2012

Workshop Report

Cleaner Brick Production Technologies
- Promoting Fly Ash Brick Production in Bihar

National Thermal Power Corporation, Kahalgaon
in Association with
Development Alternatives, New Delhi
and Bihar State Pollution Control Board, Patna
30 November 2012

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1. INTRODUCTION

A one day workshop on Cleaner Brick Production Technologies – Promoting Fly Ash Brick Production in Bihar was organized on 30th Nov 2012 by National Thermal Power Corporation (NTPC), at Kahalgaon in association with Bihar State Pollution Control Board and Development Alternatives (DA). The workshop aimed at creating awareness amongst entrepreneurs about various fly ash brick technologies and the final product. The objective of the workshop was to bring together different stakeholders involved on a common platform to discuss challenges and solutions.

The workshop was attended by more than 70 entrepreneurs, fly ash technology service providers and presided by officials of NTPC and Bihar Pollution Control Board (BSPCB). Mr. Rakesh Kumar, Member Secretary, BSPCB presided over the sessions. The inaugural session presented an overview of the fly ash situation in the country and emphasized the need for action. Subsequent technical sessions presented solutions and the various technologies to utilize fly ash.

After the technical sessions, demonstration visit were also conducted on creating awareness on the various steps to produce fly ash bricks. Technology providers also displayed working machines and explained entrepreneurs on the process to achieve quality product. The interactive session with the participants raised fly ash availability and production issues especially from the brick manufacturer point of view.

2. WORKSHOP BACKGROUND

Fly ash is a waste produced due to coal combustion in thermal power plants. In India, large quantities of fly ash are being generated, as most of our energy demand is met through coal based thermal power stations. The fly ash generation is expected to grow further as coal would continue to remain as major source of energy at least for next 25 years.

Fly ash if not managed well, may pose environmental challenges. It is ideal for use in manufacture of cement, concrete, concrete products, cellular concrete products, bricks/blocks/ tiles etc. as well as for construction of roads, embankments, dams, dykes or for any other construction activity. Thus fly ash can be considered as a "**resource**" and not a waste.

Figure 1 : Fly ash being dumped

Over the years, the Ash Utilization level across NTPC has reached from mere 0.3 million tonne in 1991-1992 to 26.03 million tonne in 2010-2011. At NTPC, Kahalgaon, the total fly ash production is around 17,500 MT with current utilization at 300 MT. A lot more needs to be done in order to reach total ash utilization. To promote and encourage usage of fly ash among brick entrepreneurs, NTPC, Kahalgaon has taken the initiative of organizing this workshop.

3. PROCEEDINGS

a. Inaugural Session

The workshop was opened by Mr. N. K. Sinha, CGM, NTPC welcoming the Chief Guest Mr. Rakesh Kumar, BSPCB and other officials from NTPC, BSPCB and Development Alternatives. Workshop was inaugurated by lighting the ceremonial lamp.

Figure 2: Dignatories lighting the lamp for the inaugural

Mr. D.K. Gupta, AGM, Ash Utilization, delivering the welcome address, highlighted on the various uses of fly ash thereby transforming a waste into a profitable resource, if used judiciously. It was emphasized that Low Carbon technologies like fly ash bricks have a huge potential to reduce greenhouse gas emission. On behalf of NTPC, all kind of possible support was offered to entrepreneurs interested in adopting fly ash brick business. Mr. N.K. Sinha, CGM, NTPC stressed the role of industrialization in developing the country's economy. Electricity (energy), is one of the prerequisites for development and is primarily sourced from coal. Coal based power plants lead to the generation of fly ash, an environmental hazard. However today there are a multitude of uses for this waste fly ash. He hoped the workshop would dispel myths of fly ash bricks and address challenges faced by entrepreneurs to maintain quality and marketability of bricks.

Workshop conducted by NTPC in association with DA and BSPCB

Mr. Rakesh Kumar, Member Secretary, BSPCB expressed his satisfaction at the high turnout of entrepreneurs for the workshop. It was stated that in the coming years power will continue to be produced possibly at an even faster rates generating more and more fly ash. On the other hand, demand for bricks will grow with increasing populations and aspirations. Fly ash bricks offer a solution matching the two concerns, simultaneously preventing extraction of fertile top and preventing environmental degradation. He encouraged entrepreneurs to put forth their concerns on adopting cleaner brick production technologies to BSPCB. He also advocated a smoother coordination between waste generators, regulators, technology providers and entrepreneurs on the issue.

Dr. K. Vijaya Lakshmi, Vice President Development Alternatives presented an overview on the Indian Brick sector. One of the largest in the world, the sector is unorganized and resource and energy intensive. The need of the hour is to bring about a change in how we perceive the industry through technology and policy. A comparison between the prevalent technologies showed that the conventional Fixed Chimney Kiln was the most polluting one and Fly Ash being the least polluting one. Opportunities lie in exploring alternative technologies like mechanization, fly ash bricks, hollow bricks, etc. With the new thermal power plants coming up there is a lot of scope for new fly ash brick enterprises.

Workshop attended by more than 70 entrepreneurs

b. Technical Session

The inaugural session, set the tone for the rest of the workshop. The technical session focused on technology solutions for fly ash management. Post tea, the technical session began with a showcase of short clips on fly ash brick making by NTPC. Mr. S.K. Pathak, AGM, NTPC Corporate Office presented the NTPC experiences with fly ash utilization. NTPC is promoting its use in cement, building products, mine filling, embankment construction, agriculture etc. All of NTPC coal based thermal power plants have in-house fly ash brick manufacturing units. All the bricks made and consumed in-house. This policy is quite questionable since it does not create any awareness within the general consumers on the use of fly ash bricks in building construction.

Need to promote fly ash brick construction in non NTPC areas

Senior Scientific officer, BSPCB, Mr. S.N. Jaiswal, presented an overview of the fly ash issues in the country today. The characteristics and types of ash generated were discussed. The various steps taken by the Government to promote fly ash utilization was presented. These efforts have resulted in recognition of fly ash as a resource material. The various notifications and policies of the Government of India through MoEF were explained with suggested role of various stakeholders ranging from brick manufacturers to construction agencies and government departments.

Figure 3: Visit to Demo Unit at NTPC

Mr. Ayan Kumar Keora, Development Alternatives presented the technical aspects of fly ash brick making and its contribution to the construction industry. Fly ash brick making methodology consists of adding ash, filler, additives, accelerators and water. The process of making the brick was expounded upon in detail.

c. Technology Demonstration Session

Apart from technical presentations, the workshop emphasized on practical aspects of fly ash brick making. This strategy was extremely fruitful since most of the attending entrepreneurs have never seen actual fly ash brick production. Practical aspects of fly ash brick making was demonstrated at NTPC production unit. Although the production setup was impressive, concerns were raised by entrepreneurs on the investment required, production cost, and quality of the product.

Existing brick makers and new entrepreneurs were introduced to New Delhi based fly ash technology provider; TARA Machines and Tech Services Pvt. Ltd. (TMTS). TMTS is one of the very few companies providing complete turnkey services for owning a successful fly ash brick making enterprise. Before providing machines, the fly ash is tested and composition determined matching the selling price with the quality desired. Besides providing machines, an entire range of services including design engineering is also being provided by TMTS.

Working of fly ash brick producing machines was demonstrated with production of chamfered blocks. Entrepreneurs were quite satisfied with the quality of the fly ash brick being produced and expressed willingness to adopt the same.

d. Interactive Session

The post lunch session was an interactive discussion to solve the issues and answer queries of entrepreneurs. Through the course of the workshop, entrepreneurs were encouraged to submit written queries and comments. Participants had queries about the type of ash to be used and the modalities of collection from NTPC. Economics of the unit was a concern among the entrepreneurs. While fly ash is available free but transport is a cost entrepreneurs have to bear which are high if transported to a large distance. Linkages to the market are weak currently which deters entrepreneurs from adopting the same. Suggestions to the government agencies to promote use of these products in government buildings and social housing schemes were made.

Issues raised on:
- **Quality**
- **Production cost**
- **Investment**

Queries on the quality of fly ash bricks as compared to red bricks were answered during the interactive session. NTPC has been instrumental in creating awareness through posters put up across the area. An existing fly ash brick entrepreneur, Mr. Jalan, shared his experiences especially those related to obtaining finances for the plant. The problem is the mindset of people to accept the grey / black bricks, which is changing but very slowly. Quality is key to build and maintain confidence in the product. Mr. Jaiswal, BSPCB reiterated the strength parameters of the fly ash products referring to a study by Development Alternatives.

Figure 4: Participants at the workshop

Need to conduct more awareness workshops in and around NTPC area

There were suggestions from entrepreneurs and Government to hold similar workshops in other locations in the state to increase awareness among entrepreneurs.

e. Valedictory Session

Mr. N.K. Sinha, thanked the guests for participating in the workshop with tokens of appreciation. The vote of thanks was given by Mr. S.K. Pal, AGM NTPC. Special thanks were conveyed to the entrepreneurs encouraging their continued interaction with NTPC.

4. MAJOR ISSUES RAISED

Some of the key concerns raised by entrepreneurs during the Workshop are given below.

a. Easy access to fly ash

Issue

One of the major concerns raised by entrepreneurs was availability of fly ash. The process of obtaining fly ash from NTPC was not known by entrepreneurs often creating issues for success of the enterprise. There is a need to solve these concerns of existing and potential entrepreneurs to ensure uptake of fly ash for brick making.

Urgent need to facilitate market access for fly ash bricks

Suggestions

A small manual on "How to Access Fly Ash From NTPC" can be prepared by NTPC , published and distributed through BSPCB, NTPC etc. DA can assist in making an entrepreneur friendly version. This will assist in streamlining the process of procurement of fly ash and build trust among entrepreneurs.

b. Large scale awareness

Issue

A major issue raised by entrepreneurs was on quality and safe use of fly ash bricks. This a major factor when it comes to the sale of these bricks. There is a mindset block among buyers with respect to grey bricks not being as strong as red bricks. Poor quality bricks produced by some units promote this belief and result in the entire sector losing credibility. Hence it is important to maintain quality and possibly charge a premium for it.

Suggestions

The quality of fly ash bricks being produced at NTPC was not up to the mark as reported by entrepreneurs. There is a need for large scale awareness on the technical aspects of fly ash brick manufacturing among existing and potential entrepreneurs. NTPC and the Government can take the lead in this process, with DA providing technical support.

Figure 5: Poor quality of fly ash bricks a concern

c. Skill development of workers

Issue

Setting up fly ash units has a large potential for generating employment in local areas. However it is a technical process with quality of product depending on the science and methodology of production. Thus skill development of workers is crucial in maintaining quality.

Suggestions

Substantial efforts are needed in developing trained manpower both in the manufacture and use of fly ash bricks. It is suggested that regular training programmes can be conducted at NTPC premises. Government can promote and sponsor the same through various schemes and departments. DA can facilitate in creating skilled trainers.

d. Use of fly ash bricks in public construction

Issue

A major reason for non-acceptance of fly ash brick production is the lack of market for the same. While MoEF notification directs both public and private construction agencies to use fly ash bricks, the uptake is not that high.

Suggestions

There is a need for the government to take a lead and promote the use of fly ash bricks through practice. Successful demonstration will also ensure a ready market for fly ash bricks thereby accelerating the uptake of technologies.

5. RECOMMENDATIONS & WAY FORWARD

a. National Thermal Power Corporation

- Preparation and dissemination of a manual on ""How to Access Fly Ash From NTPC".
- Demonstration of quality brick making
- Setting up Demo units to encourage more enterprises to start up
- Use of demo facilities to train workers and entrepreneurs
- Regular awareness workshops in and around NTPC only

b. Government of Bihar

- Large scale awareness campaigns especially on quality issues
- Inclusion of skill development for brick production in the National Skill Development Programme
- Organizing training programmes for brick manufacturers
- Use of fly ash bricks in public construction projects to promote use

c. Development Alternatives

- Support to NTPC (if needed) on preparation of manual on ""How to Access Fly Ash From NTPC"
- Provide technical support during capacity building and awareness workshops

6. WORKSHOP OUTPUT

Names of entrepreneur interested in adopting fly ash technologies:

1. Navin Kumar Yadav - 9431029733
   Begusarai
2. Sanjay Kumar Dube - 9430003448
   Kahalgaon
3. Md. Arif - 9973379200
   Kahalgaon
4. Janki Industries - 9431236756
   Bhagalpur
5. Shashi Kumar - 9386712107
   Begusarai
6. Anjani Kumar - 9204202309
   Begusarai

7. LIST OF ENTREPRENEURS

Sl.	Name	Office/ Trademark / Address	Contact
1	Shashi	NDA	9386712107
2	Anjani Kumar	TT	9204202309
3	Anjani Kumar	A S Industries, Bhagalpur	9934521198
4	Saurabh Sharma	A S Industries, Bhagalpur	9608661964
5	Prabeen Kr Singh	MAP Industries	912244424
6	Dr Ashif Kr Singh	MAP Industries	9934284255
7	Kanhaiya Lal Soni	SBI Barahat	8521246200
8	Pawan Bhagat	SPI, Barahat	9570007584
9	Manjay Kumar	PCI, Barahat	8676022485
10	Shashi Kant	RST, Barahat Pirpainti	9162874429
11	V N Thakur	RCT, Barahat Pirpainti	9801312142
12	Hriday Ray	TARA DELHI	9871619959
13	Mr Satish Kumar	Khagaria	8002585997
14	Randhir Kumar	Khagaria	8002585997
15	Mukesh Kr Yadav	Ghogha	9934096037
16	Mukul Anand	OM Sai Enterprise, Bihta Patna	9334194100
17	Vikash Kumar	Budha Enterprise, Kurthaul Dariyapur, Patna	9334335559
18	Amit Kumar	Budha Enterprise, Kurthaul Dariyapur, Patna	9334335559
19	Kirti Kumar	STAR Bricks, Rampur Kahalgaon	9631867367
20	W Pandey	STAR Brick,s Rampur Kahalgaon	955078952
21	Rajeev Ranjan	R&R Bricks	9973193888
22	Ajay Kr Pandey	SHER, Rampur	9955078952
23	Shailendra Kr Pal	PUJA Bricks	7277266982
24	Md Sunno	SHOR Harichak	9955617607

25	Udit Pd Sah	RUN, Masudanpur	9431274660
26	Pankaj Jalan	JANKI Industries	9470069697
27	Ajay Kr Sah	MDB	9431265780
28	Nirbhay Kr Thakur	RMB	9955913492
29	Nirmal Mishra	DEOGHAR	9431190451
30	Sanjeev Choudhary	DEOGHAR	9431190451
31	A P Mandal	ACC, Ghogha	7250399599
32	Chandan Pandey	HMV, HMT Ghogha	9431090395
33	Shyam Pd Sah	SNB Bricks, Ghogha	9431213517
34	Dharmendra Kumar	MDH Bricks	9097054458
35	Amit Kumar	R S C	9934043131
36	Sanjay Kumar	DLS	9973824814
37	P N Kejriwal	MDB	9931282005
38	Bijay Gupta	JDB	9973824775
39	Pappu Singh	ADS	9934683384
40	Sanjay Kr Dubey	GOLD, Kahalgaon	9955447568
41	Md Asif	GOLD, Kahalgaon	9973379200
42	S K Sinha	SPC Bricks	9934774116
43	Ajit Kumar	BBB, Ghogha	8051463258
44	Sujit Kumar	BBB, Ghogha	8083346003
45	Aniruradh Sharma	SPC, Ghogha	9431277773
46	Afroz Khan	ROSE	9973379204
47	Raju Jaiswal	Raj MATA Bricks	9934993400
48	Ramesh Kr Bhagat	JMT Bricks, Barahat	9661202852
49	Ramesh Pd Sah	RAM Bricks Industries	9801177404
50	Rahul Sah	TAJ Bricks	980110789
51	Kisto	BGP	9534860539
52	Ghanshyam Bajoria	ABC, Ghogha	8092266746
53	Gopal Dubey	SONA, Ghogha	9430428221
54	Nand Kishore Shah	MOTI	9097687157
55	Rajendra	BBC	8298206669
56	Gajendra	MOON	9931463229
57	Pradeep	SITA	8797212135
58	Shyam	SBC	9852155064
59	Lakhan Deo	CBI	9431295551
60	Amod Kr Ray	Tara Bricks	9430672624
61	Babloo Kr Singh	Tara Bricks	9955762199
62	Anand Kishor Singh	Tara Bricks	9430563549
63	Guddu Kumar	Tara Bricks	9471469068
64	B N Dubey	TATA Bricks Ghogha	9631345181
65	B K Dubey	S&G Bricks	9431213577
66	Manoj Kumar	LBI	9431689585
67	Goutam Kumar	TARA	9939889119
68	Balram Yadav	BABA	9934095418
69	Ajit Kr Yadav	BMP	9955719639
70	Binay Yadav	HIRA	9955212734

71	Binod Yadav	GOPI	9709608615
72	Bijay Yadav	BGP	9939442066
73	Sanjay Yadav	MOOM	9939956763
74	Birendra	RAJA	8051292988
75	Subash Ray	RAJ	9939296126
76	Kunal Bharti	ROOM	9631362758
77	Mum	SSB	9955962411
78	Mamta		9934073007