

निर्माण सामग्री एवं प्रौद्योगिकी संवर्द्धन परिषद्
आवासन और शहरी कार्य मंत्रालय, भारत सरकार
BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL
Ministry of Housing & Urban Affairs, Government of India

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From the Desk of the Executive Director

BMTPC rendezvous with alternative & innovative construction systems has been recognized at the highest level and Hon'ble Prime Minister of India has made a clarion call to engage disruptive housing technologies for construction which can deliver livable, affordable, sustainable & quality houses rapidly so as to build new India with every household having Pucca house.

Taking this agenda forward, the Government of India through the Ministry of Housing and Urban Affairs (MoHUA) is going to launch 'Global Housing Technology Challenge – India (GHTC-India)' in January 2019. This Challenge aims to identify and mainstream a basket of innovative construction technologies from across the globe for deployment in the housing construction sector in India. GHTC-India aspires to develop a wider eco-system to address the technological challenges of the housing construction sector in a holistic manner. It is expected that the technologies selected through the Challenge process will be sustainable, eco-friendly and disaster-resilient. They are also expected to be cost effective and speedier in construction, without compromising on quality and safety. They should also be suitable for diverse geo-climatic conditions. Also, innovative technologies, that are still developing and have a strong potential for the future, will be supported to foster an environment of research and development in the country under the challenge. Please visit <http://ghtc-india.gov.in> for details.

Shailesh
(Dr. Shailesh Kr. Agrawal)

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Demonstration Housing Projects using Emerging Technologies

BMTPC is constructing model demonstration houses in different parts of India using emerging technologies with the objective of spreading awareness and build confidence about new technologies and disseminate technical know-how in the states under Technology Sub-Mission of Pradhan Mantri Awas Yojana (Urban) so as to have sustainable, faster and quality construction. The status of the ongoing projects as approved by the Central Sanctioning & Monitoring Committee (CSMC) at three locations are as follows:



Gachibowli, Hyderabad, Telangana [32 DUs (G + 3)] using Structural Stay in Place Formwork System (Coffor) - 16 DUs and Light Gauge Steel Frame structure (LGSF) - 16 DUs
– Work has been completed and the project is ready for handing over.



Aurangabad Jagir, Lucknow, Uttar Pradesh [40 DUs (G + 1)] using Stay in Place EPS based double walled panel System (Sismo) – Work has been completed and the project is ready for handing over.

Bihar Shariff, Bihar [36 DUs (G + 2)] using Structural Stay in Place Formwork System (Coffor) – The work on housing has been completed. The external infrastructure work is in advanced stage.



Emerging Technologies for Building Construction

PIR Dry Wall Pre-Fab Panel System

PIR Dry Wall Pre-Fab Panel is a system where two fibre cement boards (FCB) of 10 mm thickness are filled with insulation material namely Poly Isocyanurate (PIR) in-situ and erected to produce straight to finish walls. The system shall be integrated with conventional column and beam for pre-engineered buildings. Insulation core provides effective insulation and strong bonding for better structural stability to facilitate higher loading and wider spans. This system can incorporate all types of services viz. electrical, gas and plumbing etc.

Size

Panels are normally produced in sizes and dimensions as given below:

Length: 2400/2700/3000mm or as per requirements.

Width: 1200 mm

Thickness: For external wall, thickness is 120mm having 10mm thick cement fiber board on both sides and inside filled with Poly Isocyanate (PIR) of 100mm thick. For internal wall, thickness is 100mm/60mm having 10mm/6mm thick cement fiber board on both sides and inside filled with PIR depending upon thickness of wall.

Uses

PIR Dry Wall Pre-Fab Panels shall be used as non-load bearing /filler walls for buildings including apartments, villas, low-rise buildings, commercial complexes, hotels, industrial buildings, etc.

Raw Materials

- Fibre Cement Board: Shall be 100% asbestos free and of Type A, Category 3 min. as stipulated in IS 14862:2000.
- Poly Isocyanurate (PIR): Shall be as per the specifications of the manufacturer
- PPGI sheet: Shall be 0.5mm thick and as conform to IS 14246:2013
- Square Hollow Section (SHS)/C Channel: Shall be manufactured from pre-galvanized high tensile steel conforming to IS 277:2003.
- Fibre glass mesh: Shall be as per manufacturer specifications.
- Acrylic based glue: Shall be as per manufacturer specifications.
- Galvanized MS screws: Shall be as per manufacturer specifications.
- Anchor fasteners: Shall be of 10mm to 12mm dia., 50mm to 75mm length and as per manufacturer specifications.
- Premix Putty: Shall conform to IS 419:1967.



Manufacturing Process of PIR Panels

There are basically two panel manufacturing methods: continuous and discontinuous. In the continuous process, all the materials used are processed together and completely formed panel is cut to the desired length without stopping the line. In the discontinuous process, the materials are processed separately; this means the facings are formed and cut to the desired length and then assembled together in a press where the foam is injected.

Continuous Process (For both Wall and Slab panels)

A typical continuous line is made up of the following three sections:

- External layers processing section
- Insulating material processing section
- Panels handling section

Discontinuous Process (For Wall Panels only)

Such panels either rigid or flexible, with flat or grooved profile can be produced using cement fibre board for walls and pre-painted metal sheet for roof slab. Diverse technologies apply to the discontinuous production process, namely:

- Manual mode injection technology at closed mould;
- Automatic mode lance displacement at closed mould;
- Automatic mode injection technology at closed mould.

Durability

- PIR wall being non-loadbearing wall panels are to be supported with RCC/Steel Structural frame members.
- No plastering is required.
- Easy to paint on it as compared with convention system.
- PIR panels are thin and consumption of materials is less resulting into lighter structures and saving on building materials.
- PIR panels maintain its performance in the long term. Whilst a building remains fully insulated heating costs are kept under control, which also results in reduced CO₂ emissions.
- The durability of PIR insulation has a positive impact on the life cycle analysis (LCA) of a building project.

BMTPC has awarded Performance Appraisal Certificate (PAC No.: 1039-S/2018) to M/s Covestro (India) Pvt. Ltd., Thane (Maharashtra) for PIR Dry Wall Pre-Fab Panel System under Performance Appraisal Certification Scheme (PACS).





Seminar on “Emerging Technologies for Affordable Housing: Opportunities and Challenges”

A Seminar on “Emerging Technologies for Affordable Housing: Opportunities and Challenges”, was organized on 17th December 2018 at Amity University, Noida by BMTPC in association with RICS School of Built Environment, Amity University. The seminar was organised to disseminate the information related to emerging technologies in the area of affordable housing as emerging technologies have an edge over conventional systems with regard to speed, cost, quality and sustainability. The seminar also deliberated on the challenges associated with the adoption of emerging technologies along with the available opportunities for adoption. More than 70 participants participated in the seminar.



Training Workshop on Use of Bamboo in Housing & Building Construction

BMTPC in association with Government Arunachal Pradesh and South Asia Bamboo Foundation organized a 10 days Training Workshop on Use of Bamboo in Housing & Building Construction from October 24 to November 2, 2018 at Namsai, Arunachal Pradesh.

The Workshop was inaugurated by Shri Chowna Mein, Hon'ble Deputy Chief Minister, Govt. of Arunachal Pradesh. Apart from International Experts on Bamboo Structures from Colombia, United Kingdom and Bhutan, 28 participants including 12 architects from other States namely Nagaland, Assam, Kerala, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu and Manipur and about 25 participants from Arunachal Pradesh participated in the workshop.

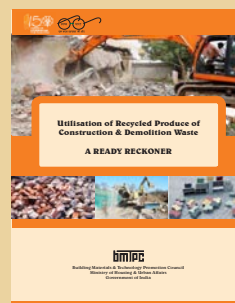
Recent Publications

Compendium of Prospective Emerging Technologies for Mass Housing–3rd Edition



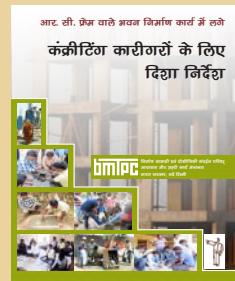
Under the Technology Sub Mission of Pradhan Mantri Awas Yojana (Urban), BMTPC has brought out 3rd Edition of Compendium of Prospective Emerging Technologies for Mass Housing. The 3rd edition containing technology details of 24 emerging technologies is a useful resource for State Govts. and related Housing Agencies for construction of affordable mass housing.

Ready Reckoner for Utilization of Recycled Produce of C&D Waste



The “Ready Reckoner for Utilization of Recycled Produce of C&D Waste” has been brought out to guide and facilitate the stakeholders for easy understanding and implementation of “C&D Waste Management Rules, 2016”. In-situ processing of C&D Waste for large size redevelopment projects has been focused to minimize the impact on the environment as well as on the cost of produce.

Guidebook for Concreting Artisans



यह मार्गदर्शिका आर. सी. फ्रेम वाले भवन निर्माण कार्य में लगे कंक्रीटिंग कारीगरों के लिए है। अच्छी गुणवत्ता वाला आर.सी.सी. का निर्माण कार्य करने के लिए कंक्रीट से सुरक्षित, मजबूत और सही संरचना बनाने के लिए जरूरी जानकारी को इस किताब में समावेश किया गया है।

Manual on Waterproofing of GFRG Buildings



The Manual of Waterproofing of Glass Fibre Reinforced Gypsum (GFRG) Buildings lists products and their application procedures for waterproofing of buildings, constructed utilizing GFRG panels. Various materials recommended are based on nano-technology. The material and applications mentioned in the document have been evaluated and recommended by IIT Madras after extensive R&D and testing.

Special Issue of Newsletter “Nirman Sarika”



BMTPC brought out a Special Issue of its Newsletter “Nirman Sarika” on the World Habitat Day 2018 theme “Municipal Solid Waste Management”. The special publication focuses on important issues related to the theme and contains invited articles/papers from experts in the field.



BMTPC's Participation in World Habitat Day 2018 Celebrations



The council participated in the World Habitat Day 2018 celebrations organized by the Ministry of Housing & Urban Affairs. The Council organized a Painting Competition for Differently Abled Children on the theme "Municipal Solid Waste Management" in the categories i.e. Mentally Challenged, Hearing Impaired and Visually Impaired. The exhibition of the winning entries was also organised on the occasion. The winners were facilitated during the World Habitat Day Celebration Function in New Delhi.

On this occasion, publications namely, (i) Special Issue of Newsletter "Nirman Sarika", (ii) Ready Reckoner for Utilization of Recycled Produce of C&D Waste, (iii) Compendium of Prospective Emerging Technologies for Mass Housing – Third Edition, (iv) Guidebook for Concreting Artisans, and (v) Manual on Waterproofing of GFRG / RAPIDWALL Buildings, were prepared by BMTPC. These publications were released by Hon'ble Minister of State (I/C) for Housing & Urban Affairs on 5th October, 2018 during the World Habitat Day Celebrations at New Delhi.

Performance Appraisal Certification Scheme - PACS

BMTPC operates a Certification Scheme to evaluate performance of innovative building products and technologies. Inspection of production and other facilities of V-Infill Walls manufactured by M/s Visaka Industries, Ltd., Secunderabad was undertaken on 11-12 October, 2018 by BMTPC officials and TAC Members. V-Infill walls are made by cladding with 8/10mm fibre cement boards (V-board) on either side of GI studs and erected to produce straight to finish walls which are filled with concrete made of EPS, cement, sand and additive.



Meeting of Peer Group for Revision of Vulnerability Atlas of India under the Chairmanship of Dr. A.S.Arya, Professor Emeritus, IIT Roorkee held on December 12, 2018



Dr. Shailesh Kr. Agrawal, Executive Director, BMTPC, chairing the session on Sustainable Material & Technologies during 10th GRIHA SUMMIT : Fostering Partnerships for Sustainable Habitat organized by TERI on December 11, 2018 at New Delhi

For further details, please contact:



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