UNFCCC Secretariat
Martin-Luther-King-Strasse 8
D-53153 Bonn
Germany

Att: CDM Executive Board

DET NORSKE VERITAS
DNV Certification
International Climate Change Services
Veritasveien 1
NO-1322 Høvik
Norway
Tel: +47-6757 9900
Fax: +47-6757 9911
http://www.dnv.com
NO 945 748 931 MVA

Your ref.:	Our ref.:	Date:
CDM Ref 0556	MLEH/KCHA	9 November 2006

Response to request for review "12MW Captive Power Project based on Waste Heat Recovery of Industrial Waste Gases" (0556)

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV's request for registration of the "12MW Captive Power Project based on Waste Heat Recovery of Industrial Waste Gases" project (0556) and would like to provide the following initial response to the issues raised by the requests for review.

Comment 1:

The additionality arguments as presented by the project participants have not been checked against any third-party sources, nor is any of the evidence available in the validation report, PDD, or even referenced in the validation report. This applies to the following important arguments: technological barriers; common practice; and impact of CDM registration.

DNV Response:

We acknowledge that the evidences for the additionality arguments have not been referenced in the validation report. However, DNV would like to clarify that during validation all arguments presented in the PDD to demonstrate the additionality of the project were verified. The sources and references used to assess the additionality arguments are given below.

While assessing the technological barrier, DNV consulted the engineering expert Mr. A K Chatterjee, General Manager (Kolkata) of M/s ThyssenKrupp Industries India, for guidance on the waste heat recovery from coke oven units. It was confirmed that non-recovery type coke ovens and the subsequent waste-heat recovery power plant project from coke ovens was unheard of in India and that this technology presents technical barriers related to the draught control and risks pertaining to thermodynamic shock which might adversely affect the life and performance of the coke ovens itself. DNV had also assessed communications (included in Annex 1 and 2) from Techno Electric and Engineering Company Limited (TEECL), Kolkata, the engineering, procurement & construction (EPC) contractors for ECL, which clearly states the apprehension of the EPC contractor towards the project and highlights the possible barriers and risks in implementing the project activity. The above mentioned communication also identifies the project as a pioneering activity in the field of waste heat recovery from coke ovens and the absence of

data for design and engineering. The communications also indicate that the contractor had at one point wanted to withdraw from the project due to the technical complications involved, which had resulted in delayed implementation and commissioning. DNV also was also given confirmation by reputable boiler suppliers, M/s Thermax and Thermal Systems Limited, that there was considerable difficulty in designing the boilers due to the uniqueness of the project and that both boiler suppliers had considerable doubts about the performance of the dampers in the actual project scenario.

The technological barrier with respect to the grid synchronization had been assessed from the experience and knowledge of the power scenario in India. Several entities having captive power plants have been denied synchronization with the grid by the regional electrical boards due to technical difficulties. This has been highlighted in the report of the central electrical authority (CEA), the excerpt of which is included in Annex IX (The entire report is available on the CEA website www.cea.nic.in titled "Tapping of Surplus Power from Captive Power Plants"). A few important points for the eastern regional grid to which the project activity is connected are highlighted below:

Wheeling of surplus power from one unit of ITC to other unit is not allowed by West Bengal as the State Government have yet to formulate the guidelines for this type of transaction.

Due to restriction of the grid, M/s Haldia Petro Chemicals Ltd. is not able to wheel their surplus power to the industry interested in purchasing of their high cost power.

It is to be noted that, due to restriction of the grid, M/s Haldia Petrochemicals Ltd. are not able to wheel their surplus power to the industry. M/s Haldia Petrochemicals Ltd is located within 1 km of the project plant and both Haldia petrochemicals and ECL are connected to the same grid. Therefore, the same grid restrictions apply to the project plant as well.

The above mentioned report also gives a list of captive power plants that are synchronized with the regional grids and is included in Annex X. It is evident that there are no waste heat based power plants in West Bengal that are connected to the regional grid. The only other waste heat based captive power plant in the region is that of Phillips Carbon Black Ltd. (PBCL), which is not connected with the regional grid, and the power plant is based on combustion of waste gases generated from a carbon black plant and not heat recovery from coke oven. Even the list of captive power plants for the entire eastern region does not contain any coke manufacturing unit which generates power from waste heat as in the project plant. This clearly indicates that the project activity is not a common practice in the region. This has also been corroborated by the EPC contractor of ECL (see Annex I).

As mentioned in table III of Appendix A of the validation report, DNV carried out a survey of all major non-recovery type coke oven plants in India (Annex III) and verified that among them only five entities (including the project plant) have implemented waste heat recovery. All these project activities have been presented as CDM projects. The project activity titled "Jindal steel and power project, Raigarh (JSPL)", which was initiated after the ECL project, has already been registered as a CDM project (project activity 0351).

The financial calculations assessed by DNV demonstrated that the registration of the project as a CDM project improves the rate of return of the project activity marginally, thereby providing some additional financial benefits to the project participant and alleviating the technological barrier.

Comment 2:

The PDD states that "The crediting period for 12 MW of the installed capacity shall commence on 01/04/2006." However, the crediting period cannot start before project registration.

DNV Response:

DNV would like to refer to the decision at EB 26 on *"Clarification regarding registration procedure relating to retro-active crediting (paragraph 4 of decision 7/CMP.1)"* which states that

86. In order to operationalize paragraph 4 of Decision 7/CMP.1 the Board clarified that project activities that started in the period between 1 January 2000 and 18 November 2004 that have either submitted a new methodology by 11 January 2006 or have requested validation by a designated operational entity by 31 December 2005 can request retroactive credits if:

(a) The request for registration of the project activity is submitted by the DOE through the electronic interface 31 December 2006, midnight GMT;

(b) Any required registration fee is received by the secretariat before 31 January 2007; and

(c) The request is complete and, hence published on the UNFCCC CDM website, by 15 February 2007."

As per the definition given in the guidelines for completing the CDM-PDD, the starting date of a CDM project activity is the date at which the implementation or construction or real action of a project activity begins. The important milestone for the project activity was the placing of the letter of intent for procurement of boilers on 1 December 2003, subsequent to which the civil works began in January 2004. The letter of intent dated 1 December 2003 was presented to DNV during the validation (see Annex IV). DNV was also able to confirm that CDM benefits were considered prior to the starting date (see Board note in Annex V). The project design document was published for comments by Parties, stakeholders and NGOs from 31 August 2005 to 29 September 2005, which clearly indicates that the validation process by DNV had started prior to 31 December 2005. Hence, the project meets all criteria for seeking retroactive credits from 01 April 2006.

Comment 3:

The arguments for the IRR being below the ECL hurdle rate are not substantiated by any documented evidence.

DNV Response:

ECL has an IRR hurdle rate of +16% for its core business and +18% for non core business. DNV assessed the internal official document released by the Director (Finance) of ECL (attached as Annex VI) which provides the above guidance on the IRR of projects. Deviations are allowed for certain projects related to statutory requirements. As the project activity deviates from the core business of ECL (construction of pipes) and there are no statutory requirement to implement the project, the guiding IRR for the project was considered at +18%. This is higher than the IRR for the project activity (see Annex VII) which is 15.1% without considering CDM benefits. To further substantiate this point the IRR calculations for three other recent projects of ECL, (attached as Annex VIII) were also verified and in all the projects the IRR is much higher than the hurdle rate.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION LTD

Michael Lehmann
Technical Director
International Climate Change Services

C Kumaraswamy
Manager – South Asia
Climate Change Services

Annex I

Ann - 2

ENGINEERS & CONSTRUCTORS

TECHNO ELECTRIC AND ENGINEERING CO. LTD.

Electrical Division :
2F, Park Plaza, 71, Park Street, Kolkata-700 016, Tel : 3021-3000, 98318 56617-20, 2217-1165, Fax : 033-22171167, E-mail : techno@cal.vsnl.net.in

25th May 2004

M/s Electrosteel Castings Ltd.
30, B.T. Road, Khardah
P.O. Sukchar
24 Parganas (N)
PIN – 700115

Attn. : Mr.K.K.Binani : Senior General Manager

Dear Sirs,

Sub. : 12 MW Waste Heat Recovery Power Plant at Haldia
(Your order nos. HL/000851/04-05, WH/000023/04-05 & WH/000024/04-05)

In preparation for our meeting on 10.06.2004 wherein we would be putting the final touches to the design drawings, we wish to draw your attention to the technological issues that could be detrimental to the success of the project. We have discussed these with you in general terms in the past, however now we are in a position to focus on the areas which are most important to be careful about.

As you are aware, there are no examples of non-recovery coke oven plant whose waste heat is collected and used for power generation. Our experience in the country is in coal based power generation and we consider it much more reliable for your project rather than attempt to prepare the blue print of a technology whose applications are not known in India yet.

It would not be out of context to mention here that since we do not possess any prior first hand experience in the waste heat based power plant from non-recovery coke oven gases we would like you to be aware of the risks associated with this iconoclastic technological move. This application may lead to problems such as thermodynamic shock damaging your boilers, coke ovens and causing severe damage to equipment and also pose a health and safety risk due to boiler over-pressure. While we have undertaken to execute this project successfully under your guidance, we do not guarantee against design problems as these are based on best design estimates and not on technologically proven applications.

Before starting with the project, following are the points which we will like to discuss with you as we envisage from our experience that these could be the technical challenges in the project and would require critical look and careful handling. Points for discussion are as below:

1. The technical drawings of the project and operation details, specially the function of the dampers :

   We would like to make you aware of the fact that any negative flow / disturbance in the draught linked between the two units will upset the coking process and may damage the walls of boilers and coke oven batteries due to sudden thermodynamic shock. We have

...2

discussed with various experts from the field of coke and power plant and we understand that regulating the high temperature water-cooled dampers is the critical operation parameter that would require skill in handling and operation. We are taking due precautions to recheck all computations on sizing and operating parameters of the dampers. We have received the report on waste gas availability based on your study in Gujarat and we believe that the designs are based on these flow rates and temperatures of waste gas. However, we are not sure about the flow & temperature variations, dust load and pressure drops in the ducts and would like to discuss these in the meeting.

2. The details of the boilers to be supplied by Thermax have been received by us. We are taking for granted that Thermax is aware of the risks to the operation of the boilers due to upstream process conditions (thermodynamic shock, flow & temperature variations, dust load, sudden pressure drop etc.). We are yet to work out the complete details of the water cooling of the dampers that may need revision considering factor of safety in the design. The protocol for conducting the pilot testing of damper operation may have to be done offline without the boiler connection as we do not wish to be responsible for any damage to costly equipment.

3. We are required to run a pilot test along with your operational people to help your unit in obtaining power synchronization with the grid. This could take time as synchronization with grid, system islanding and load shedding schemes and protection of the metering system from sudden faults is not an easy task and requires intervention of experts, particularly in West Bengal where such applications are made more difficult due to grid uncertainties and fluctuating load conditions. The key success factor would be the integration of indigenous technologies of heat recovery mechanized coke ovens coupled with waste heat recovery in the boiler and subsequent power generation in Turbo-generator with grid off take.

4. We urge you to develop a training and operational manual that considers health and safety issues as well and screen the competency of the personnel who would be responsible for the operation of the plant.

5. After the Burning Chamber for the sponge iron kilns it is a must for the hot dust laden flue gas to be further circulated in the boiler. This is both from optimum heat recovery point of view as well as environmental discharge through the stack.

We seek your active support and cooperation in this challenging project and look forward to the meeting on 10th June 2004.

Thanking you,

Yours faithfully,
for TECHNO ELECTRIC & ENGINEERING CO. LTD.

B.K. CHAKRABORTY
GENERAL MANAGER

Annex II

Ann.-3

ENGINEERS & CONSTRUCTORS

TECHNO ELECTRIC AND ENGINEERING CO. LTD.

Electrical Division :
2F, Park Plaza, 71, Park Street, Kolkata-700 016, Tel : 3021-3000, 98318 56617-20, 2217-1165, Fax : 033-22171167, E-mail : techno@cal.vsnl.net.in

30th March 2006

M/s Electrosteel Castings Ltd.
30, B.T. Road, Khardah
P.O. Sukchar
24 Parganas (N)
PIN – 700115

Attn. : Mr.K.K.Binani : Senior General Manager

Dear Sirs,

Sub. : 12 MW Waste Heat Recovery Power Plant at Haldia
(Your order nos. HL/000851/04-05, WH/000023/04-05 & WH/000024/04-05)

You are aware that after the Power Plant was started and connected to the grid on 10th March 2006, a no. of pilot tests were conducted and the results have been encouraging. We feel that the plant may now be taken under regular operation and further tests and debugging may be continued to stabilize it.

You will recall that we had several discussions with you and your team on the uniqueness of the technology adopted in your plant and on the need to carefully undertake the design, execution and trial operation precautions. As one of the first examples in India of waste gas based energy generation from non-recovery coke ovens, there were ample apprehensions on the technological merit of such a pioneering application. The aspect of thermodynamic shock and resultant damage to the walls of the boilers and coke oven batteries were challenges beyond our known realms of similar application. We were very apprehensive not just on the design aspects and the water cooling but also on the need for training to safeguard this critical operation – a catastrophic failure would have jeopardized our technical reputation and attracted the liability clauses of our contract.

We had carried out thorough research to identify design and operation critical issues from similar applications in the coke making sector but were left with the conclusion that such technology has not arrived in India as yet. Moreover your idea to include dust laden gases from sponge iron complicated matters and we were at one point not interested to continue with the execution as per design. Despite such concerns, you will agree that we took it up as a technological challenge and surmounted them with your support and active cooperation. This initiative did lead to time overruns, but it was worthwhile as a first of its kind application that would be testimony for many other similar projects. Surely, those projects would learn from our joint efforts in executing this project.

We would, at this stage, appeal to you not to penalize us for the time overruns and waive the clause pertaining to that in the contract. Hope our request will find a favourable response from your end.

With warm regards,

Yours sincerely,

B. K. CHAKRABORTY
VICE PRESIDENT

Registered Office : P-46A, Radha Bazar Lane, Kolkata - 700 001, Tel : 2225-4671/4472/3276, Fax : 033-2225 4478, E-mail : techno@cal.vsnl.net.in
Power Plant/Utility Group : Ideal Plaza - South Block, Room No. S-307 & S-309, 11/1, Sarat Bose Road, Kolkata - 700 020, Tel : 2280-1646, Fax : 033-2283 1885, E-Mail : techno@cal.vsnl.net.in
Corporate Office : 508-509, Skipper Corner, 88, Nehru Place, New Delhi-110 019, Tel : 011-2643-1602, 5161-7438, 2648-6492, Fax : 011-2644 6098, E-Mail : delhi@techno.co.in
Hyderabad Office : 6-3-252/1/6 : Flat No. 301, Eramanzil, Hyderabad - 500 082, Tel : 040-5566 0523, Fax : 040 2331 7757, E-Mail : hyderabad@techno.co.in
Visit us at : http://www.techno.co.in

Annex III

Ann. – 1

List of major non-recovery type coke oven plants in India

Sl.	Name of Unit	Location	Capacity (MT/month)
1	Gujarat N.R.E. Coke	Jamnagar, Gujarat	20,000
2	Sesa Kembla Coke Co.Ltd.	Amona, Goa	23,000
3	Saurashtra Fuels	Porbandar, Gujarat	15,000
4	Mahashakti Coke	Mundra, Gujarat	30,000
5	B.L.A.Industries	Mithapur, Gujarat	15,000
6	Antai Balajee Coke	Gandhidham, Gujarat	20,000
7	Usha Ispat	Redi, Maharashtra	10,000
8	Shivamani Energy	Tuticorin, Tamilnadu	5,000
9	Satvahana Ispat Ltd.	Bellary, Karnataka	15,000
10	Coromandal Pvt. Ltd.	Vishakhapatnam, A.P.	3,000
11	Electrosteel Castings Ltd.	Haldia, West Bengal	12,500
12	Lanco Industries Ltd.	Srikalahasthi, A.P.	12,500
13	Jindal Steel Works	Bellary, Karnataka	100,000
14	Jindal Steel & Power Ltd.	Raigarh, Chhattisgarh	33,000
15	Kalimati Steel Pvt. Ltd.	Kharagpur, W.B.	8,000
16	Wellman Carbo Metaliks	Kharagpur, W.B.	4,500
17	Jaiswal Neco	Raipur, Chhattisgarh	33,000
18	Shree Mahavir Carbon Limited	Cuttack, Orissa	2,000
19	Shreeji Coke Combine (P) Ltd.	Cuttack, Orissa	900
20	Apex Fuels Pvt Limited	Cuttack, Orissa	1,400
21	Nandi Ghosh Coal & Coke (P) Limited	Cuttack, Orissa	3,000
22	Purbi Bharat Coal Products Limited	Cuttack, Orissa	7,500
23	Neelachal Carbon Metallics Limited	Cuttack, Orissa	4,500
24	I B Industries	Cuttack, Orissa	3,000
25	Pyramid Coke Industries	Cuttack, Orissa	1,500
26	Shree Jagannath	Cuttack, Orissa	1,250
27	Shri Hanuman Coke	Cuttack, Orissa	1,500
28	MB International	Cuttack, Orissa	1,500
29	Konark Met Coke	Cuttack, Orissa	8,750
30	Wellman	Cuttack, Orissa	5,000

Annex IV

ELECTROSTEEL CASTINGS LIMITED
40, STEPHEN HOUSE, 4, B. B. D. BAG (EAST), KOLKATA-700 001 (INDIA)
TEL : 91-33-2248-4071/72, 2220-7008/09, 2220-8912/13, 2221-4770/4
Fax : 91-33-22209634 (Export), 91-33-22206040 (Sales), 91-33-22481803 (Finance)

MR. ASIM DE (1) MR KK BINANI (2)

Ref No ECL/WHRB
Date: 1st December 2003

Thermax Limited
D-13 MIDC Industrial Area
Chinchwad
Pune 411019

Kind Attention : Mr. Sanjay Moza /Mr. Suresh Dhumal

Subject : Letter of Intent for 2 nos of Waste Heat Recovery Boilers for our coke oven plant.

Dear Sirs,

Referring to the discussions the undersigned had with your Mr. Suresh Dhumal & Mr. Sanjay Moza and the revised price you have submitted vide your letter dated 1st December 2003, we hereby confirm our Letter of Intent (LOI) on you for supply of 2 nos of Waste Heat Boilers.

1. The Boiler parameters for each boiler shall be as follows

Steam Generation	23.7 TPH
Steam Pressure at Superheater outlet	66 Kg/cm2(g)
Steam Temperature at Superheater outlet	485 +/-5 Deg C

The above is based on design condition of Gas flow of 59,000 Nm3/hr entering at 950 Deg C & cooled to 180 Deg C. The Boiler will also deliver the same pressure & temperature of steam under upset conditions of 1100 and 850 Deg C with the corresponding gas flow (Heat duty remaining same).

Though you have given the details of the design of the boiler for surface area etc., however it will be your responsibility to fulfill the ultimate requirement of delivering the above output at normal and upset conditions.

2. Detailed Purchase order with Scope & specification follows.
3. **The order value shall be Rs 6,40,00,000/- (Rupees Six hundred & forty lacs only) for two boilers.**

Annex V

Placed before the board on 25-07-2003 for approval of CPP as a CDM project

Coke Oven Plant at Haldia with power plant

PLACED BEFORE THE BOARD ON 25/7/03

	Coke Oven	Power Plant
Projected Investment -	37.25 Cr	32.00 Cr
Plant Capacity -	1,50,000 MT	8 MW
	Net usable prod – 1,20,000MT	

Land already acquired from Haldia Development Authority and Project is already cleared by Pollution Control Board.

Action has already been taken for Land development and Civil work. Orders worth Rs.12 Cr (approx.) already placed for Plant & machinery, Refractories, etc. The project is likely to be commissioned by July'04.

Approval of the board was given for the Coke Oven Plant without Power Plant in the last meeting held on 16th June'03. Approval is being sought for the integrated plant covering the Power Plant of 8 MW. The Power Plant will be developed as a CDM (Clean Development Mechanism) Project to get the benefit of Carbon Trading.

Technology

It is least polluting non-recovery type coke oven where the volatile matter of the coal are burnt and waste gases provide heat for power plant.

Board Note from the board meeting on 28-01-2004 seeking approval for 12 MW CPP

Coke oven

Civil work for Main Oven is over. Battery No 1 is ready for Refractory laying and Battery No.2 will be ready by 3rd week of Jan'04 .All Orders for total Refractory has been placed. orders for castables and mortars are under finalisation. Already received 4000 Mt Refractory & balance is likely to be received by April'04. Refractory laying work has already started from 2nd week of Jan'04.and is expected to be over by mid May'04.

Coal & Coke handling system is being designed and all Drawings would be ready by 31.01.04. Order has been released for Coal crushers , Coke cutter & conveyor equipment and are expected to be received by 31.03.04. Charging Car & Pusher are under design (with ECL-Chennai). Manufacturing drawing will be ready by 31.01.04. Quenching Car manufacturing drawing released for manufacturing. Initially Project Cost was estimated to Rs.37.25 Cr but now with change in design to get consistent quality Coke and higher civil (Piling) cost due to soil condition , Project cost is likely to go to Rs.46.41 Cr for which Board's approval is requested.

Power Plant

Initially Sanction was for Rs. 32 Cr (8 MW) . After detailed study it was found that 12 MW Power can be generated utilising the waste heat of Coke Oven & Sponge Iron Plant , action has been initiated to putup 12 MW Power Plant at a Cost of 47 CR. subject to Board's approval.

To gain time ,Order for 2 nos of Boilers has been placed with a delivery schedule of 12/13 months. Negotiation for TG set is in progress and order will be finalised by end Jan'04. EPC contract finalised.

Sponge Iron Plant with Power Plant	2,800	Jun-04	0	0

The sanction was for Khardah but due to non-availability of NOC from PCB for Khardah site , action has been initiated to put up Sponge Iron Plant at Haldia , subject to Board's approval.

NOC from PCB for Haldia site has already been received. Land acquisitioning is under progress. Engineering order placed on M/S Popuri Engg,Hyderabad. 1st phase of the project will be completed by Oct'04. Since Power Plant is merged with Coke Oven Power Plant , Sanctioned amount of Rs.28 Cr will be reduecd to Rs.20 Cr for 100TPD sponge Iron Plant.

Finishing Line No- 6	900	Nov-04	220.6	30.1

Maximum long delivery item ordered. Shed foundation is in progress. Dedusting foundation ready. New sludge bed commissioned. Efforts are on to complete the Project by Aug'04 to cater the demand of small dia Pipe.

N.C.Bahl
Director

Annex VI

Ann. – 4

ELECTROSTEEL CASTINGS LIMITED
19, CAMAC STREET, KOLKATA-700 017 (INDIA)
TEL : Board Number 91-33-2283 9990
Fax : (Directors) 91-33-22894336, (Sales) 91-33-22894337, (Export) 91-33-22894338, (Finance) 91-33-22894339

CIRCULAR

25th February, 2003.

ALL DEPARTMENTAL HEADS :

Sub : Guideline for Financial Evaluation of future Projects.

It is often observed that a common evaluation criteria is not being followed by all the Departments while undertaking different Projects. To streamline the system, it is advised that the following guideline be adhered to while evaluating the financial viability of the future Projects :

"For Projects undertaken related to our core business, the estimated internal rate of return (pre-tax) on equity should be + 16%, whereas for non-core business Projects it should be + 18%."

The above should be treated as general guideline. Deviations may be allowed for certain Projects related to statutory requirements or for strategic reasons.

(S.Y. Rajagopalan)
Director (Finance).

IRR CALCULATIONS FOR 12 MW POWER PLANT AT HALDIA (WITHOUT CDM BENEFIT)	
Contribution from Power	**Rs/unit**
Net Selling Price of Power	2.35
Less : Variable cost of Power	0.60
Contribution per / unit	1.75

Total Investment	Rs. Lakhs	5,900.0
Annual Production of power	unit	73,730,000

(Figures in Rs. Lakhs)

Annual Contribution	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue from sale of power	1,733	1,733	1,733	1,733	1,733	1,733	1,733	1,733	1,733	1,733
Variable cost	442	442	442	442	442	442	442	442	442	442
Total Contribution / annum	**1,290**	**1,290**	**1,290**	**1,290**	**1,290**	**1,290**	**1,290**	**1,290**	**1,290**	**1,290**
Fixed Cost										
Interest on Investment @ 10% p.a.	590	529	463	391	312	225	130	-	-	-
Depreciation @ 10% p.a. on 80% of investment	472	472	472	472	472	472	472	472	472	472
Interest on Working Capital @ 10% p.a	5	5	5	5	5	5	5	5	5	5
Manpower Cost	30	31	32	32	33	34	35	36	37	37
Other Overhead @ Rs5 lac p.m	60	63.00	66.15	69.46	72.93	76.58	80.41	84.43	88.65	93.08
Total	**1,157**	**1,100**	**1,038**	**970**	**895**	**812**	**722**	**597**	**602**	**608**
Gross Profit	133	190	252	321	396	478	568	693	688	683
Cash Generation	605	662	724	793	868	950	1,040	1,165	1,160	1,155
Prog Cash Generation	605	1,267	1,992	2,784	3,652	4,602	5,642	6,807	7,968	9,122

Internal Rate of Return (IRR) Pre-Tax

Period		Cash Flow
0		(5,900.0)
1		1,195
2		1,192
3		1,188
4		1,184
5		1,179
6		1,175
7		1,170
8		1,165
9		1,160
10		1,155
	IRR	**15.1%**

Fixed cost (Rs lakh)	1,157
Units generated (Net)	73,730,000
Fixed cost / unit	**1.57**
Variable Cost	Rs/unit
Spares & consumables	0.35
Water	0.05
Govt duty	0.20
Total	**0.60**

Cost of generation	
Fixed cost/unit	1.57
Variable cost/unit	0.60
Total	**2.17**

Annex VIII

29.12.05

PLACED BEFORE
THE BOARD ON 11/01/06

INTRODUCTION

This report deals with the Techno-economic Feasibility of increasing productivity of Mini Blast Furnace with prepared burden there by reducing Liquid Iron Cost as well as fulfill Liquid Metal requirement of Ductile Iron Pipe Plant to Produce 2.5 Lac Mt p.a without Cupola Metal.

Presently we are using lump Iron ore in our MBF, producing liquid iron at the rate of 600 to 650 Mt per day. To Produce 2.5 Lac Mt Ductile Iron Pipe, around 750 Mt liquid Iron is required from Blast Furnace.

It is a common knowledge in the iron and steel industry that use of prepared burdens like sinter increases productivity of the Blast Furnace. Sinter is made by heating iron ore fines along with fluxes like lime, dolomite etc.

Iron Ore Fines is available in plenty in both natural forms like Blue dust and as a waste during sizing of Lump Ore. India is today one of the major exporter of iron ore fines. There are many more mines to be explored. This is also attracting many foreign investors to propose steel making plants based on these reserves.

Major quantity of the raw materials in ready to use condition would be available from mine head, our own coke plant operating at Haldia, and slaked lime from the lime query. The remaining raw materials would be available from the plant in the form of coke breeze, iron ore fines, dry dust catcher fines, sintering fines, P.C. equipment fines and would be recycled.

Accordingly Electrosteel would like to adopt use of prepared burden (Sinter) in the Blast Furnace to increase the availability of Liquid Iron to Produce 2.5 Lac Mt D.I.Pipe per Annum.

PROJECT IMPLEMENTATION

The Project can be implemented within 15 - 18 months .

20.01.05

IRR CALCULATIONS FOR REPLACEMENT OF HYDROCARBON FUEL IN ANNL.FURN.	
Cost reduction of Oil in Main Plant Annealing Furnace	**Rs/unit**
Actual Fuel Cost in Main Plant Annealing Furnace (Oct'04-Dec'04)	472
Estimated Fuel Cost Post BFG	384
Savings/Contribution per MT of Pipe	87

Total Investment	Rs. Lakhs	340.0
Estimated Monthly production in Main Plant	MT	10,500

(Figures in Rs. Lakhs)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Annual Contribution	110	110	110	110	110	110	110	110	110	110
Fixed Cost										
Interest on Investment @ 10% p.a.	34	28	22	-	-	-	-	-	-	-
Depreciation @ 10% p.a. on 95% of investment	32	32	32	32	32	32	32	32	32	32
Interest on Working Capital @ .5lac p.m	6	6	6	6	6	6	6	6	6	6
Other Overhead @ Rs 1.0 lac p.m	12	13	13	14	15	15	16	17	18	19
Total	84	79	73	52	53	54	54	55	56	57
Gross Profit	26	31	37	58	57	56	56	55	54	53
Cash Generation	58	63	69	90	89	89	88	87	86	85
Prog Cash Generation	58	121	190	280	370	459	547	634	720	805

Internal Rate of Return (IRR) Pre-Tax

Period		Cash Flow
0		(340.0)
1		92
2		91
3		91
4		90
5		89
6		89
7		88
8		87
9		86
10		85
	IRR	23.2%

Costing MIS. Mr. B. B. Ganguly D08H9L Hoffled on 21/1/05

MD / Mr Maninder Singh

Ann. - 6

Date:- 20-Jan-05

AUTHORISATION FOR		
Expenditure for over 50,000/-	Capital Project	Development / ~~Major Repair~~

EXPENDITURE RELATES TO		
Project MBF / CI / DI	Dev / Rep MBF / CI / DI	Proj / Dev / Rep COMMON

NAME OF THE PROJECT		
	PROJECT	Replacemnt of hydrocarbon fuel in DIP furnace
	PROJECT DIRECTOR	Maninder Singh

CODE NO OF THIS SANCTION FORM		
Initial of Proj. Director	S No by A/Cs	Originating Deptt. Code
MS		

Expenditure required to :- ✓ Addition of New Equipment | To Replace old Equipment

PROJECT / EQUIPMENT SPECIFICATION

SL. NO.	PARTICULARS	UNIT	Quantity	Approx Value
1	Burners & BMS etc	lot		84.65
2	Ducting & structurals	lot		83.00
3	Refractories	lot		23.00
4	Electricals	lot		18.50
5	Spares	lot		28.21
6	Labour for erection etc	lot		5.75
7	Duties, taxes, insurance, freight etc	lot		66.35
8	Contingencies	lot		30.95
	TOTAL			340.41
			Say	340.00

IF SPACE IS INADEQUATE PLEASE USE SEPARATE SHEET AND ENCLOSE

SL. NO.	WHY THIS EXPENDITURE IS REQUIRED	EXPECTED BENEFITS FROM THIS EXPENDITURE	APPROX. VALUE IN LAC
1	Improved fuel economy	PRODUCTION / PRODUCTIVITY	
2	Reduced consumption of hydrocarbon fuel	POLLUTION CONTROL :-	
3	Usage of Blast Furnace gas being currently flared and hence reduction in thermal emission	QUALITY :-	
		MAINTENANCE :-	
		MATERIAL CONSUMPTION :- (Fuel Oil) pa	175.00
		LABOUR :-	
		OVER HEAD :-	
		TOTAL :- per annum	175.00

Total cost (estd) of project	Rs. LAC	PROJECT IMPLEMENTATION TIME	
Equipment Cost (incl. Tax & Duties)	Details attached		
Boughtout Materials (Steel Electrical etc.)		1. Govt Approval	
Erection / Commissioning Cost		2. Site Clearance / Development / Pu	
Civil Cost		3. Design / Drg	
Labour Cost		4. Material / Equipment Procurement	
Miscellaneous		5. Erection / Commissioning	
		6. Civil Work	
		7. Pollution Clearance etc.	
TOTAL =	340.00	TOTAL TIME REQUIREMENT	8 months

(Please enclose Cash Flow / Pay-back calculation)

FUND REQUIREMENT (From the date of Sanction)

1st Month	2nd Month	3rd Month	4th Month	5th Month
	40	70	25	30

Special Remark Estimated Life of the Project: 10 Years | Will be on operation on 1 / 2 / 3 Shift

Departmental Head	Recommended	Approved	Sanctioned
[signature]	[signature] 27/1/05	[signature] D(O)	[signature] 1/2/05 MD

To be made in 4 copies - Originating Dept. / Accounts / Procurement Dept. / Costing / D (F)

22-12-04

IRR CALCULATIONS FOR 2ND HANSBERG CORE SHOOTER-MODEL :H-100	
Contribution from Pipe	**Rs/unit**
Net Selling Price of Pipe	26,000
Less Variable cost of Pipe	22,000
Contribution per / MT	4,000.00

Total Investment	Rs Lakhs	473.0
Annual Extra Production of Pipe	MT	6,000

(Figures in Rs. Lakhs)

Annual Contribution	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue from sale of Extra prodn	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560
Variable cost	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320
Total Contribution / annum	240	240	240	240	240	240	240	240	240	240
Fixed Cost										
Interest on Investment @ 10% p a	47	38	28	18	7	-	-	-	-	-
Depreciation @ 10% p a on 85% of investment	40	40	40	40	40	40	40	40	40	40
Interest on Working Capital @ 10% p a	10	10	10	10	10	10	10	10	10	10
Manpower Cost	30	31	32	33	33	34	35	36	37	38
Other Overhead @ Rs5 lac p m	60	63	66	69	73	77	80	84	89	93
Total	188	182	177	170	164	161	166	171	176	181
Gross Profit	52	58	63	70	76	79	74	69	64	59
Cash Generation	92	98	104	110	117	119	114	109	104	99
Prog Cash Generation	92	190	294	404	520	639	753	863	967	1,066

Internal Rate of Return (IRR) Pre-Tax

Period		Cash Flow
0		(473.0)
1		140
2		136
3		132
4		128
5		124
6		119
7		114
8		109
9		104
10		99
	IRR	23.8%

D59E8L Mod... Fund NO. 59E8

Date:- 22.12.2004

AUTHORISATION FOR		
EXPENDITURE FOR OVER 50,000/-	Capital Project ✓	DEVELOPMENT / MAJOR REPAIR

EXPENDITURE RELATES TO

PROJECT ~~MBF/LCH~~/ DI	DEV. / REP. MBF / ~~GT~~ / DI	PROJ./~~DEV./REP.~~ COMMON
DI		

NAME OF THE		
	PROJECT	Commissioning of 2nd Hansberg Machine
	PROJECT DIRECTOR	Mr. Ashit Sengupta

CODE NO. OF THIS SANCTION FORM		
INITIAL OF PROJ DIRECTOR	SL. NO. BY A/Cs	ORIGINATING DEPT CODE
AS		

Expenditure required to :- ✓ Addition of New Equipment | To Replace old Equipment

PROJECT / EQUIPMENT SPECIFICATION

SL. NO.	PARTICULARS	UNIT	QUANTITY	APPROX. VALUE
1.	Commissioning of 2nd Hansberg Core Shooter Machine	Set	1(one)	473 lac
			TOTAL	473 lac

IF SPACE IS INADEQUATE PLEASE USE SEPARATE SHEET AND ENCLOSE.

SL. NO.	WHY THIS EXPENDITURE IS REQUIRED	EXPECTED BENEFITS FROM THIS EXPENDITURE	APPROX. VALUE IN LAC
1.	Details attached	PRODUCTION / PRODUCTIVITY :-	473
		POLLUTION CONTROL :-	
		QUALITY :-	
		MAINTENANCE :-	
		MATERIAL CONSUMPTION :-	
		LABOUR :-	
		OVER HEAD :-	
		TOTAL :-	473

TOTAL COST (Estd) OF THE PROJECT	Rs. LAC	PROJECT IMPLEMENTATION TIME	
Equipment Cost (incl. Tax & Duties)	457	1. Govt. Approval.	
Boughtout Materials (Steel Electrical etc.)		2. Site Clearance / Development / Purchase.	
Erection / Commissioning Cost	14	3. Design / Drg	
Civil Cost	02	4. Material / Equipment Procurement	
Labour Cost		5. Erection / Commissioning	
Miscellaneous		6. Civil Work	
		7. Pollution Clearance etc.	
TOTAL =	473	TOTAL TIME REQUIREMENT	

(Please enclose Cash Flow / Pay-back calculation) Attached

FUND REQUIREMENT (From the date of Sanction)

1st Month	2nd Month	3rd Month	4th Month	5th Month

Special Remark :- Estimated Life of the Project | Years | Will be on operation on 1 / 2 / 3 Shift

Departmental Head	Recommended	Approved	Sanctioned
23/12/04	24/12/04 24/12/04	31/1/2005	

22/12/04

To be made in 5 copies - Originating Dept. / Accounts[KW] / Procurement Dept. / Costing / D(F).

ELECTROSTEEL CASTINGS LTD. KHARDAH PIN-700 115

IRR CALCULATION OF SINTER PLANT INVESTMENT

29.12.05

Particulars	Unit	Existing with		Proposed Blast Fur.with 70% Sinter & 30% Lump Ore & No Cupola opern.	Difference - Sinter compared to	
		Blast Furnace & Lump Ore	Cupola with Pig Iron		Blast Fur. With Lump Ore	Cupola with Pig Iron
Liquid Iron Production per Day	Mt	650	97	750	100	-97
Liquid Iron Production per Annum	Mt	227,500	32,010	262,500	35,000	(32,010)
Variable Cost per Mt of Liquid Metal	Rs / Mt	11,885	15,183	11,067		
Variable Cost Saving per Mt	**Rs / Mt**				818	4,116

PAY-BACK CALCULATION

Total Investment	Rs.Cr	Say = Rs 66 Cr									
Year		**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**5th Year**	**6th Year**	**7th Year**	**8th Year**	**9th Year**	**10th Year**
Production Achievement		95%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Extra Contribution on a/c of Cost Savings											
Compared to Lump Ore in Blast Fur.	**Rs. Lacs**	**1,767**	**1,860**	**1,860**	**1,860**	**1,860**	**1,860**	**1,860**	**1,860**	**1,860**	**1,860**
Compared to Cupola with Pig Iron	**Rs. Lacs**	**1,252**	**1,318**	**1,318**	**1,318**	**1,318**	**1,318**	**1,318**	**1,318**	**1,318**	**1,318**
Pig Iron Prod on balance 20 days (750-662 T)*(350-330)@ 1400/-p.t	**Rs. Lacs**	**23**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**
TOTAL EXTRA CONTRIBUTION	**Rs. Lacs**	**3,042**	**3,202**	**3,202**	**3,202**	**3,202**	**3,202**	**3,202**	**3,202**	**3,202**	**3,202**
Addition Fixed Cost											
Manpower Cost	Rs. Lacs	360	378	397	417	438	459	482	507	532	558
Other Overheads @ Rs.10 lacs p.m	Rs. Lacs	120	126	132	139	146	153	161	169	177	186
Depreciation @ 5.26%	Rs. Lacs	346	346	346	346	346	346	346	346	346	346
Total Fixed Expenses	**Rs. Lacs**	**826**	**850**	**875**	**902**	**929**	**959**	**989**	**1,021**	**1,055**	**1,091**
Profit before Interest on Investment	**Rs. Lacs**	**2,216**	**2,352**	**2,327**	**2,301**	**2,273**	**2,244**	**2,213**	**2,181**	**2,147**	**2,112**
Interest on Investment @ 9% on balance amount	Rs. Lacs	594	466	322	172	13	(153)	(153)	(327)	(325)	(508)
Profit before I.Tax	**Rs. Lacs**	**1,622**	**1,886**	**2,005**	**2,129**	**2,260**	**2,397**	**2,365**	**2,508**	**2,472**	**2,620**
Provision for I.Tax @ 33.66%	Rs. Lacs	546	635	675	717	761	807	796	844	832	882
Profit After Tax	**Rs. Lacs**	**1,076**	**1,251**	**1,330**	**1,413**	**1,499**	**1,590**	**1,570**	**1,664**	**1,640**	**1,738**
Add Depreciation	Rs. Lacs	346	346	346	346	346	346	346	346	346	346
Total Cash Generation	Rs. Lacs	1,422	1,597	1,676	1,758	1,845	1,936	1,915	2,010	1,986	2,084
Prog Cash Generation	**Rs. Lacs**	**1,422**	**3,019**	**4,695**	**6,454**	**8,299**	**10,235**	**10,214**	**12,244**	**12,200**	**14,328**

Internal Rate of Return	Rs Lacs
Period	Cash Flow
0	(6600.00)
1	2,562
2	2,698
3	2,673
4	2,647
5	2,619
6	2,590
7	2,559
8	2,527
9	2,493
10	2,456
	38.1%

ELECTROSTEEL CASTINGS LTD. KHARDAH PIN-700 115

IRR- of Sinter Plant (29.12.05)1

Annex IX

FINDINGS - AT A GLANCE

1.1. A capacity of about 1100 MW has been offered by various CPPs for connectivity to the grid/HT consumers. The quantum may further increase if the various technical and commercial issues are resolved.

1.2 The important issues which are required to be resolved on top priority basis are as under:

a. Issues related to open access.

i) The States/State Regulatory Commissions which have not issued the regulations for open access may have to expedite the same.

ii) In the interest of providing competitive and smooth access and to facilitate export and import of power within the state or between consumers of two or more states, the open access regulations and methodology of determined charges should be aligned across states. **The state regulators may be urged to develop progressive and encouraging policies for CPP (like one issued by MERC)**

iii) Electricity duty: No electricity duty should be imposed on utilization of generated captive power by participating industry. Reasonable duty may be imposed for export of power.

iv) Reduction in contract demand of a CPP holder with distribution licensee may be allowed without any penalty.

v) CPPs having standby connection with grid, demand charges on the standby component should be reasonable say around Rs. 20 per KVA per month. However, if the CPP exceeds the contracted standby demands then penal rate can be applicable on excess drawl.

vi) The sum of transmission charges and transmission loss (i.e. wheeling charges) fixed by SERCs for transfer of surplus power from captive power plant may not exceed 7% of the generation cost within the state. (Ref. In line with MERC order dated 08-09-2004.)

vii) The surcharge applicable on HT consumers opting to purchase from other CPPs who have surplus power must be fixed at realistic levels. This may be fixed in accordance with avoided cost method suggested by FOIR (Forum of Indian Regulators).

viii) For the purpose of recovery of T&D losses in OA charges, the losses should be benchmarked to reflect technical loses, gradually reduced and equitably distributed (exclude theft of electricity for computation of T&D loss) rather than pass-through to the customer.

ix) Parallel Operation Charges (POC) imposed by state utility is very high. Aligning of POC with ABT regime would encourage connectivity to grid for facilitating transfer of surplus power to the licensee.

x) Banking of energy may be allowed by the distribution licensee and shall be regulated by the energy banking agreement and may be signed between HT industries/CPP holder and the distribution licensee.

xi) For the present, 0. 5 class metering arrangement may be allowed. 0.2 class accuracy metering arrangement as required as per metering regulations may be installed in phases.

b. Fixation of reasonable tariff by State Regulatory Commission for the surplus power available from the CPPs.

c. To make available additional fuel required by the CPPs. Due to restriction in the coal linkage quantity, CPPs located in the vicinity of coal pitheads have to import coal.

d. Strengthening of intra-state and inter-state transmission network.

2.0 INTRODUCTION

Large number of captive plants including co-generation power plants of varied type and sizes exist in the country which is either utilized in process industry or for in-house power consumption. A number of industries do not want to depend upon the grid power and set up their captive plants so that reliable and quality power is available to them. Some

plants are also installed as standby units for operation only during emergencies when the grid supply is not available. Captive plants including co-generation power plants could therefore play a supplementary role in meeting the country's power demand .

1.1 2.1 PROVISIONS OF ELECTRICITY ACT AND NATIONAL ELECTRICITY

1.2 POLICY

1.3

2.1.1 After the enactment of Electricity Act 2003 there is a renewed interest in captive generation. Surplus power, if any, from the captive power plants may be fed into the grid as open access has been allowed. Electricity Act 2003 has laid special emphasis on captive power generation and its provisions are as follows:

- Any person may construct, maintain or operate a captive generation plant and dedicated transmission line.
- The supply of electricity from the captive power plant to the grid shall be regulated in the same manner as a generating station of the generating company.
- Every captive generator shall have the right to open access for the purpose of carrying electricity from his captive plant to the destination of its use.
- The availability of adequate transmission facilities is to be determined by Central Transmission Utilities or the State Transmission Utilities.

2.1.2 Further as per MoP notification dated 8.6.05, the requirements of Captive Generating Plant is as under:-

No power plant shall qualify as a 'captive generating plant' under Section 9 read with clause (8) of section 2 of the Act unless -

a. In case of power plant -

i) not less than twenty six percent of the ownership is held by the captive user(s), and

ii) not less than fifty one percent of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for the captive use :

Provided that in case of power plant set up by registered cooperative society, the conditions mentioned under paragraphs at (i) and (ii) above shall be satisfied collectively by the members of the co-operative society;

Provided further that in case of association of persons, the captive user(s) shall hold not less than twenty six percent of the ownership of the plant in aggregate and such captive user(s) shall consume not less than fifty one percent of the electricity generated, determined on annual basis, in proportion to their shares in ownership of the power plant within a variation not exceeding ten percent;

b In case of a generating station owned by a company formed as special purpose vehicle for such generating station, a unit or units of such generating station identified for captive use and not the entire generating station satisfy(s) the conditions contained in paragraphs (i) and (ii) of sub-clause (a) above including -

Explanation:-

i) The electricity required to be consumed by captive users shall be determined with reference to such generating unit or units in aggregate identified for captive use and not with reference to generating station as a whole; and

ii) The equity shares to be held by the captive user(s) in the generating station shall not be less than twenty six per cent of the proportionate of the equity of the company related to the generating unit or units identified as the captive generating plant.

2.2 DETAILS OF CAPTIVE POWER PLANTS (1 MW AND ABOVE)

As per the details available in CEA, the total installed capacity of captive power plants having 1 MW and above capacity is 18740 MW (as on 31-03-2004).

The details of captive power plants, range-wise and prime-mover wise are given as under:

Table – I

Captive Power Plants having installed capacity > or = 1 MW

IC RANGE (MW TO MW)	NOs.	INSTALLED CAPACITY (31-03-2004)	
		MW	%
01 to < 10	2001	5455	29
10 to < 20	156	2156	12
20 to < 30	78	1864	10
30 to < 40	40	1321	07
40 to < 50	18	777	04
50 to < 100	37	2424	13
100 & ABOVE	19	4743	25
TOTAL	2349	18740	100

Table - II

-

Captive Power Plants having installed capacity > or = 1 MW

PRIME MOVER	INSTALLED CAPACITY (31-03-2004)	
	MW	% OF TOTAL
HYDRO	62	-
STEAM	8585	46
DIESEL (HFO/Diesel)	7195	39
GAS	2746	15
WIND	152	-
TOTAL	18740	100

2.3 DETAILS OF CAPTIVE POWER PLANTS (BELOW 1 MW)

The details of captive power plant below 1 MW were obtained from various manufacturers of these plants. The capacity of such plants reported by the manufacturers, which were sold from 1990 to 2004, is of the order of 23000 MW. These plants may include standby plants also which are operated only when the supply from the grid is not available. Moreover, these types of small plants may be located in small scale industries, commercial establishments. Hotesl, big residential complexes etc. The details of these plants indicating the supplier's name, size of plant, no. of set sold and total MW capacity from 1990 to 2004 are given in Appendix.

3.0 REGIONAL LEVEL MEETINGS

During the presentation given by CEA in MoP on 16th May,2005 on tapping of surplus power from captive power plants, it was directed by Secretary(Power) that CEA may get in touch with CPPs to prompt them to supply power to the grid..

In view of above, CEA requested CII, PHD Chamber, FICCI and ASSOCHAM to arrange meetings with CPP owners/industries in all the regions to understand the technical and commercial problems being faced by CPPs/industries. In this respect, PHD chamber arranged meetings in the Northern region and CII arranged meetings in the Eastern, Western and Southern Regions. The teams including representatives from CEA, PTC and PFC attended various regional level meetings. The schedule of meetings arranged at various locations in all the regions is as under:

Region	Place of meeting	Date of Meeting
Northern Region	New Delhi, CEA	03-06-2005
	New Delhi, PHD House	13-06-2005
	Jaipur	04-07-2005
	Chandigarh (likely to be arranged by PHD Chamber)	Date not yet finalised.
Eastern Region	Ranchi	21-06-2005
	Kolkata	23-06-2005

Western Region	Ahemdabad	24-06-2005
	Pune	29-06-2005
	Bhopal	01-07-2005
	Raipur	22-07-2005
Southern Region	Hyderabad	22-06-2005
	Bangalore	23-06-2005
	Chennai	24-06-2005

In addition to above, a meeting is proposed to be held with Indian Sugar Mills Association (ISMA) representatives on 09-08-2005 in CEA to explore the possibility of surplus power from the co-generation /CPPs installed by sugar industries during off season period by making available coal to them during this period.

Based on the response received from various CPPs/industries during the above meetings as well as the correspondence made with them, the surplus power availability has been compiled and it is enclosed at Annexure – I and II. A capacity of about 1100 MW has been offered by various CPPs for connectivity to the grid/HT consumers. The quantum may further increase if the various issues relating to open access, strengthening of intra-state and inter-state transmission network, adoption of progressive and encouraging policies by state regulators, encouraging installation of group captive plants and selection of optimal unit size for new captive plants and fixation of reasonable tariff by State Electricity Regulatory Commissions for the surplus power available from the CPPs are resolved.

The issues which came up for discussion during these meetings are given as under:

1.3.1.1 3.1 NORTHERN REGION

Meetings held at New Delhi(CEA), New Delhi (PHD Chamber) and Jaipur.

Major Issues raised were:

i) High synchronization charges being levied by state utility (Uttranchal), it was proposed for fixing a uniform rate of synchronizing charges.

ii) Charging very high fixed charges for electricity connection (RVPNL)

iii) Banking System**:** The arrangement of banking transaction may be allowed for the captive power producers and users through the state transmission network.

iv) Wheeling Charges**:** It may be fixed in such a manner that the delivery cost to the user should have parity with the grid power cost.

v) Surplus power**:** The cost of surplus power may be fixed by the regulatory commission and CPPs may be allowed to transact the same at a certain period notice which may be of the order of 24 hrs.

vi) Selling price of surplus power: The selling price of surplus power should be attractive for the consumers as well as captive power producers.

vii) On a query from CPP representative regarding 0.5 class CT/PT provided by them at present, it was clarified that the issue has already been flagged by the sub-group constituted by CEA which includes representative from CII, ASSOCHAM, PTC and CEA and it was recommended by the sub-group that at present 0.5 class CT/PT can be used but finally the CPPs/industries have to comply with the metering regulations for providing 0.2 class of CT/PT.

viii) Problems being encountered in dealing with state transcos.

3.2 EASTERN REGION

i) Jamshedpur Utility and Services Company Ltd. informed that JSRC has allowed them to wheel 8-10 MW surplus power to their another plant. However, JSEB has gone to High Court against the order of regulatory commission. There is immediate need to change the mindset of state electricity board.

ii) Excessive Annual Minimum Guarantee Charges (AMGC) applied by JSEB/DVC which is about Rs. 1.50 per unit and is deterrent to exporting of surplus power.

iii) DVC insisting Durgapur Steel Plant Authority to lay separate transmission lines for export of power. SAIL is insisting that they can use the same transmission lines for export and import of power. They need not to have other transmission line. The issue needs to be examined. DVC is offering Rs. 0.45 per unit for surplus power which is non – remunerative.

iv) Issue of shortage of coal was raised by Usha Martin Ltd. representative. It was clarified that this issue is already under consideration of the Govt.

v) Imposition of excessive electricity duty.

vi) Wheeling of surplus power from one unit of ITC to other unit is not allowed by West Bengal as State Govt. have yet to formulate the guidelines for this type of transaction.

vii) Due to restriction of the grid, M/s Haldia Petro Chemicals Ltd. is not able to wheel their surplus power to the industry interested in purchasing of their high cost power.

3.3 WESTERN REGION

3.3.1 Meeting at Ahmedabad.

i) Parallel operation charges (POC) imposed by state utility is very high. GERC have upheld GEB's views for levy of additional charges to be computed based on the working of GEB.

ii) High electricity duty imposed by GEB.

iii) Higher cost of coal and non availability of required quantity of coal by rail at the price fixed for CPPs.

iv) Provision of electricity duty on deemed generation.

v) State utility not allowing to enhance capacity of some CPPs as they are not able to give the schedule of surplus export of power. Surplus power varies as per the requirement of power for the various processes in the industry.

vi) CPPs run in isolation from the grid for safety of their own plant.

vii) Due to wide fluctuation of frequency in the grid, the processes in many industries get affected.

viii) Some steel industries have surplus power which is of varying nature. They are not able to export this uncertain surplus power to the grid due to unfavorable policies adopted by GEB. PTC assured them to assist in exporting their power.

ix) Some CPPs have small quantum of surplus power but not aware of the modalities of export. PTC informed that these CPPs can sell the surplus power to their neighboring consumers directly or through trader after entering into the power purchase agreement.

x) Export of power only at a reasonable and attractive price.

xi) Support for non-conventional power generation may be considered.

3.3.2 Meeting at Pune

Sh. Pradeep Bhargava, Managing Director, Newage Electrical India Ltd. on behalf of Chairman, CII starting the interactive session informed that Pune city has been reeling under severe peak power and energy shortages due to various reasons putting industries

under great trouble by affecting their production adversely. As a rough estimate, a capacity of 100 MW is required to relieve the crisis. This being a localized problem , CII is actively involved in consultation with Maharashtra State Distribution Co. Ltd for finalization of a proposal for creating conducive condition for getting additional power from the existing CPPs by running plants on continuous mode. Their utilization of surplus capacity will not need any transmission and distribution facility or open access arrangement. The proposal is based on reimbursement by utilities to the CPPs of incremental generation cost by imposing cess on consumers in the area. The representative of CII and Maharashtra State Distribution Co. Ltd. shall e-mail the detailed status of the proposal to CEA. If the 100 MW pilot project in respect of Pune and 60 MW pilot project in respect of Nasik become a reality then 400 MW power supply deficit can made up in whole of the state of Maharashtra. All the representative of the CPPs revealed that their CPPs are stand by plant and are run on liquid fuel like HSD, FO, LSHS and LDO etc. Since generation cost from the plants is very high ranging from Rs. 8/- per unit to Rs. 11/- per unit, it will not be commercially viable to run these plants on continuous basis provided the proposal is accepted by the state Govt. and State Electricity regulator.

3.3.3. Meeting at Bhopal

i) The cost of generation using liquid fuel like HSD was coming as high as Rs. 11 under the prevailing conditions of taxes and duties.

ii) High parallel operation charges (Rs. 16 per KVA)

iii) Non-payment of dues by MPSEB for the electricity already supplied during last two years as intimated by a CPP.

iv) High wheeling charges and surcharge.

v) Non-response of Board on the applications of CPPs for supplying surplus power.

vi) Non-availability of sufficient quantity and quality of coal even to CPP located close to coal mines.

3.3.4 Meeting at Raipur

i) The parallel operation charges fixed as Rs.16 per KVA by CSEB on the installed capacity is very high.

ii) The demand charges have been increased exorbitantly. In case of supply of power to the third party, CPP has to pay the demand charges on total demand.

iii) Imposition of cess of 10 paise per unit on captive power generation is adding to the cost of generation.

iv) Levying of Electricity duty on captive power generation

v) Rate of purchase of power by SEB:

The present rate fixed by CSEB for firm power and infirm power from captive power producers are as follows :

Firm power -- Rs.1.55/Unit to Rs.1.60/unit.

Infirm power -- Rs.1.00/unit.

The rate does not even cover the fuel cost in case of infirm power and variable charges in case of firm power.

The CPPs prefer to reduce their generation instead of supplying the surplus power to Electricity Board.

vi) Coal linkage quantities of the CPPs have been reduced since April 2005 by about 20% forcing CPPs to restrict their generation rather than generating surplus power.

vii) Due to restriction in the coal linkage quantity, CPPs located in the vicinity of coal Pit heads have to import coal.

viii) Quality of coal supplied by CIL/SECL has been deteriorating as a result coal consumption per unit of power is on the increasing trend.

ix) Since FBC boiler of sponge iron plants are using 30 to 40% dolochar as fuel which is an industrial waste & difficult to dispose, the power generated by such plant must be recognised as non-conventional and all incentive should be given to them.

3.4. SOUTHERN REGION

i) The response was very enthusiastic in regard to supply of surplus power from CPPs but most of the participants were of the opinion that the cost of generation is very high especially , the diesel sets and whether SEBs will be able to purchase power at that high rate.

ii) CPPs wanted to know as to why they should pay for the commercial loss of the utilities.

iii) Surcharge and wheeling charges are very high which are deterrent to supply surplus power to state utilities. The opinion was that the surcharge may be rationalised and also electricity duty on surplus power may not be imposed.

iv) The representative of AP Electricity Regulatory Commission informed that the draft paper on the open access has already been published and the rules are under finalisation and the same will be put on website of APERC.

v) It was opined to formulate a common policy on all India basis on open access. The issues to be addressed are cross subsidy surcharge, additional surcharge etc.

vi) Uniform wheeling charges may be imposed.

vii) Fuel for some industries is subsidized, however, there are additional taxes and duties when it is used for generation of power. It is difficult to maintain record of fuel used for the industry and power separately.

viii) SEBs are delaying payment for the power supplied by CPPs.

ix) The issue of coal shortage was also raised.

x) A view emerged that small power producers may make a group and give power at one point which will be taken by the power purchaser.

xi) Bio mass industry in AP has virtually closed down due to unremunerative tariff being fixed by APERC. There is urgent need to settle the issue as up to 80 MW capacity is affected by this.

xii) CII suggested that a grid connectivity study should be carried by any agency e.g. CEA.

xiii) There are problems relating to connectivity at 11 KV (frequent interruption etc.)

xiv) KERC has prescribed minimum quantum of power (15 MW) for open access benefit.

xv) Sugar mills apprehended that since many sugar mills are in rural areas, there may be resistance to use of coal in off-season period.

xvi) It was felt that there was no clarity in inter-state/intra-state sale of power in many states.

xvii) States like Pondicherry do not allow synchronization with grid to CPPs.

4.0 DISCUSSION WITH ISMA

Further, the issue of surplus power was also discussed with ISMA representative of Delhi and they informed the following problems being faced by them to supply surplus power from their co-generation plants installed at sugar mills :

i) Earlier by Govt. of India, a well meaning and forward policy was introduced but lately in most of the states, a reversed trend has manifested itself due to unreasonable fixation of power tariff for co-generation units, contrary to the earlier approach and assurance held by the Govt.

ii) Sugar mills have vast potential to produce bagasse based co-generation of power which is projected at 5000 MW. It is unfortunate that the positive trend for installation

of co-generation plants has been reversed with State Regulatory Commission/SEBs adopting a rigid approach by deescalating the power tariff in suppression of the signed agreements between co-generation units and the regulatory commission/ SEBs. This is a matter of serious concern to ISMA and it need to be addressed.

iii) ISMA has been representing to the Govt. in the Ministry of Power (a) for mandatory use of 10% renewable energy of the total energy/consumed and (b) to ensure prompt payments against energy.

iv) Supply to SEBs except Maharashtra which has notified 10% power consumed in the state should be from renewable sources, no other state has notified any policy in this respect.

v) The recent decision of the Maharashtra govt. to levy a cess of 4 paise per unit of power supplied to public and private sector utilities for promoting renewable sources of energy is indeed a very positive step. As stated, the state government has also made it compulsory to use of 10% renewable energy of the total energy consumed in the state. Other states must emulate Maharashtra pattern to encourage renewable sources of energy.

5.0 As a follow up action of the first regional level meeting with CPPs of Northern Region held in CEA on 3rd June,2005 , a team of officers comprising CEA, PFC and BHEL visited IFFCO Ltd, Bareilly and Indo-Gulf Fertiliser Ltd, Jagdishpur plants during 12-14,July,2005 to study the potential and cost effectiveness of surplus power generation at CPPs and energy conservation requirements. PTC has been requested to interact with the plant authorities and explore the possibility of tapping surplus power for feeding to the grid/HT consumers as reported during the site visit.

6.0 CPP/HT INDUSTRY INTER CONNECTION WITH GRID

The indicative cost estimate furnished by BHEL for creating necessary infrastructure to interconnect the CPPs with the grid is as follows:

(excluding step-up transformers, civil works for building, SCADA and transmission lines)

For 11 kV interconnection Rs. 35 lacs.
For 33 kV interconnection Rs. 40 lacs.
For 132 kV interconnection Rs.135 lacs.
For 245 kV interconnection Rs.165 lacs.

Note: The above costs are for a single bay with following scope of work:
The scope considered includes circuit breaker, isolators, CT/CVT/SA, Bus Bar Material, Earthing Material, structures, civil works for the above, CR panels, including synchronization equipment and necessary cables.

Cost of Transformer

33/11 kV Transformers - Rs. 8 lac per MVA
66/33 kV Transformers - Rs. 7 lac per MVA
132/33 kV Transformers - Rs. 6.5 lac per MVA
245/132 kV Transformers - Rs. 6.0 lac per MVA

Cost of transmission lines

11 kV - Rs. 3 lac /km.
33 kV - Rs. 3.5 lac/km

Note: The actual cost for inter-connection will depend upon the site conditions, specification requirements, etc.

7.0 INSTALLATION OF CAPTIVE PLANTS IN FUTURE

To estimate the future installation of captive power plants, various manufacturers were requested to furnish the details of orders in hand as well as their estimation of future orders in the next five years so as to assess the additional captive power plants capacity to be installed in the country. The details were asked for the captive power plant capacity

of 1 MW and above excluding DG sets using HSD as fuel. The total capacity as reported by the manufacturers (6 Nos.) is about 12000 MW. If it is assumed that 20% of this capacity may be available as surplus power, in that case, about 2400 MW will be available to the grid/HT industry in the next five years. However, the cost of power will be the critical criteria for absorption of surplus power from the captive power plants.

8.0 CONCLUSION

8.1 A capacity of about 1100 MW has been offered by various CPPs for connectivity to the grid/HT consumers. The quantum may further increase if the various technical and commercial issues are resolved.

8.2 The important issues which are required to be resolved on top priority basis are as under:

a. Issues related to open access.

i) The States/State Regulatory Commissions which have not issued the regulations for open access may have to expedite the same.

ii) In the interest of providing competitive and smooth access and to facilitate export and import of power within the state or between consumers of two or more states, the open access regulations and methodology of determined charges should be aligned across states. **The state regulators may be urged to develop progressive and encouraging policies for CPP (like one issued by MERC)**

iii) Electricity duty: No electricity duty should be imposed on utilization of generated captive power by participating industry. Reasonable duty may be imposed for export of power.

iv) Reduction in contract demand of a CPP holder with distribution licensee may be allowed without any penalty.

v) CPPs having standby connection with grid, demand charges on the standby component should be reasonable say around Rs. 20 per KVA per month.

However, if the CPP exceeds the contracted standby demand then penal rate can be applicable on excess drawl.

vi) The sum of transmission charges and transmission loss (i.e. wheeling charges) fixed by SERCs for transfer of surplus power from captive power plant may not exceed 7% of the generation cost within the state. (Ref. In line with MERC order dated 08-09-2004.)

vii) The surcharge applicable on HT consumers opting to purchase from other CPPs who have surplus power must be fixed at realistic levels. This may be fixed in accordance with avoided cost method suggested by FOIR (Forum of Indian Regulators).

viii) For the purpose of recovery of T&D losses in OA charges, the losses should be benchmarked to reflect technical loses, gradually reduced and equitably distributed (exclude theft of electricity for computation of T&D loss) rather than pass-through to the customer.

ix) Parallel Operation Charges (POC) imposed by state utility is very high. Aligning of POC with ABT regime would encourage connectivity to grid for facilitating transfer of surplus power to the licensee.

x) Banking of energy may be allowed by the distribution licensee and shall be regulated by the energy banking agreement and may be signed between HT industries/CPP holder and the distribution licensee.

xi) For the present, 0. 5 class metering arrangement may be allowed. 0.2 class accuracy metering arrangement as required as per metering regulations may be installed in phases.

b. Fixation of reasonable tariff by State Regulatory Commission for the surplus power available from the CPPs.

c. To make available additional fuel required by the CPPs. Due to restriction in the coal linkage quantity, CPPs located in the vicinity of coal pitheads have to import coal.

d. Strengthening of intra-state and inter-state transmission network.

List of participants in the various Regional Level Meetings is enclosed at Annexure –III.

Annex X

Details of Captive Power Plant & status of supply of surplus power to grid							
Name of installation	**Capacity of Captive Plant**	**Fuel**	**Quantum of surplus power available (MW)**		**Grid connectivity**	**Selling price per unit (Rs./kWh)**	**Remarks**
Northern Region							
Haryana							
Haryana Milk Foods Ltd.,Pehowa	1.6	-	0		Not connected	-	
National Fertiliser Ltd.,Panipat(2x15)	30	Coal & LSHS	0		Not connected	-	
DCM Textiles,Hisar	5.4	FO/Diesel	0		Not connected	-	
Surya Roshni Ltd.	6.86	HSD	0		Not connected	-	
Hindustan Syringes & Medical Devices Ltd	3.5	HSD	0		Not connected	-	
HMT Ltd.,Pinjore	5.2	HSD	0		Not connected	**8.50**	
Ballarpur Industries Ltd., Yamunanagar	24	Coal	0		Not connected	-	
Maruti Udyog Ltd.,Gurgaon -3x20	60	R-LNG	**20**		Connected	To be worked out	
Nuchem Ltd.	4	Agro Waste	**1**	Av.	Connected	-	
Saraswati Sugar Mills Ltd.	16	Bagasse	**1.5**	1-2 MW during Dec.-April	Connected	Not selling	Can add 5-6 MW for sale for 5-6months/year
Rajasthan							
Aditya Cement	23	Indigenous coal	**1.5**	0.85 to 2.5 MW for 17.5 hrs	Connected	3.00 + margin	
Binani Cement Ltd	25	Coal & Lignite	**2**	for 10hrs(yearly average)	Connected	3.5(proposed)	
Banswara Syntax Ltd.	7.59	HFO	0		Connected	-	
Hindustan Zinc Ltd.,Chittorgarh - 2x77	154	Coal	**35**	upto oct 05 & 6 MW	Connected	To be decided mutually	
				afterwards			
Orient Syntex (APM Industries Ltd.),Bhiwadi	5	HFO	0		Connected	-	
Hindustan Copper Ltd.,Khetri -2x10 GT	20	Naphtha	0		-	-	Plant very old. Major overhaul deferred due to
-2x3.5 DG set	7	HSD	0		-	-	paucity of funds.
Nahar Industrial Enterprises Ltd	8.2	Furnace oil	0		Not connected	-	
(Arham Spinning Mills Ltd.,Bhiwadi)							
Birla Corpn. Ltd,Chanderia	27	Coal/pet coke/Lig./	**3.5**	3-4 MW/day	Connected	75% of grid rate	70%Pet coke+30% coal,100%Lignite,100% coal,
		Biomass					70% Biomass+30% coal -Planning to syn.with grid
DCM Shriram Consolidated Ltd	85	Coal & Lignite	**2.5**		Connected	To be negotiated	
Birla Coliete Ltd.	3.1	LSHS	**2**	After expansion	Connected	Negotiable	Planning to add 7.5 MW(Fuel- Pet coke)
Grasim Industries Ltd. White Cement Divn.	3.1	HFO	0		Connected	-	Planning to add CPP
Chambal Fertilisers & Chemicals Ltd.-2x17.66	35.3	NG & LNG	0		Connected	-	

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Punjab							
Jagatjit Industries Ltd. (Steam Turbine)-2x2.5	5	Rice Husk	0		Not connected	-	
Jagraon Co-op. Sugar Mills Ltd.	5.3	Bagasse	**1**		Not connected	-	
Nahar Sugar & Allied Industries Ltd.	8.5	Bagasse	0		Not connected	-	
(1x2.5+2x3)							
National Fertiliser Ltd.,Bathinda(2x15)	30	Coal	0		Connected	-	
Shreyans Inds. Ltd.(Unit :Shree Rishabh Papers)	1.5	Rice Husk	0		Not connected	-	
Appollo Fibres Ltd.Hoshiarpur -2x2.7-DG set	5.4	HSD	0		Not connected	-	
Indian Acrylics Ltd.,Harkishanpura	7.525	Rice Husk	**1**		Connected	3.39	8MW TG set in Dec.05,Surplus will be 5MW
Uttar Pradesh							
IFFCO Ltd.,Bareilly -2x18	36	Natural gas	0		Not connected	-	
India Polyfibres Ltd.	4.5	HSD/LDO	0		Not connected	-	
Indo Gulf Fertilisers	36	Natural Gas	**18**		Connected	2.80	
Uttaranchal							
Century Pulp & Paper,Lalkua	27.4	Pith + black liquor & coal	0		Connected	-	
Total (NR)	**726.975**		**89**				
Western Region							
Chattisgarh							
Prakash Industries Ltd.							
Co-gen	12.5	Hot gases	**10**	Infirm power	Connected	1.00	Planning to add 125 MW in next 3 years
15+50-Fluidised bed boiler	65	Coal					
Jamul Cement Works	25	Coal	0		Not connected	-	Planning to enhance capacity
Chattisgarh Electricity Co. Ltd. -2x30	60	Coal	**10**		Connected	Could be mutually discussed	
Indo Lahri Bio Power Ltd.	6	Rice Husk	0		Not connected	-	
HEG Ltd.,Sponge Iron Divn.,Durg	12.8	Coal	**10**	24hrs/day for 55 days *	Connected	2.60	* At 70% load factor
Jayaswals NECO Ltd.,Raipur	15.5	Blast furnace gas,Coal	**2.5**		Connected	Peak -2.015,non peak - 1.55 & infirm power-1.00	
Lafarge India Pvt.Ltd.(Sonadih Cement Plant)	16	HFO/HSD	0		Not connected	-	
- (2x5+1x6)							
Grasim Cement - 3x6	18	HFO	0		Connected	-	
Hirmi Cement Ltd	30	HFO	0		Connected	-	
Bharat Aluminium Co. Ltd	270	Coal	**30**		Connected	Negotiable	540 MW under installation(to be ready in 2-3 months)
Under Construction	540	Coal					
Ispat Godawari Ltd.	18	Coal,dolochar &	0		Connected	-	Wheeling 6 MW to sister concern
		Waste heat					
Uniworth Ltd. -4x3	12	HFO	**2.4**		Not connected	-	

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Chind Iron & Steel Industries Ltd.	8	Biomass	**7.2**		Connected	2.85	
Mahendru Sponge & Power Ltd.	8	Coal	0		Not connected	-	5 MW power to sister concern.Planning to add 8 MW
Bhagwati Power & Steel (P). Ltd.- Proposed	15	Coal	0		-	-	
Vandana Global Ltd.	8	Waste heat & coal	0		-	-	Planning to add 25 MW
G.R.Sponge & Power Ltd.	4	Waste heat recovery	**4**		Not connected	Expecting more than 3.00	3 MW to be wheeled to group concern
	4	Coal + Dolochar					
Ambuja Cement Eastern Ltd.	8	HFO	0		Connected.	-	
	10	LDO & HFO					Getting disconnected w.e.f. 31.7.2005
	15	Raw coal					
Agrawal Vidyut	8.5	Rice husk/coal *	**4**		Not connected	-	* Commisioning :Oct.o5 .Plant to be connected with the
							grid.
Ind Agro Synergy Ltd./Ind Power Power Ltd	34	Coal	**8**	Infirm power	Connected	1.00	Addl.10 MW w.e.f. Dec.05.Planning to add 2x25 MW
Gujarat							
Gujarat Alkalies & Chemicals Ltd.	90	Natural gas	0		Connected	1.80	
Atul Ltd.	32	Coal	**4**	3-5 MW for 24 hrs in a day	Connected	4.25	
Krishak Bharati Co-Op. Ltd- TG(2x15)	30	NG/ARN	**4.5**	4-5 MW if extraction of	Connected	4.15	
				steam from turbine taken			
Modern Petrofils	8	FO/LDO	0		Connected	-	Draws power @ 500KW
Saurashtra Cement Ltd. -5.8+6.4	12.2	Furnace oil (HFO)	0		Connected	-	
Nova Petrochemicals Ltd.	7.5	Lignite	0		Not connected	-	
Indian Rayon & Industries Ltd.,Veraval	16.5	Coal/Lignite	0		Not connected	-	
Gujarat Heavy Chemicals	26.2	Coal	**1.5**		-	To be discussed	
	1.3	Diesel					
United Phosphorous Ltd.	61	Gas	**12.5**		Connected	-	
Reliance Ind. Ltd.Naroda,Ahmedabad	24	Gas	**30**		-	LF + 50 paise	
	14						
Reliance Ind. Ltd.,Jamnagar	360	Liquid Fuel	0		Connected	-	
Apollo Tyres Ltd.-3x4.2	12.6	HFO/CNG	**4**		Not connected	4.00	
Gujarat Ambuja Cement Ltd. - 4x10+3x6.3	58.9	Furnace oil	**10**		Not connected	-	
- 3x30(Proposed expansion)	90	Coal/Lignite	**24**			-	
JK Paper Ltd.	12	Coal,Bamboo dust,black	**2.5**		Connected	To be negotiated	
		liquor,furnace oil					
Essar Steel Ltd. -32+100(Open cycle)	132	RLNG	**35**	20-50MW based on steel	Connected	3.00	
-55+100+100 (under construction)	255	RLNG		plant production			
Tata Chemicals Ltd.	72	Coal & pet coke	**20**	After proposed expansion	Not connected	-	Infrastructure for connectivity with grid available
Indian Petrochemicals Corpn. Ltd.(IPCL)	60	gas	**10**	If PTC helps in trading	Connected	-	
	18.5	HFO					
I.C.Textiles Ltd.	6.04	HFO*	**1.3**		Not connected	4.50	* Planning to convert to gas based. Need fin. assistance

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Goa							
Zuari Industries Ltd.	7.5	Naphtha +HFO	0		Not connected	-	
	6						
Sesa Industries Ltd.	3	Blast furnace gas	0		Not connected	-	
Mandovi Pellets(A divn of Chowgule & Co. Ltd)	12.4	Furnace oil	0		Not connected	-	
Madhya Pradesh							
Khaitan Chemicals & Ferilisers Ltd.	3.2	Waste heat	**0.2**	for 16 hrs in a day	Not connected	3.10	
Anant Spinning Mills- 2x4	8	HFO	**4.5**	4-5MW from proposed	Not connected	-	
				plant of 50 MW			
Maral Overseas Ltd.	6.6	HFO	0		Not connected	-	
Jaypee Rewa Cement	27	Coal	**10**	5-15 MW		To be discussed	
	24	HFO					
National Fertilisers Ltd.	17.2	HFO	**17**			5.00	
	34.5	Gas					
Satna Cement Works	46.5		**4**		connected	3.50	
Maharashtra							
Manikgarh Cement	15	Coal	0		connected	-	
Dharamsi Morarji Chemical Co. Ltd	1		0		Not connected	-	Steam driven turbine
Usha Ispat Ltd. - 2x3.5	7	Main-Blast furnace W.G	0		Not connected	-	
		Addl.-Furnace oil					
Awarpur Cement Works -2x23	46	Coal	0		Not connected	-	
Maharashtra Electrosmelt Ltd.	4.2	Waste gas	0		Connected	-	
Standard Alkali,Chemical Divn.-3x11.5	34.5	Furnace oil	0		Connected	-	
Tata Motors Ltd. - Pimpri	19.4	LDO	0		Not connected	-	
- Chinchwad	4.7	LDO	0				
Indo Count Industries Ltd.	6	HFO	**0.7**		Not connected	Negotiable	
Indo Rama Synthetics(I) Ltd,Nagpur	52.5	Furnace oil	**9**	8 to 10MW for intermittent	Not connected	To be furnished later	No synchronising facility between
				hrs. in a day			the plant & MSEB
Mukand Ltd.	22	Heavy Furnace Oil	0		Connected	-	
Cosmo Films Ltd.	8.1	HFO	0		Not connected	-	
Reliance Industries Ltd -GT	68.34	Naphtha,LSHS	**19**		Connected	4.50 (proposed)	
-ST	24						
Supreme Petrochem Ltd. - Standby	5.6	Diesel	0		Not connected	-	
Jindal Iron & Steel Co. Ltd.	7.5	HFO	0		Connected	-	
Godrej & Boyce Mfg.Co. Ltd. - 6x1.1	6.6	LDO	0		Not connected	-	
Indian Petrochem Corpn Ltd	60	Gas	**10.5**			To be discussed	
	25	Coal					
The Associated Cement Co. Ltd.	15	Coal	**1.1**			To be discussed	
Total (WR)	**3251.38**		**323.4**				

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Southern Region							
Andhra Pradesh							
Jocil Ltd.	6	Biomass	**3.4**		Connected	3.12	Billing @Rs3.48/kwh
Chodavaram Co-op. Sugar Ltd.	7	Bagasse	**1.5**	for 22hrs	Connected	3.08	
Sudalagunta Sugars Ltd -Co-gen.	8	Bagasse & biomass	**5**		Connected	2.53 to APTRANSCO	If wheeled to third party,
							wheeling charges payable
Gayatri Sugars Ltd.	6	Bagasse	**3.2**		Connected	3.04	
Rashtriya Ispat Nigam Ltd.,TPP	247.5	Coal & by product	**25**		Connected	1.76	Export of surplus power not steady
(3x60+1x67.5)-Vishakhapatnam Steel Plant							
Gowthami Solvent oils Ltd.	2.75	Rice hask	**2**		Connected	3.00	
Singareni Collierries Co. Ltd.,	15	Coal	0	To be decided after renovation	Not connected	-	Capacity to increase to 35 MW
(Godavarikhani)-Derated							after renovation.
Singareni Collierries Co. Ltd.,	6	Coal	0	To be decided after renovation	Not connected	-	Capacity to increase to 20 MW
(Kothagudem)-Derated							after renovation.
Rain Calcining Ltd.,Vizag	49	WH* & Pet coke	**41**		Connected	-	* Recovered through flue gas
Trident Sugars Ltd.	11	Bagasse & biomass	**7.5**		Not connected	3.09	
Sirpur Paper Mills Ltd.	24.5	Coal	**2**		Not connected	-	
Facor Alloys Ltd.	30	HFO,LSHS	**30**		Connected	Fixed cost-1.50+Actual variable cost of generation	
MRF Ltd.,Medak	3.4	Diesel	0		Not connected	-	
	4.25	Furnace oil					
Ultratech Cement Ltd.	23.74	HFO	0		Connected	-	
CPP at heavy water plant,Manuguru(DOAE) 2x27	54	Coal	**12**		Connected	-	Planning to export to sister concern plants in TN & Mah.
Andhra Sugars Ltd.,Chem. &Fertilisers Divn.	3.8	HFO	0		Not available	-	Not operating due to high fuel cost
Nava Bharat Ferro Alloys Ltd.	50	Coal	**10**		Connected	2.25	Additional 32 MW w.e.f 1.1.2006
Super Spinning Mills 'B' unit,Hindupur	4.2	Diesel	0		Connected	-	
Nizam Deccan Sugars Ltd. -2x1.5	3	Bagasse	0		Not available	-	
CC I Ltd., Adilabad Cement Factory	4	HFO	0		Not connected	-	Not in operation since last 5 years
CC I Ltd., Tandur Cement Factory	13.4	Diesel	0		Not connected	-	
(1x3.8+2x3.2+4x0.8) - Standby							
Sri Dhanalakshmi Cotton & Rice Mills Pvt. Ltd.	6.2	**Mini Hydel**	0		Connected	-	
Rain Industries Ltd.(Cement factory)-6.5+6	12.5	HFO	**11**	Standby	Not connected	-	
Sree Rayalaseema Alkalies & Allied Chem.	24.8	HFO	0			-	
Ltd.	10	Coal	0			-	

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Karnataka							
Ugar Sugar works Ltd.	44	Bagasse	**29**	During season only	Connected	3.67	
Vasavadatta Cement	25.2	Coal	**1.4**	Average	Connected	3.50	
Welcast Steels Ltd	5.1	HFO	**1.5**		Not connected	Negotiable	
Davangere Sugar Co.Ltd	24	Bagasse/Husk	**18**	For 11 months	Connected	3.40	Applied for coal linkage
				if coal is made available			
Mysore Paper Mills Ltd.	41	Bagasse/pith/black liquor	**7**	4-6 hrs./day	Connected	Mutually agreed price	
		FO/wood dust etc.					
Shree Renuka Sugars Ltd.	20.5	Bagasse + Coal	**7.5**	For 11 months in a year	Connected	4.00	
The Nandi Samakari Sakkare	18	Bagasse	**12**	For 7 months in a year	Not connected	2.50	
Tamil Nadu							
Salem Co-op Sugar Mills Ltd.	5.5	Coal	0		Not connected	-	
Stand by	1.25		0				
Perambalur Sugar Mills Ltd .-2x1.5	3	Bagasse	0		Not connected	-	
(Multi Stage Stem Turbine –Alternator)							
Thiru Arooran Sugars Ltd.	18.68	Bagasse,pith,coal	**13**		Connected	3.01	
	2	Diesel					
Kallakurichi II Co-op. Sugar Mills Ltd.	6	Coal & Bagasse	**1.2**	24hrs in a day for 172	Not connected	-	
(2x3)				days crushing period/Yr			
Supreme Renewable Energy	40	Coal & Bagasse	**32.5**	30 MW-Season	Connected	3.16	
				35 MW-Off season			
Sakthi Sugars Ltd.,Erode	32	Coal & Bagasse	**25**		Connected	3.01	
Dharni Sugars & Chemicals Ltd.	15	Coal/Bagasse/Biomass	**11**		Connected	3.15	
Rajshree Sugars & Chemicals Ltd.	12	Bagasse	**3.5**	3-4 MW for 24hrs/day	Connected	3.15	
Grasim Industries Ltd.-Cement divn.- TG	12.5	95% lig. &5% coal	**1.25**	1 - 1.5 MW for few hrs/day	*	-	* Initially utilised grid power,
DG (3x6.25)	18.75	FO					later surrendered
Chennai Petroleum Corpn Ltd.,Manali	100	Refinery fuel oil,Naphtha	0		Connected	3.01	
Chennai Petroleum Corpn Ltd.,Nagapattinam	4.7	Refinery fuel oil & fuel gas	0		Connected	-	
Dharampuri Distt. Co-op Sugar Mills Ltd.	2.5	Bagasse	0		Not connected	-	
Terra Energy Ltd.	28.42	Coal / Bagasse	**14.5**	13-16 MW for 24hrs./day	Connected	-	
Tamil Nadu Newsprint & Papers Ltd.	61.12	**	**7.5**	5-10 MW for 24hrs/day	Connected	2.73	** Coal/Lignite,Furnace oil,diesel,
							black liquor,solid chipper dust,
							agro fuel &pith

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Sakthi Sugars Ltd.,Unit-II,Shivaganga	5.5	Bagasse	**1.5**		Connected	3.15	
S.V.Sugar Mill Ltd.,Kanchipuram	6	Bagasse	**2**	*	Connected	3.15	* 24hrs during sugar crushing season
Ambur Co-op. Sugar Mills Ltd.	2	Bagasse	0		Not connected	-	
Amaravathi Co-op.Sugar Mills Ltd.	1.5	Bagasse	0		Not connected	-	
Servalakshmi Paper & Boards Pvt. Ltd.	5.5	Diesel	0		Not connected	-	
Cheyyar Co-op Sugar Mills Ltd.	7.5	Bagasse	**2.5**		Connected	3.15	
Bannari Amman Sugars Ltd	20	Coal+Biomass	**13**		Connected	3.16	
Shri Renuga Textiles Ltd.	4.5	Bio-Mass	0		Not connected	-	
Tamil Nadu Petroproducts Ltd.	18	-	**4.75**		Not connected	4.50	
Madras Cements Ltd.,Alathiyur	36	Coal	**15**		Connected	-	
	20	HFO	**16**		Connected	-	
Sree Karpagambal Mills Ltd.	2.82	HFO	0		Not connected	-	
Sri Lakshmi Saraswathi Textiles (Arni) Ltd.3x0.94	2.82	HFO	0		Not connected	-	
Dalmia Cement (Bharat) Ltd.	12	LSHS	**12**		Not connected	Not yet decided	Have plan to connect to grid
	27	Coal	0				
Futura Polyester Ltd. - GT	4	Naptha/Kerosine/Diesel	0		Not connected	-	
SPIC Pharmaceuticals Divn.	11.1	HFO	0		Connected	-	
Tidel Park Ltd.	10.5	Diesel	0		-	-	
DCW Ltd. -6x6	36	HFO	0		Not connected	-	Surrendered 110 KV HT service connection
Sun Paper Mill Ltd.	6	Coal & biomass	**0.3**	Av. MW	Connected	3.01	
The Associated Cement Co. Ltd.	15	Coal	0		Not connected	-	
	6.4	Diesel	0		Not connected	-	
Kothari sugars & chemicals Ltd.	11.02	Bagasse	**3**		Connected	3.15	
Kerala							
Hindustan Organic Chemicals Ltd. - 2x5	10	LSHS/LSFO	0		Connected	-	
Kochi Refineries Ltd.	20.3	Coal	0		Not connected	-	
Hindustan Newsprint Ltd	15.9	Coal	0		Not connected	-	
	2.7	Diesel	0		Not connected	-	
Pondicherry							
ACE Glass Container Ltd. -1x.96+4x1 (Standby)	4.96	Diesel	0		Not connected	-	
Total (SR)	**1496.28**		**409.5**				

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
Eastern Region							
Jharkhand							
Bihar Caustic & Chemicals Ltd.	30	Coal	0		Connected	3.20	
Jojobera Power Plant(Tata Power Co. Ltd.)	67.5	Coal	0		Connected	-	Consumed at steel plant
Hindalco Industries Ltd.,Muri (TG+DG)	9.2	Coal & diesel	0		Not connected	-	
West Bokaro Collieries(Tata Steel) 2x10	20	Coal washery rejects	**10**	4-6 MW on sundays &	Not connected	On mutual agreed rates	
				paid holidays & total 10MW			
				after renovation			
Moonidih CPP,BCCL 2x10	20	Coal washery rejects	**2.25**	2-2.5 MW for 20hrs	Not connected	-	Under breakdown . 2-2.5 MW can be spared after
							rehabilitation
Rajrappa,CCL	10	Washery reject		20MW between 5AM-		Tariff as per adjustment	i) Kathara CPP to function from Nov/Dec 2005
Gidi,CCL	10	Washery reject	**17**	5PM & 14 MW during	Not connected	with DVC	ii) DVC has not permitted synchronisation of
Kathara,CCL 2x10	20	Washery reject		remaining period			CPP's power with their grid
Fluidised based power plant ,Jamadoba	10	Coal washery rejects	0		Not connected	-	
(Tata Steel)							
Chaibasa Cement Works	21	Coal	0		Not connected	-	
Fondry Forged Plant(CPP),HEC	11.2	HSD	0		Not connected	-	
TISCO,Jamshedpur(JUSCO)	130	By product gas	**30**	Subject to AMGC relaxation	Connected	2.35	
La Opala RG Ltd.	1	HSD			Not connected	-	
	5	Hydel (Proposed)	**4**		Not connected	-	
Orissa							
Sakthi Sugar Ltd.,Dhenkanal	5.5	Bagasse &coal	**1.5**		Not connected	3.50 or power purchase	
						price for non-conventional	
						energy sources which	
						ever is higher	
Ferro Alloys Corpn Ltd.- 2x10	20	HFO	0		Not connected	-	
Aska Co-op. Sugar Industries Ltd.	1.25	Bagasse	0		Not connected	-	
	2.5						
Badamba Co.op. Sugar Industries Ltd.	1.5	Bagasse	0		Not connected	-	
IDCOL Kalinga Iron Works Ltd.	16	Blast furnace flue gas	0		Not connected	-	
HINDALCO Industries Ltd,Hirakud	167.5	Coal	**12.5**	10-15 MW	Connected	Based on negotiation	10 MW from June2005 & >15 MW from June 2006
Oswal Chemicals & fertiliser Ltd.,Paradeep	110	Coal	**37.5**		Connected	-	
OCL India Ltd.,Rajgangpur	20.9	HFO/LSHS	0		Connected	-	
NALCO CPP,Angul -8x120	960	Coal	**100**		Connected	1.10	
Indian Charge Chrome Ltd.	108	Coal-F grade	**7**		Connected	0.94	
Balasore Alloys Ltd. - 2x10.5	21	HFO	**19**	147 MU/annum	Not connected	To be mutually settled	Generation cost around Rs 4 per unit
Rourkela Steel Plant (SAIL)	125	Coal,oil,blast furnace gas	**10**	For 8 months in a year	Connected	-	

Name of installation	Capacity of Captive Plant	Fuel	Quantum of surplus power available (MW)		Grid connectivity	Selling price per unit (Rs./kWh)	Remarks
West Bengal							
Phillips Carbon Black Ltd. -TG	4	Waste gas	0		Not connected	-	
- DG	1.9	HSD	0				
Kesoram Rayon	6	Coal	0		Not connected	-	
IISCO,Burnpur Power plant (Derated)	25	coal/by product gas of	0		Connected	-	
		steel plant/oil					
Haldia Refinery,Indian Oil -STG	48	Furnace oil/gas	0		Not connected	-	
-GT(Naphtha fired)	20		0				
Haldia Petrochemicals Ltd.	116	Naphtha	**22.5**	20-25 MW,Round the clock	Connected	-	
Ludlow Jute Mills	4.4	HSD/LDO	0		Not connected	-	
ITC Ltd.	9.9	Coal	**1**	Except 15 days/month for	Not connected	-	
				2 months			
Durgapur Steel Plant (SAIL)	-		**15**	10-20 MW	Connected	-	
Total (ER)	**2159.25**		**289.25**				
Total (All India)	**7633.885**		**1111.2**				