4th MONITORING REPORT

MONTE ROSA BAGASSE COGENERATION PROJECT (MRBCP)

CDM Registration Reference Number 0191

Monitoring Period:

From 1 May, 2008 to 28 February, 2009

Prepared by Econergy Brasil Ltda.

Avenida Angélica, 2530 – cj 111
São Paulo – SP, Brazil
01228-200
Phone: + 55 (11) 3555-5700
Fax: + 55 (11) 3555-5735
http://www.econergy.com

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1. Introduction

This document reports the Emission Reductions (ERs) generated by Monte Rosa Bagasse Cogeneration Project (hereinafter MRBCP), CDM Registration Reference Number 191, from 01/05/2008 to 28/02/2009.

This project activity consists of increasing efficiency in the bagasse (a renewable fuel source, residue from sugarcane processing) cogeneration facility at Monte Rosa. With the implementation of this project, the mill was able to sell electricity to the grid, avoiding the dispatch of same amount of energy produced by fossil-fuelled thermal plants to that grid. By that, the initiative avoids CO_2 emissions, also contributing to the regional and national sustainable development.

The MRBCP operation has been monitored in accordance with the requirements of the applicable Monitoring Methodology AM0015: "Bagasse-bases cogeneration connected to an electricity grid" as described in its Project Design Document. Quality Assurance and Quality Control Mechanism Stipulated in the Monitoring Methodology have been applied.

The PP would like to highlight, as it has already been clearly described in the PDD, that bagasse is a fibrous biomass residue from sugarcane processing (alcohol and sugar production). All the bagasse utilized by MRBCP is produced internally and used in its cogeneration facility (boilers and steam turbines) for steam and power generation. Therefore, no bagasse was purchased.

It is important to highlight, that no bagasse stored for more than one year at the project site. Only a relatively small amount of biomass residue is stored from one crop season to another, to start up the boilers.

All the bagasse internally produced by MRBCP is internally transported to its cogeneration facility through electrical and/or mechanical conveyor belts which operate using electricity and/or steam generated in the biomass residue cogeneration facility of the own mill.

Therefore, there is neither fossil fuel consumption within the project boundary nor any other fossil fuel consumption attributable to the project activity. Consequently, there is no need to monitor fossil fuel consumption of the project activity.

Configuration before the cogeneration plant project implementation and after project implementation.

Below table presents the timeline of the execution of the Monte Rosa cogeneration with biomass expansion project and the nominal capacities of each piece of equipment.

Pre-Project:
Before the cogeneration project (2001-2002 cane season), the operation of the Monte Rosa plant was with three backpressure turbo generators (one 1.5 MW backpressure turbo generator (TG), one 2.5 MW backpressure turbo generator, one 3 MW backpressure turbo generator) and three 13.78 bar pressure boilers with different capacities. In total this adds up to an installed capacity of 7 MW. At the beginning of phase I of the project, the only turbo generator that is left in operation is the 3 MW backpressure turbo generator; the other two turbo generators were removed between May and June 2002.

Phase I:
During 2001, the first phase of the cogeneration project began. One 15 MW extraction turbo generator (TG) and one 62 bar pressure boiler were installed in order for these to start operating during the 2001-

2002 cane season (March 2002). At the end of 2002 the installation of two 4 MW backpressure turbo generator (TG) was finished; these serve as back up for the 15 MW turbo installed in 2001. One 2.5 MW backpressure TG and one 1.5 MW backpressure TG that were part of the old equipment installed before the project were disabled. At this point the plant has an installed capacity of 26 MW, of which 18 MW were used and 8 MW were on standby.

Phase II:
During the second phase (2004) of the cogeneration project the following activities were carried out: One 3 MW turbo generator (TG) is put on standby together with the three 13.78 bar pressure boilers and in this phase one condensing turbo generator with a 16.5 MW nominal capacity is installed; this turbo is operated at an approximate average ratio of 15 MW. Two 20 MW extraction turbo generator (TG) and one 62 bar pressure boiler are also installed. During this phase one 15 MW backpressure turbo generator (TG) is disabled.

During the verification period, two 20 MW extraction turbo generator (TG) and one 16.5 MW condensing turbo generator were in operation, as well as the 62 bar pressure, 120 ts/h boiler and the 62 bar pressure, 150 ts/h boiler.

The following table shows the configuration, nominal capacity, dates of entry into operation and deactivation, as well as the status of the equipment before and after the project.

	Operation / Installation			Deactivation	Stand-by
Before the expansion projet	One 3 MW backpressure turbo generator (TG)	One 2.5 MW backpressure turbo generator (TG)	One 1.5 MW backpressure turbo generator (TG)		
	One 13.78 bar boiler (36 ts/h)	One 13.78 bar boiler (22.67 ts/h)	One 13.78 bar boiler (11.33 ts/h)		
Phase 1 2001 - 2002	One 15 MW backpressure extraction turbo generator (TG). May - Dec 2001	One 3 MW backpressure turbo generator (TG)		One 2.5 MW backpressure turbo generator (TG) May - Jun 2002	Two 4 MW backpressure turbo generator (TG). Jun - Dec 2002
	One 62 bar boiler. (120 ts/h) Jan - Dec 2001	One 13.78 bar boiler (36 ts/h)		One 1.5 MW backpressure turbo generator (TG) May - Jun 2002	
		One 13.78 bar boiler (22.67 ts/h)	One 13.78 bar boiler (11.33 ts/h)		
Phase 2 2004	One 16.5 MW condensing turbo generator. Jun - Dec 2004	One 20 MW extraction turbo generator TG (backpressure). Jun - Nov 2004	One 20 MW extraction turbo generator TG (backpressure). Jun - Nov 2005	One 15 MW extraction turbo generator TG (backpressure). May 2005	Two 4 MW backpressure turbo generator (TG).
	One 62 boiler (120 ts/h)	One 62 boiler (150 ts/h) Oct 2003 - Nov 2004			One 3 MW backpressure turbo generator (TG)
					One 13.78 bar boiler (36 ts/h)
					One 13.78 bar boiler (22.67 ts/h)
Verification Period	One 16.5 MW condensing turbo generator	Two 20 MW extraction turbo generator TG (backpressure).			Two 4 MW backpressure turbo generator (TG).
	One 62 bar boiler (120 ts/h)	One 62 bar boiler (150 ts/h)			One 3 MW backpressure turbo generator (TG)
					One 13.78 bar boiler (36 ts/h)
					One 13.78 bar boiler (22.67 ts/h)

2. Emission Reductions Calculation Formula

The ERs generated by the MRBCP are calculated the net generation from project during the monitoring period times baseline emission factor detailed in the registered PDD. Then:

ERs= EG_y (MWh) * EF_y (tCO_2e/MWh)

Where the ex-ante baseline emission factor of the Nicaraguan grid is 0.7094 tCO_2e/MWh.

The following table presents information and data used to determine the baseline scenario.

ID number	**Data type**	**Value**	**Unit**	**Data Source**
1. EG_y	Electricity supplied to the grid by the projet	Obtained throughout projet activity lifetime	MWh	Monte Rosa
2. EF_y	CO_2 emision factor of the grid	0.7094	tCO_2e/MWh	Calculated
3. $EF_{OM,y}$	CO_2 operating margin emission factor of the grid	0.7446	tCO_2e/MWh	Calculated using information provided in the baseline information section (annex 3) of the PDD
4. $EF_{BM,y}$	CO_2 Build Margin emission factor of the Grid	0.6741	tCO_2e/MWh	Calculated using information provided in the baseline information section (annex 3) of the PDD

3. Dispatched energy to the grid

Monitoring Period (DD/MM/AAAA)		Electricity sold to the grid (MWh)
From	**To**	
01/05/2008	30/05/2008	0.00
01/06/2008	30/06/2008	0.00
01/07/2008	31/07/2008	0.00
01/08/2008	31/08/2008	0.00
01/09/2008	30/09/2008	0.00
01/10/2008	31/10/2008	0.00
01/11/2008	30/11/2008	15.34
01/12/2008	31/12/2008	17,214.16
Total		**17,229.50**

Monitoring Period (DD/MM/AAAA)		Electricity sold to the grid (MWh)
From	**To**	
01/01/2009	31/01/2009	22,927.88
01/02/2009	28/02/2009	18,494.12
Total		**41,422.00**

The reports from Nicaragua's Load Despatching office (*Centro Nacional de Despacho de Carga)* are available with the project participants and were cross-checked with the invoices.

The months not considered in the previous table are related with the off-crop season. During this period no energy was produced by the cogeneration system of the mill and consequently, no electricity was sold to the grid.

4. Emission reductions generated in the Monitoring Period

Calculation of ERs				
Description	**Unit**	**From 01/05/2008 To 31/12/2008**	**From 01/01/2009 To 28/02/2009**	**Total**
Electricity sold to the grid	MWh	17,229.50	41,422.00	58,651.50
Baseline Emission Factor	tCO_2e/MWh	0.7094		
Emission Reductions	tCO_2e	12,222.61	29,384.77	41,607.37

In the accordance with the formula in the section 2, the MRBCP has in the monitoring period generated:

ERs = 58,651.50 MWh * 0.7094 tCO_2e/MWh = 41,607 tCO_2e