

CDM PROJECT

Energy efficiency improvement
of coal fired thermal power
plants of MAHAGENCO ,
Koradi units-1&2 of 120 MW
each.

Objective of the project

- To improve the power generation efficiency of units - 1 & 2 of the power plant, and thus achieve reduction in coal consumption per unit of power generation.

Project Description and Proposed Activities

- There are 4x 120 MW thermal units at Koradi Thermal Power Station (TPS). The Unit -1 was commissioned in June 1974 and the Unit – 2 in March 1975. The turbine were supplied by M/s Zamech, Poland, Generators by M/s Dolmel, Poland, and boilers by M/S ABL, India. These units have been de-rated to 115MW due to poor quality of coal supply as compared to the design coal. Each of these units has completed around 200,000 hours of operation. The R&M work planned will restore capacity and improve the life of these units by 15 to 20 years.

Project Description Continued :

Latest technological features will be introduced for the first time to minimize heat rate and reduce CO₂ and NO_x emission as per guarantee parameters . The loans/funds required for the project have been arranged. Order for the required equipment and services are being finalized. The works on Unit-1 will be done during March to October 2007, and on Unit -2 during November 2006 to June 2007.

Name of the project developer

- Maharashtra State Power Generation Co. Ltd.[MAHAGENCO]
(Formerly known as M.S.E.B.)
- **Greenhouse gasses targetted**
CO₂ and NO_x
- **Earliest project start date**
November 2006
- **Estimate of time required before becoming operational after approval of the PIN**
Unit –2 to start operation by July 2007 and Unit –1 by November 2007.

Expected first year of CER delivery

- From July 2007
- **Project lifetime**
- 15 to 20 years
- **Current status or phase of the project**
- DPR made after Residual Life Assessment (RLA) studies, NIT issued in January 2005, required loans got sanctioned in September 2005, and orders for supply of equipment and services being issued from Feb. 2006.

Technology

- Units are currently operating as per old technology of 1970.
- Latest features like modified design turbine blades, modern instrumentation and controls, Low Nox burners for boiler, etc. will be introduced to improve efficiency and reduce emission of GHG.

Baseline scenario

- Existing Heat Rate & Generation Efficiency (year 2004-05) for Koradi Units –1 & 2, and the Heat Rate of 6x120 MW power plants in Maharashtra State.
- Which guidelines will be applied
- GHG emission reductions under Kyoto Protocol of UNFCCC for Clean Development Mechanism (CDM)

Expected environmental benefits

- Estimate of Greenhouse Gases
- Abated/CO₂ Sequestered (in metric tons of CO₂-equivalent)
- Unit –1: 85,657
- Unit –2: 99,707
- Total: 185,364
- [Details given in Attachment 1]

Calculation of CERs for units 1 & 2 of Koradi Thermal Power Plant

S.No.	Parameter	Koradi-1	Koradi-2
1	Existing Capacity, MW	115	115
2	Capacity after R & M, MW	120	120
3	Existing (year 2004-05) heat rate (kCal/kWh)	2680	2764
4	Heat rate after R & M (kCal/kWh)	2402	2402
5	Present PLF (%)	64.56	54.24
6	Units Generated (present) (MU/Year)	650.422	546.446

	Parameter	Unit 1	Unit2
7	PLF expected after R & M(%)	85.00	85.00
8	Units generated after R & M(MU/year)	893.52	893.52
9	CERs per year for electricity generated (equivalent to existing i.e 2004-05)	67,644	73,989
10	CERs per year for electricity generated (above the present level i.e 2004-05)	18,013*	25,718*
11	Total CERs/ year	85,657	99,707
12	Starting Date	Nov.07	July 07

Assumption: i)Base year 2004-05 performance, Coal GCV=3861 kCal/kg,
Coal NCV= 3592 kCal/ kg

ii) *Baseline: average heat rate of 6 x 129 MW units in Maharashtra

Local benefits

- Reduction in emissions of Sox, NOx, Particulate Matter
- Global benefits
- Reduction of emissions of GHG
- **Socio-economic aspects**
- -employment generation for the technicians and labour to be used for doing the R&M works
- -reduced environment pollution
- -conservation of coal resources for the country
- -generation of more power from the facility and thus satisfying
- the needs of power starved industry and the households in the State

Concerns And Issues

- New methodology, hence risk of approval
- High Cost of refurbishment
- High payback period (about 11 years against life of 15 years)
- Emission reduction depends on old components reliability, wear and tear, external factors like grid disturbance, coal quality, maintenance, etc.

- Scenario after year 2012 is not clear
- Regulators' approval for modernization works

THANK YOU