

## **Design of High Draught Brick Kilns with Zig-Zag Setting**

The burnt clay bricks have been in vogue for at least 3000 years. Presently, there are about 100,000 active brick kilns operating all over India producing approximately 250 billion bricks per year. About 70% production of bricks in India depends on conventional Fixed Chimney Bull's Trench Kiln technology (FCBTK), consuming approximately 35 million metric tons of low-grade coal.

High draught brick kiln is a continuous, cross draught, moving fire kiln in which the air flows in a zig-zag path. The draught required for the air flow is provided by a fan. In India, high draught zig-zag firing technology was first introduced by CSIR- Central Building Research Institute (CBRI). Burning of poor grade coal produce huge amount of particulate and gaseous emissions (Suspended Particulate Matter (SPM) & Black Carbon (BC)). The Central Pollution Control Board (CPCB) & Ministry of Environment, Forest and Climate Change (MoEF & CC) have identified conventional brick kilns as a potential polluter of the environment. Through a Gazette notification from Government of India 2022MoEF& CC; CPCB has made it mandatory that SPM concentration in the effluent gases should not exceed 250 mg/Nm<sup>3</sup> (Earlier it was 750 mg/Nm<sup>3</sup> for FCBTK).

### **Benefit to Society/Economy**

#### **Technical benefits**

- Fuel saving (20-25%)
- Improvement in product quality (Class I bricks more than 90%)
- Increase in production

#### **Social Benefits**

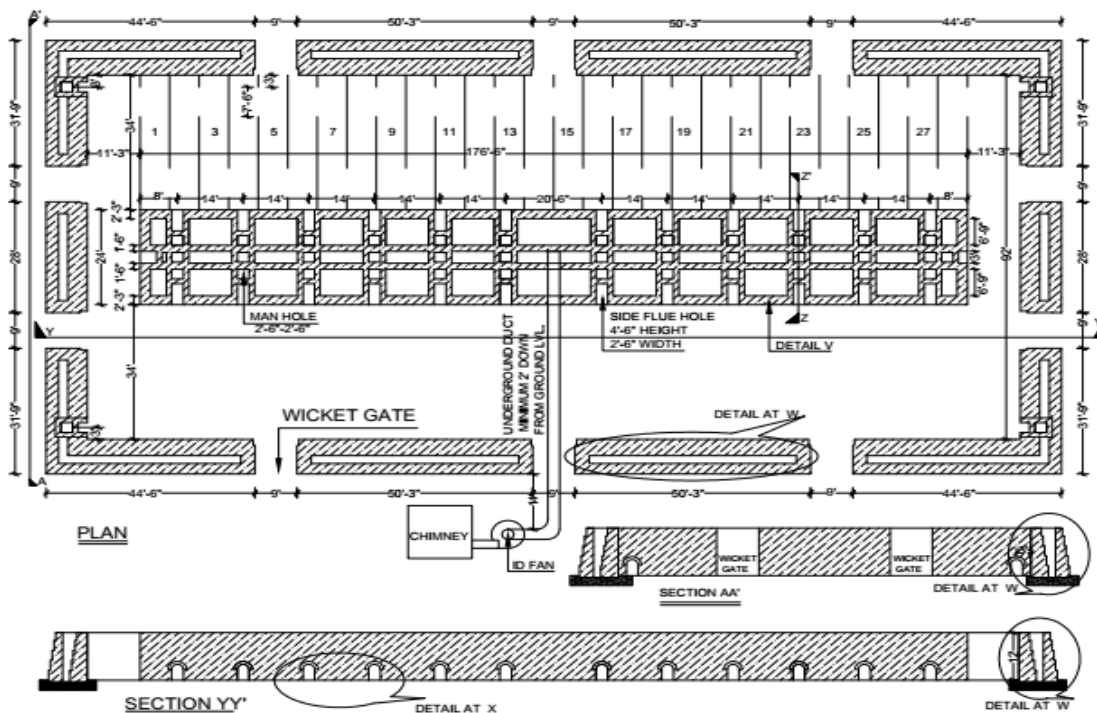
- Improvement in working environment due to less SPM level
- Improvement in workers skill

#### **Environment Benefits**

- Reduction in effluent generation
- Reduction in Green House Gas emission such as CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>2</sub> etc

The technology has been transferred to following firms

S.N.	Name of the firm	Address	Date of transfer
1.	M/S Team Energy System	SCO 87, Sector-4, 2 <sup>nd</sup> Floor, Sector 4, Panchkula, <b>Haryana</b>	8 <sup>th</sup> August 2017
2.	M/s Pollution Consultants & Engineers	22C, Pocket-8, SRS Royal Hills, Sector-87, Faridabad-121002, <b>Haryana</b>	15 <sup>th</sup> December 2017
3.	M/s Amit J Kumar & Associates	Ground Floor, House No.12, Jai Kamla Niwas, 02, Johri Enclave, Loni, Ghaziabad – 201 102 <b>Uttar Pradesh</b>	29 <sup>th</sup> January 2018
4.	M/s. Ray Techno Solutions	Vill. Bhatua, P.O Rajhat, Hoogly-712123 <b>West Bengal</b>	21 <sup>st</sup> July 2022
<b>Cost of technology transfer per firm: Rs. 7 lakhs + GST</b>			



Plan layout of high draught brick kiln



**Photograph of Transfer of Technology**



**High draught Brick kiln with Zig-zag Setting as designed by CSIR-CBRI, Roorkee**