 2 sets of processing lines and 1 boiler which will be directly heated by the COG. Since the recovered gas is directly used by the recipient plant (there is no intermediate thermal energy such as steam produced with the recovered COG before supplied to the recipient plant), the thermal energy supplied to the recipient plant is the same of the energy content of the gas consumed in the plant. Therefore indirect metering of the thermal energy is achieved by metering the amount of the coke oven gas delivered to the equipment and metering the net calorific value of the recovered coke oven gas. Further, to account for possible change of efficiency of the equipment due to fuel switch from coal gas to COG, the efficiency of the equipment will be monitored ex-post and applied to the calculation of HG_{j,y}, which is conservative. Therefore, DNV is the opinion that the monitoring of the thermal energy produced is in accordance with the methodology considering the recovered gas is directly supplied to the recipient plant.

Action taken (if relevant)

The validation report and the PDD have been amended to clarify the metering and indirect measurement of thermal energy.