CDM: Recommendation Form for Small Scale Methodologies (version 01)

(To be used for presenting questions/proposals/amendments to the simplified methodologies for small-scale CDM project activity categories)

Date of SSC WG meeting:	21–24 September 2009, SSC WG 22
Title/Subject (give a small title or specify the subject of your submission, maximum 200 characters):	Applicability of AMS-II.D for project activity involving steam savings in an industrial process
Indicative methodology to which your submission relates (refer the items of Appendix B of the Simplified Modalities and Procedures), if applicable.	AMS-II.D, version 11
Name of the authors of the query:	T. M. Sunar / S.S. Pipara Institution: Grasim Industries Limited thakurmal.sunar@adityabirla.com, sspipara@adityabirla.com, anik@asiacarbon.com

Summary of the query:

Please use the space below to summarize the query related to SSC methodologies/categories SSC Modalities and Procedures provide recommendation/analysis of the SSC WG.

Original text from PP:

The project activity aims to reduce steam consumption in the crystallisation of glauber salt (Sodium Sulphate -Na2SO4.10H2O) by installing Acid Absorption Crystallizer (AAC); using less steam as compared to existing Steam based Horizontal Continuous Crystallizer (HCC). Consequently, corresponding consumption of fuel shall be reduced leading to reduced Green House Gas (GHG) emissions.

The present project activity involves the replacement of 4 existing units of HCCs with 4 units of AACs (3 running & 1 standby).

The project will be implemented in two phases. Phase-I completed in November 2006, which includes installation of 2 units of AAC and Phase-II includes installation of two units of AAC which are expected to be functional by the end of 2009.

Both HCC's are equipped with steam boosters and ejectors. Steam boosters require high pressure steam. AAC eliminates the need of energy intensive steam boosters. Therefore, the need for HP steam is reduced, leading to reduced consumption of coal. However there is slight increase in low pressure steam & power consumption in Multi Stage Flash Evaporator (MSFE) required for the evaporation of relatively dilute acid generated in AAC.

The clarification relates to the applicability of AMS IID version 11 to this project. As per AMS IID version 11, "This category is applicable to project activities where it is possible to directly measure and record the energy use within the project boundary (e.g. electricity and /or fossil fuel consumption)". This project activity involves installation of Acid absorption crystallizer (AAC) by replacing conventional Horizontal continuous crystallizer (HCC). In this case, as opposed to AAC for crystallization of Glauber Salt, the conventional / existing crystallizer would have needed additional steam in the boosters to remove the condensable vapours in the crystallizer. In AAC, this requirement is fulfilled by harnessing heat of dilution of H2SO4, thereby completely eliminating the use of boosters and therefore the use of steam in

the boosters. Thus reducing the steam consumption, to the extent it was being used in the boosters.

However, the AAC results in dilute H2SO4 of 70 % concentration as opposed to conventional system which uses no H2SO4. This dilute H2SO4 is used in the process and eventually the energy (steam & power) consumed in MSFE to the extent of evaporation of increased water quantity due to dilution of H2SO4 from 98.5% to 70% and has been accounted and deducted from the energy (steam) consumption reduction on account of elimination of boosters. Other than this, there is no impact on either backward or forward processes in terms of reduced or increased energy consumption due to this project.

In this project activity, reduction in steam consumption at crystallizer is directly monitorable and verifiable due to steam metering devices which have been installed. Because of this reduction in steam consumption, there is a reduction in coal consumption in the centralized power plant. The centralized power plant generates both process steam and electricity (thro' total condensing as well as extraction-cum-condensing turbines); it is not possible to physically monitor separately the coal consumption for electricity and steam.

Since the steam was generated at a particular pressure in the centralized power plant and the pressure has been reduced and utilized for the process. Hence, steam metering devices is installed for monitoring of Steam consumption in the HCC & AAC. And the specific energy consumption in the centralised power plant will be used for arriving at the energy savings. Specific energy consumption will be arrived in two scenarios and the conservative value among the two scenarios will be chosen for calculating energy savings.

Scenario 1: Historical data of Coal consumption, Calorific value, load & efficiency and steam generation in the centralized power plant is available. Based on that, specific energy consumption value will be arrived (TJ of coal / TJ of steam) and the value will be fixed throughout the crediting period.

Scenario 2: The specific energy consumption will be monitored during the crediting period and the value will be varying every year. While calculating the specific energy consumption during the crediting period, conservative value of efficiency & load factor will be used.

Using the reduced steam consumption in the process and the conservative value of specific energy consumption in the centralized power plant, we can arrive at the reduction in coal consumption (TJ of steam reduced in the process X TJ of coal / TJ of steam= TJ of coal). The following are the monitored parameters used for arriving the coal savings due to this energy efficiency activity,

• Steam pressure, temperature and consumption by the AAC

• Salt output from the AAC

Historical data for Horizontal continuous crystallizer is available. The following are the data available for HCC for arriving at the baseline steam consumption and coal consumption.

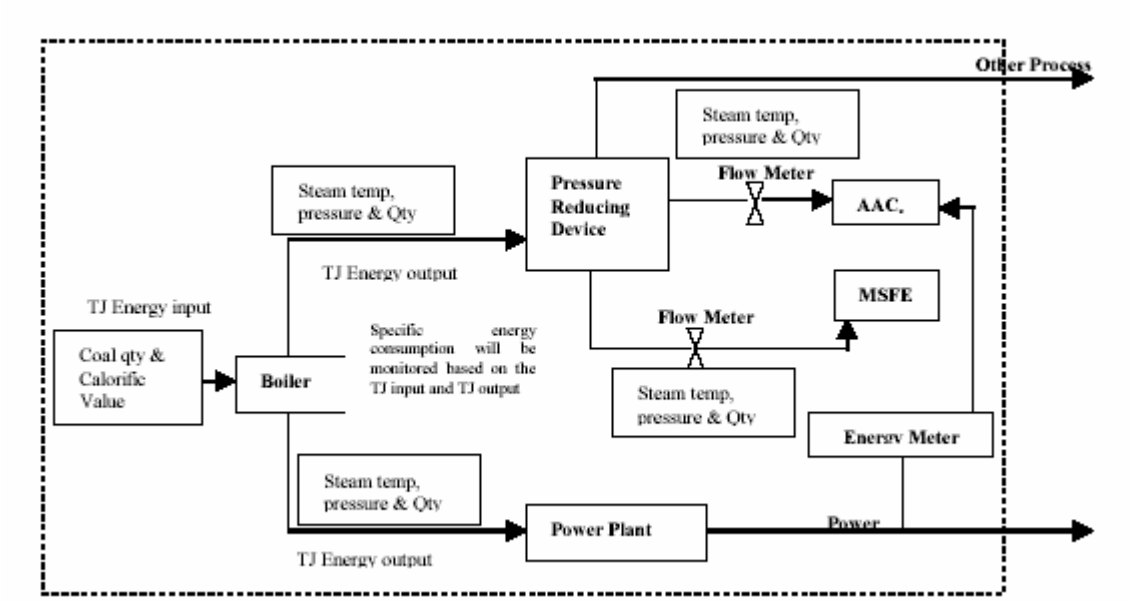
• Steam pressure, temperature and consumption by the HCC

• Salt output from the HCC

Also as per the methodology AMS II D Version 11, " The category is applicable to project activities where the impact of the measures implemented (Improvements in energy efficiency) by the project can be clearly distinguished from changes in energy use due to other variables not influenced by the project activity (Signal to !oise ratio). To ensure this, AAC & HCC energy balance before and after installation of the AAC will be used. And the same will be monitored during the crediting period.

The following flow diagram will clearly depicts the energy use and monitoring of the same,

Flowchart



In summary we therefore seek to clarify, whether this approach of calculating reduction in coal consumption is applicable under this methodology (AMS II D version 11)

Recommendation by the SSC WG:

Please use the space below to provide amendments/change (in your expert view, if necessary).

Please refer to paragraph 36 of the meeting report of the SSC WG 22 (http://cdm.unfccc.int/Panels/ssc_wg).

Answer to authors of query by the SSC WG:

Please use the space below to provide answer to the authors of the above query.

The small-scale working group of the CDM Executive Board would like to thank the author for the submission.

The SSC WG agreed to clarify that the proposed approach for calculating emission reduction based on equivalent reduction in coal consumption is not applicable under AMS-II.D for the subject project. The primary reason is that the proposed revision does not adequately capture baseline and project emissions associated with the described project and the effect of interrelated variables on overall facility fuel consumption and emissions. For example, the submission has not substantiated the issue that the energy savings due to the project activity can be clearly distinguished from changes in energy use due to other variables (e.g., quantity and quality of steam energy supply to the other processes) not influenced by the project activity. In this regards, the submission author may also wish to note that if an energy efficiency improvement project activity is not in a stand-alone facility but in a complex industrial process and/or a sub-system of a large facility, it may be difficult to fit under the SSC methodology as there may be considerable uncertainties in estimating baseline and project emission using the framework of a simplified small scale methodology (see also paragraph 58 of the EB 47 report).

With respect to this specific project, the following issues are also noted:

- The baseline and project emissions are calculated based on equivalent coal consumption in the central boiler using specific energy consumption of the boiler. The determination of efficiency and load factor is critical to establish specific energy consumption of the boiler. As the output from the boilers is used for various heat and electrical applications, the proposed approach of using specific energy consumption of central boiler to estimate equivalent coal savings attributable to project activity may need detail procedures to determine specific energy consumption of the boiler.

- The reduction in steam consumption in ACC may also result from the variation in production output and service level/quality. Thus, the independent variables that determine baseline energy use needs to be considered. These may include number of units produced, weight of units, volume of units, type of units, quality of units, etc. For example, steam energy per unit output in HCC (baseline) and ACC (project) may be required to capture the variation in output while monitoring of product quality would be required to ensure the service level as compared to the baseline.
- The assessment of leakage emissions due to the use of sulphuric acid in the project activity (which was not used in the baseline) would be required.

Signature of SSC WG Chair ……..

(Hugh Sealy)

Date: 24/09/2009

Signature of SSC WG Vice-Chair ……..

(Peer Stiansen)

Date: 24/09/2009

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