



**Eco Cell Industries**

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## Company profile

The earthquakes of April 21st 2015 destroyed about 500,000 residential homes and other physical infrastructures. Thus, in order to meet the present requirement of Nepal for fast, cheap and earthquake resistant reconstruction, ECO CELL INDUSTRIES was established. Eco cell industries provide sustainable, resilient and eco-friendly building materials for reconstruction of individual homes and public buildings.

Currently, it is manufacturing interlocking bricks from one factory facility located at Banepa, whereas it is also working as a consulting firm at various reconstruction projects in various earthquake affected districts.

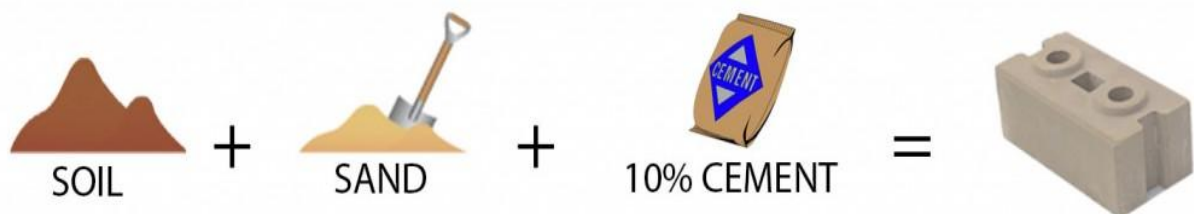
This industry is promoted by a group of individuals who are dedicated towards

## Introduction of CSEB

Earth Bricks, or interlocking bricks, is a strong and earthquake resistant building material. It is a proven earthquake resistant technique which has been used for decades in earthquake affected areas in India, Pakistan and Iran. It allows build high quality and earthquake resistant structures at low cost. Department of urban development and building construction has acknowledge CSEB product as earthquake resilience building material in Nepal.

## Building material of CSEB

Earth Bricks consists of Soil, Sand and 10% Cement. The mixture is compressed in a machine which results in a compacted brick with high density. The Sand bonds with the cement stabilizing the brick. The soil compresses, which adds to the high density and strength. Every soil available is not suitable for CSEB production. The ideal soil must consist of 50-60% of sand, 10-15% of gravel, 5-10% silt and 20-30% of clay. Since this ideal soil is hard to find so we must check the properties of soil and add sand to make the appropriate mixture.



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## **Advantages of CSEB**

### **Cost Benefit**

The use of CSEB reduces cement/concrete, reduces use of steel bars, eliminates plastering, reduces labour, resulting in lower construction cost.

### **Eco-friendly**

The brick making process has zero carbon foot print which helps in keeping the environment clean and protects the ozone layer. Ecological Bricks reduce Green House emission by 86%.

### **Shorter Construction Time**

Compared to traditional methods of construction, minimum masonry is required in interlocking bricks which helps in significant reduction in construction time. A 35 m<sup>2</sup> of house can be constructed in around two weeks' time

### **Earthquake resilience**

The unique interlocking system of these bricks allows flexibility while the reinforced steel bars through the holes of bricks where the buildings are most vulnerable during the earthquake shock makes the buildings more stable during earthquake. Thus CSEB helps to build earthquake resilience structures.

### **Other benefits**

Other benefits of CSEB are; thermal insulation, sound resistant, fire resistant, bug proof, ease of utility system installation and aesthetic look of the structures.

## **Services we offer**

### **Supply Compressed Interlocking bricks**

Currently we operate a factory for production of CSEB located in Banepa, Kavre. We are supplying the bricks from this factory location to the various construction sites at reasonable price. Along with the bricks sales we also provide brief training and supervision to the construction workers on site or at our factory location depending on feasibility.

### **Machinery and Equipment supply**

As a part of being one stop solution for the CSEB production we also offer various kinds of machinery and equipment for the production of CSEB. We are the sole distributor of **Terra Block Machineries (an ISO certified company)** for Nepal. We offer wide varieties of Indian origin machineries which are cost effective, durable and easy to maintain.

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### **Construction Consultancy services**

Our team of engineers and construction supervisors are ready to provide any consulting services needed for the use of CSEB. The construction consultancy services includes; building designs and drawings, construction supervision, training the construction workers.

### **Feasibility Study and Training**

We provide feasibility study of the proposed location and raw material for the production line setup. Along with this we also provide comprehensive production training for 3-7 days at client's location or at our factory locations per feasibility.

## **Business Model (Franchise)**

We provide extensive training for soil testing, material mixing, machine handling, brick manufacturing, brick curing and supply management to our franchisee. The initial training would take one week of time where franchisee will be able to learn overall aspect of the business. Also we provide onsite supervision in construction area of our franchisee.

On the "building with interlocking" side, We provide training on overall design and building of houses. This covers construction of overall parts of house using these bricks. Since interlocking CSEB is a new product for building contractors so proper training for its use is most to get better result. We provide 2 days special training course on earthquake resilience building using interlocking CSEB to our franchisee. Our supervisors and engineers will provide comprehensive training to the contractors about the use of interlocking CSEB and techniques for earthquake resilience building.

#### **Production:**

- Soil testing
- Mix preparation for CSEB production
- Production
- Brick curing
- Quality and strength test
- Machine operation and maintenance
- Organizing production flow

#### **Manonary:**

- Foundation preparation
- Tie beam casting
- Wall construction
- Roofing

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## **The cost to our franchisee**

### **1. Single mould manual press machine setup**

- This machine is small easy to transport and cost effective.
- It produces one brick at a single press.
- The dimensions of bricks produced from this machine is 4”\*6”\*12”.
- Number of labour required for production: 4 labours
- Quantity of production per day in 8 hr shift: 350 (also depends upon skills of labour)
- Cost of setup is Rs. 2,70,000
- The unit consists of the following items;
  1. Mould Box - 1 no.
  2. Die – 1 set
  3. Pressing Pipe – 1 no.
  4. Base Channels – 1 pair.



## 2. Double mould manual press machine setup

- This machine is small easy to transport and cost effective.
- It produces two brick at a single press.
- The dimensions of bricks produced from this machine is 4”\*6”\*12”.
- Number of labour required for production: 5-6 labours
- Quantity of production per day in 8 hr shift: 700 (also depends upon skills of labour)
- Cost of setup is Rs. 3,30,000.
- The unit consists of the following items;
  1. Mould Box - 1 no.
  2. Die – 1 set
  3. Pressing Pipe – 1 no.
  4. Base Channels – 1 pair.





### 3. Semi-automatic machine production line

Semi-Automatic Machine for making inter-locking bricks of size 4”\*6”\*12” would amount to **Rs.17,54,000/-** (Rupees seventeen lakhs and fifty four thousand Only) including Transportation and Taxes as applicable.

The unit consists of the following items : (All material used are from STEEL AUTHORITY OF INDIA LTD)

- (a) Brick press unit – 1
- (b) Die Plates - 1 set
- (c) Power Pack unit – 1
- (d) 450 litres mixing machine – 1
- (e) Tools and spares.
- (f) Turn Table – 02 nos
- (g) Hydraulic Trolley:- 1

The Unit Description:-

- 1. Brick Press Unit:** - Brick Making Machine 80 ton pressing load The Machine has a rate of production of 3000 bricks/ 8 hour shift. This operates on 3 Phase electricity and consumes about 5KWH.This comes with Power pack, Cylinder and lever system.
  
- 2. Pan Mixture:-** Pan Mixture of 450 Liters capacity with CI roller to mix raw materials with 6 inch Gear Box with 7.5 HP –Siemens Motor with Heavy duty scrapper.

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### **If you want a separate Training and Supervision for CSEB production**

For efficient operation of machines and quality bricks production we provide comprehensive production training. The training is scheduled for 3 days either at our factory location (Banepa) or at clients' location as per feasibility of our clients. An extra day for production supervision on clients' location can ensure the efficient production flow.

The cost of the Training and Supervision is Rs 75,000.00 for a group of 5-7 people.

The training includes;

- Soil testing
- Mix preparation for CSEB production
- Production
- Quality and strength test
- Machine operation and maintenance
- Organizing production flow
- Different plans for production unit setup and operations.

Masonry training includes;

- Foundation preparation
- Tie beam casting
- Wall construction
- Roofing

**\*\*Following conditions applies;**

- Additional mould for half brick and channel brick production is provided.
- Transportation of machine from Kathmandu to the proposed location is at buyers end.
- Accommodation and transportation expenses of trainer are at buyers end.
- Other equipments for setup of machine and factory is at buyers end.
- Training for masonry is for the semi skilled and skilled labours who are currently working in construction field.
- The price varies along with the quantity of machines requirement.
- The machines are delivered within 30 days from the day of order placement.

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