

CATEGORY

POTENTIAL TECHNOLOGY – ACCELERATION : GHTC-INDIA



PRODUCT / TECHNOLOGY



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Technology Detail

**HABITECH NIVARTANTRA ENVIRONMENT FRIENDLY  
BUILDING TECHNOLOGY SOLUTION**

*Alternate system to conventional masonry wall & RCC roof*



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Video

CONTACT DETAILS

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BRIEF

The Housing / Building Structure technology comprises of two key innovations:

- I. Compacted intermeshing® blocks (CIB) manufactured from local soil judiciously mixed with stabilizers and additives. The production of compacted intermeshing blocks is an entirely green process using novel, simple to use, manual press equipment for small projects and high pressure Hydraulic press system for large projects and unlike conventional brick making process, it does not require kilns / furnace to fire the blocks. These blocks have structural voids for intermittent horizontal and vertical reinforcement to enable appropriate structural strength obviating use of beams, columns and concrete lintels. The voids in the CIB also enable natural air curtain against temperature, noise pollution and water penetration.
- II. “Peggable Contoured®” flat roofing structure comprising Joist & contoured pans manufactured with novel joist and pan making equipment resulting in a flat roof with significantly higher load bearing capacity with much lesser amount of cement as compared to conventional flat roofs.
- III. An onsite Natural Sanitation technology is also offered with Novel Anaerobic “Inclined multi-baffles®” reactor (AIBR) system which enables a significantly better digestion of fecal matter resulting in lower particulate effluent discharge.



## SALIENT FEATURES

- Structure made from compacted intermeshing blocks integrated with intermittent vertical and horizontal reinforcements exhibits load bearing capacity, structural stability & service life comparable to conventional RCC structure
- As building blocks do not involve fire, the embodied energy & Green house gas emissions are significantly lower as compared to ordinary burnt clay brick based construction.
- Have better thermal & acoustics properties
- The cement, steel & sand consumption is significantly lower than RCC conventional construction
- As blocks are manufactured locally, helps in generating local employment, reduction in transportation cost & fuel consumption

## ECONOMIC ASPECTS

The core structural component – Compacted intermeshing blocks, with significantly lower use of cement and steel in comparison with conventional column/ beam structures, as well as the standardized and simplified construction process results in an overall 10 - 20% cost savings over conventional construction systems.

## SUSTAINABILITY ASPECTS

The compacted intermeshing blocks manufactured from the local soil are environmentally cured and not fired in kilns as done in case of conventional bricks. CIB's are almost consuming upto 11 times less energy and also polluting upto 13 times less than country fired bricks.

With lower consumption of cement & steel in blocks & contoured roof, along with better thermal efficiency, makes the technology highly sustainable.

The local employment is also generated for manufacturing of blocks. The excavated area from where soil is sourced, can be used effectively to create a natural water reservoir with simple integrated rain water harvesting thereby resulting in self-reliance in water availability.



### SUITABILITY & AVAILABILITY

- The components as well as the building structures created are suitable for all kind of climatic conditions
- The equipment's have been designed and developed in Pune and two established fabrication entities in Pune have been given license to manufacture these equipments. They have successfully manufactured the equipment for the 3 projects till date.
- For large scale manufacture of the equipment, License can be given to fabrication entities across the Country.

### LIMITATIONS, IF ANY

- Since all the building components are made on site using equipment, the cost viability is achieved when housing / building clusters are constructed comprising decent plinth size of approx. 20,000 Sq. ft. and above.
- The load bearing structure is limited to G+2 configuration.
- The onsite sanitation system requires slightly bigger area for establishing the constructed wetlands. Hence the sanitation system viability is achieved only in rural / peri urban areas whereas cost of land in urban areas makes it unviable.





## MARKET LINKAGES

The agency is based in Pune, however technical know-how & licensee for manufacturing of equipment can be provided across the Country.

## MAJOR PROJECTS

- Construction of Technology Innovations Demonstration Model Building – Ashiana Annexe comprising of 12 dwelling units Transit Accommodation at the President’s Estate, Dehradun (CPWD Work order No. 04/EE/PEPD/2016-17 dated 29<sup>th</sup> August 2016)
- Construction of novel GRAMALAYA using Habitech-NivaraTantra Technologies at SMARTGRAM Harchandpur, Sohna, Gurugram under the Rashtrapati Bhavan’s SMARTGRAM initiative (Size: 218.824 sqmt.)
- Construction (in final stages of completion) of Smartgram Secondary School at SMARTGRAM Daulah, Sohna, Gurugram under the Rashtrapati Bhavan’s SMARTGRAM initiative (Size: ~1693 sqmt.)

## CERTIFICATION/INDIAN STANDARD/ ENDORSEMENT

- Council of Scientific & Industrial Research - Central Building Research Institute was involved in the comprehensive testing of the structural components – compacted intermeshing blocks for the Rashtrapati Bhavan project “Ashiana Annexe” constructed at the President’s Estate, Dehradun and subsequent to successful completion of the evaluation, signed off a Memorandum of Understanding for support in proliferation of Habitech-NivaraTantra Technology solutions in presence of Late Shri Pranab Mukherjee, Honorable President of India during the inauguration of Ashiana Annexe.
- Awarded as one of the Potential Technologies under Affordable and Sustainable Housing Accelerator (ASHA – India), GHTC- India, organized by MoHUA, Gol.





## Glimpses of Light House Projects (LHPs)

### LHP CHENNAI



**Technology:** Precast Concrete Construction System-Precast Components Assembled at Site  
**No. of Houses :** 1,152  
**Country of Origin :** Finland/USA

### LHP RAJKOT



**Technology:** Monolithic Concrete Construction using Tunnel Formwork  
**No. of Houses :** 1,144  
**Country of Origin :** France

### LHP INDORE



**Technology:** Prefabricated Sandwich Panel System with Pre-engineered Steel Structural System  
**No. of Houses :** 1,024  
**Country of Origin :** China/ Japan

### LHP LUCKNOW



**Technology:** Stay In Place PVC Formwork with Pre-Engineered Steel Structural System  
**No. of Houses :** 1,040  
**Country of Origin :** Canada

### LHP AGARTALA



**Technology:** Light Gauge Steel Framed (LGSF) System with Pre-engineered Steel Structural System  
**No. of Houses :** 1,000  
**Country of Origin :** New Zealand/ Kenya

### LHP RANCHI



**Technology:** Precast Concrete Construction System - 3D Volumetric  
**No. of Houses :** 1,008  
**Country of Origin :** Germany