CLEAN DEVELOPMENT MECHANISM
MONITORING REPORT

Termoelétrica Santa Adélia Cogeneration Project

(CDM Registration Reference Number 0200)

Monitored Period: 01 July 2006 to 31 December 2006
Crediting Period: 07 May 2003 to 06 May 2010

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Section A. General description of project activity

A.1. Title of the project activity

Termoelétrica Santa Adélia Cogeneration Project.

Document version number: 03, 05/July/2007.

Monitoring Report based on the PDD Version Number: 4B, from 21/Dec/2005.

A.2. Description of the project activity

The primary objective of the Termoelétrica Santa Adélia Project is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental, social and economic sustainability by increasing renewable energy's share of the total Brazilian (and the Latin America and the Caribbean region's) electricity consumption.

Santa Adélia is a sugar mill located in Jaboticabal, state of São Paulo, Brazil. The company was founded in the 1930s and is owned by the Bellodi family. Santa Adélia produces sugar and anhydrous and hydrated alcohol, as well as generates its own electricity. During the 2003 - 2004 crop season, Usina Santa Adélia processed 2,033,938 tones of sugarcane, produced 3,456,000 sugar sacks (50Kg each), 74,141,000 liters of anhydrous alcohol, and 13,623,000 liters of hydrated alcohol.

Termoelétrica Santa Adélia began its plan to commercialize surplus electricity in 2001 and in 2003 the entire power plant expansion was completed. In that year, Termoelétrica Santa Adélia sold its first MWh to the local power utility CPFL - *Companhia Paulista de Força e Luz* and has signed a 10 year Power Purchase Agreement (PPA).

In 2002, Termoelétrica Santa Adélia upgraded its equipment with the objective of using bagasse more efficiently to cogenerate electricity. A more efficient cogeneration of this renewable fuel allows Santa Adélia mill to sell a surplus of electricity to the grid and creates a competitive advantage. The electricity sold to the grid diversifies income to the mill and it helps meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental, social and economic sustainability by increasing renewable energy's share of the total Brazilian (and the Latin America and the Caribbean region's) electricity consumption.

Termoelétrica Santa Adélia operates with a configuration using a high-pressure boiler and a multiple stage backpressure turbine coupled with a new generator. The plant exports approximately around 85.000 MWh operating at full capacity during the season (May to November).

A.3. Santa Adélia Monitoring Report

The GHG emissions reduction during the period from July 2006 to December 2006 was achieved through the dispatched electricity generated by Termoelétrica Santa Adélia, that displaced a mix of electricity generation in the Brazilian South-Southeast-Midwest interconnected grid.

The Monitoring Report is based on the electricity delivered to the grid by Termoelétrica Santa Adélia. The amount of energy delivered is monitored by the energy producer (seller) and by the power utility (buyer) meters. The power utility – Companhia Paulista de Força e Luz (CPFL) - is responsible to inform CCEE – *Câmara Comercializadora de Energia Elétrica* about the total of the energy delivered to the grid. CCEE makes feasible and regulates the electricity energy commercialization.

Calculation of the emissions reduction is based on validated and registered parameters fixed in the PDD and justified during the validation. The baseline emission factor for project activities as Santa Adelia Cogeneration Project for the Brazilian South-Southeast-Midwest grid is 0.2677 tCO2/MWh.

A.4. Period of the monitoring report and amount of monitored emissions reductions

Period of the monitoring report: 01/July/2006 – 31/December/2006

Amount of monitored emissions reductions: 16,747.71 tCO_2

Total crediting period of the project: 07/May/2003 – 06/May/2010

A.5. Date of completing the monitoring report

The date of completing the monitoring report was 05/July/2007.

A.6. Personnel Responsible

Project Manager – José Roberto Braido (Termoelétrica Santa Adélia Ltda.)

Project Manager – Vlademir de Souza (Termoelétrica Santa Adélia Ltda.)

Monitoring Report – Ricardo Esparta (Ecoinvest Assessoria Ltda.)

Section B. Monitoring methodology and plan

B.1. Name and reference of approved monitoring methodology applied to the project activity

AM0015 – "Bagasse-based cogeneration connected to an electricity grid"

B.2. Justification of the choice of the methodology and why it is applicable to the project activity:

Termoelétrica Santa Adélia is a cogeneration project connected to the electricity grid. The project has fulfilled all the "additionality" requisites (see application of the "additionality tool[1]" below) and has demonstrated why the project would not occur in the absence of the CDM. The chosen methodology is applicable to all bagasse-based cogeneration projects connected to the grid. The monitoring methodology and plan considers monitoring emission reductions generated from cogeneration projects using sugarcane bagasse as fuel.

During a period of restructuring the entire electricity market, as is the current Brazilian situation, investment uncertainty is the main barrier for small renewable energy power projects. In this scenario these projects compete with existing plants (operating margin) and with new projects (build margin), which usually attract the attention of financial investors. Operating and Build Margins have been used to calculate the emission factor for the connected grid.

The methodology AM0015, for cogeneration projects, uses derived margins, which have been applied in the context of the project activity through the determination of the emissions factor for the South-Southeast-Midwest subsystem of the interconnected Brazilian grid (electricity system that is connected by transmission lines to the project electricity system and in which power plants can be dispatched without significant transmission constraints).

[1] Tool for the demonstration and assessment of additionality. UNFCCC, CDM Executive Board 16th Meeting Report, 22 October 2004, Annex 1. Web-site: http://cdm.unfccc.int/

B.3. Data to be monitored:

ID number	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of monitored data	How will the data be archived? (electronic/ paper)	For how long is archived data to be kept?	Comment
1	Electricity generation of the Project delivered to grid	EG_y	MWh	m	15 minutes measurement and Monthly Recording	100%	Electronic and paper	During the credit period and two years after	The electricity delivered to the grid is monitored both by the project owner (seller) and the energy buyer. A Brazilian government entity, CCEE – *Câmara Comercializadora de Energia Elétrica* - controls and monitors the electricity available on the national interconnected grid. The amount of electricity delivered to the grid by the project activity is available on CCEE's web-site.
2	CO_2 emission factor of the grid	EF_y	tCO_2/MWh	c	At the validation	0%	Electronic	During the credit period and two years after	Data is available under request. Factors were calculated according to the Approved monitoring methodology AM0015.
3	CO_2 Operating Margin emission factor of the grid	$EF_{OM,y}$	tCO_2/MWh	c	At the validation	0%	Electronic	During the credit period and two years after	Data is available under request. Factors were calculated according to the Approved monitoring methodology AM0015.
4	CO_2 Build Margin emission factor of the grid	$Ef_{BM,y}$	tCO_2/MWh	c	At the validation	0%	Electronic	During the credit period and two years after	Data is available under request. Factors were calculated according to the Approved monitoring methodology AM0015.
5	Fraction of time during which	λ_y	Non dimensiona	c	At the validation	0%	Electronic	During the credit period	Data is available under request. Factors were calculated according to the Approved

	low-cost/must-run sources are on the margin		1					and two years after	monitoring methodology AM0015.

Section C. Monitored data

As the project is neither associated with leakage effects nor with new emissions of pollutants and all other pertinent data is necessary to be analysed and presented only at the validation phase of the project, the only data that has to be monitored going forward during the life of the contract is the electricity supplied to the grid by the project (EG_y).

The main data to be considered in determining the emissions reductions is the electricity exported to the grid. The emissions reduction is reached by applying an emissions factor through the electricity dispatched to the grid, that is verified and monitored by a two party verification: by the power plant that sells the electricity and by the utility company that buys the electricity.

This data is monitored through a spreadsheet that collects information by meters installed in the exit of the mill and entrance of the transmission lines and by the sales receipts issued by the electricity utility to the mill.

C.1. Data collected in order to monitor project emissions

According Monitoring Methodology AM0015 – "Bagasse-based cogeneration connected to an electricity grid", data of CO2 emissions from fossil fuels combusted due to the project activity at the project site are required, where relevant.

The only emissions due to fossil fuels at the project site are due to the transportation of sugar cane, by trucks, to the sugar mill. This transportation existed already in the baseline, and did not change because of the project, so that there are no net changes in CO_2 emissions from fossil fuels due to the project activity. A document provided by Caldema - the boilers´ manufacturer - stating that the equipment was designed to burn sugar cane bagasse and must not be put in operation burning other types of fuels were presented to DOE.

Also, Santa Adélia monitors constantly that there are no relevant sources of fossil fuel emissions due to the project activity at the project site, and confirms that project emissions are zero.

Considering information above, GHG emissions by the project activity are zero.

C.2. Data collected in order to monitor baseline emissions

Termoelétrica Santa Adélia Generation July to December 2006	
Month	**Energy (MWh)**
January	-
February	-
March	-
April	-
May	-
June	-
July	16,315.41

August	15,805.35
September	15,193.45
October	13,279.56
November	1,967.71
December	-
TOTAL	**62,561.48**

Table 1 – Electricity generation delivered to grid by Termoelétrica Santa Adélia
(Sources: Termoelétrica Santa Adélia Ltda.)

Emission factors for the Brazilian South-Southeast-Midwest interconnected grid				
Baseline (including imports)	EF_{OM} [tCO2/MWh]	Load [MWh]	LCMR [GWh]	Imports [MWh]
2002	0,2504	275.402.856	258.720	1.607.396
2003	0,5378	288.459.525	274.649	459.586
2004	0,8726	297.875.274	284.748	1.468.275
	Total (2001-2003) =	861.778.888	818.118	3.626.268
	$EF_{OM,simple-adjusted}$ [tCO2/MWh]	$EF_{OM,simple}$	Lambda	
	0,4310	0,1045	λ_{ano}	
	Alternative weights	Default weights	0,5063	
	w_{EP} = 0,75	w_{EP} = 0,5	λ_{ano}	
	w_{EP} = 0,25	w_{EP} = 0,5	0,5312	
	EF_{OM} [tCO2/MWh]	Default EF_{OM} [tCO2/MWh]	λ_{ano}	
	0,3494	0,2577	0,5041	

Table 2 – CO_2 emission factor of the grid/ CO_2 Operating Margin emission factor of the grid/ CO_2 Build Margin emission factor of the grid

Section D. Calculation of GHG emission by sources

The Monitoring Report applies the *ex ante* validated emission factor for project activities for the Brazilian South-Southeast-Midwest interconnected grid. Calculation of the emissions reduction is based on validated and registered parameters fixed in the PDD and justified during the validation. As shown in the table above, the CO2 emission factor of the grid is 0.2677 tCO2e/MWh.

D.1 Describe the formulae used to calculate emissions reductions

The emission reductions by the project activity (ERy) during a given period of year y are the product of the baseline emissions factor (*EFy*, in tCO2e/MWh) times the electricity supplied by the project to the grid at the same period of year y (*EGy*, in MWh), as follows:

$$ER_y = EF_y \cdot EG_y \qquad \textbf{Equation 1}$$

D.2 Tables providing values obtained when applying formulae above

Termoelétrica Santa Adélia Ltda.

Year	Electricity Generation (MWh)	Baseline Emission Factor (tCO2e/MWh)	Emissions Reduction (tCO2e)
2006 (01/Jul/2006 to 31/Dec/2006)	62,561.48	0.2677	16,747.71
		Total (tCO2e)	**16,747.71**

Annexes

Annex 1 - Contact information

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