

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


भाग 10, अंक 4, अक्टूबर – दिसम्बर 2021, नई दिल्ली Vol.10, Issue 4, October – December 2021, New Delhi

From the Desk of the Executive Director



The concerted efforts made by Mo-HUA & BMTPC to bring transformative changes to the construction practices in India have started to bloom now. Most of the public & private agencies are looking for technologies other than brick & mortar/cast-in-place RCC construction. Thanks to Global Housing Technology Challenge – India (GHTC-India) which was the game changer for the construction Industry & precipitated the change.

Through GHTC-India, 54 new construction systems have been identified and being propagated across India. The six Light House Projects (LHPs) at present being constructed in six states using six distinct shortlisted technologies through challenge are being promoted as live laboratories to assimilate field level application of these new systems & use them as future technologies of construction. A dynamic website <https://ghtc-india.gov.in> has also been developed where all information & literature about these systems have been collated including updated progress of LHPs. To entice the stakeholders, a scheme called Technograhis has also been rolled out wherein one can register & go through e-modules in a self-learning mode & get a certificate. These Technograhis are the change agents of innovative and sustainable technologies triggering technology transition in the construction sector for its adoption & replication in the country.


(Dr. Shailesh Kr. Agrawal)

Published by:

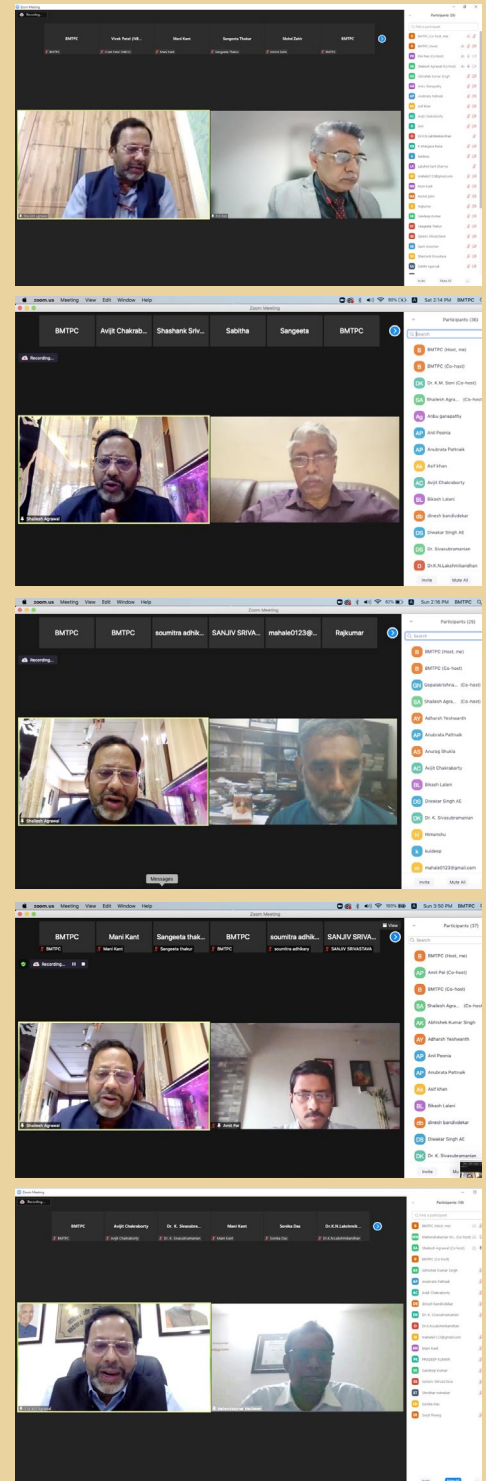
Building Materials & Technology Promotion Council, New Delhi

Seventh Batch of NAVARITIH : Certificate Course on Innovative Construction Technologies

In order to build capacities amongst building professionals about the new and emerging building materials and technologies for construction industry, the Ministry of Housing & Urban Affairs in collaboration with BMTPC and School of Planning & Architecture (SPA), New Delhi has started a Certificate Course on emerging housing technologies namely NAVARITIH (New, Affordable, Validated, Research Innovation Technologies for Indian Housing). The NAVARITIH Certificate Course was launched by Hon'ble Prime Minister on January 1, 2021 during the foundation stone laying ceremony of six Light House Projects through video conferencing. The reading material in form of a Book for NAVARITIH: Certificate Course on Innovative Construction Technologies was also released by Hon'ble Prime Minister. The hardcopies of the book is available through Amazon.in (<https://www.amazon.in/Alternate-Innovative-Construction-Systems-Housing>)

The major objectives of the Certificate Course are to (a) Familiarise the professionals with the latest materials and technologies being used worldwide for housing, (b) Provide an awareness of the state of art of materials and technologies in terms of properties, specifications, performance, design and construction methodologies so that professionals can successfully employ these in their day to day practice and (c) Provide exposure to executed projects where such materials and technologies have been implemented.

The seventh batch of NAVARITIH was conducted from November 12 to 19, 2021 wherein 45 engineers, architects and other stakeholders participated. So far more than 780 participants have attended the NAVARITH Course. The eighth batch of the NAVARITIH Course has also been announced for which online classes will start from January 14, 2022 onwards. In view of prevailing global pandemic scenario, the Course is being conducted on virtual platform through online classes. It is first of its kind course and the curriculum covers alternate & innovative materials and construction technologies. The resource persons are experts from IITs, Research Institutions and Industry.





Emerging Technologies for Building Construction

KON_CRETE Reinforced Autoclaved Aerated Concrete (AAC) Panels

KON_CRETE Reinforced AAC wall & floor/roof panels are innovative Autoclaved Aerated Concrete (AAC) products, having properties such as light, high thermal efficiency, acoustics performance, energy efficiency & light weight.

These are steam cured cementitious materials manufactured from a mix of flyash, cement and other additives giving the material a unique cellular lightweight internal structure. The manufacturing process involves mixing of Fly ash slurry stored in slurry tanks, the binders (lime, cement and anhydrite) stored in silos & aluminum powder which is dispersed in the water. All the components are accurately weighed and released into the mixer in a pre-defined order. Recipe and temperature control system constantly monitors this process. The mix is then poured into the moulds & immediately after this, the reinforcement frame assembly is inserted, as per the design requirement. The product/cake pre-cures for 2-3 hours after which it is cut by high-precision cutting machines as per required dimensions.

Uses

The reinforced AAC panels can be used for all kinds of modern-day construction with applications as external, internal, partition walls & floor / roof etc. Along with suitability for versatile needs of the building process, AAC Panels also possess advantages over conventional building materials for an array of application areas;

- Multistoried residential construction.
- Small modular residential construction.
- Commercial construction.
- Industrial warehouse and Sheds.
- Shopping malls.
- Hotels and resorts.
- Hospitals

Product Dimension

	Partition Wall	External wall	Floor/ roof
Length	Up to 6 Meter. (Customizable)	Up to 6 Meter. (Customizable)	Up to 6 Meter. (Customizable)
Width	600 mm. fixed	600 mm. fixed	600 mm. fixed
Thick-ness	100mm,125 mm	150mm, 200mm, 250mm	According to the design criterion.
Lintel Beams	750 mm 1000 mm 1200 mm 1500 mm	600 mm	Fixing of Doors and Windows

Basic Raw Material Requirements

- i) Cement: Shall conform to IS 269-1967 or IS 455 -1967 or IS 1489-1967
- ii) Lime: Shall satisfy the requirements for class C lime satisfied in IS 712-1964
- iii) Fly ash: Shall conform to IS 3812 part -1966 except that the loss on ignition shall not be more than 6%

- iv) Water: Shall conform to the requirements given 4.3 of IS 456-1964
- v) Reinforcement:
 - a) Plain mild steel bar conforming to grade I of IS 432 part I – 1966 of IS 226- 1967
 - b) Plain medium tensile steel bars conforming to IS 432 part I -1966.

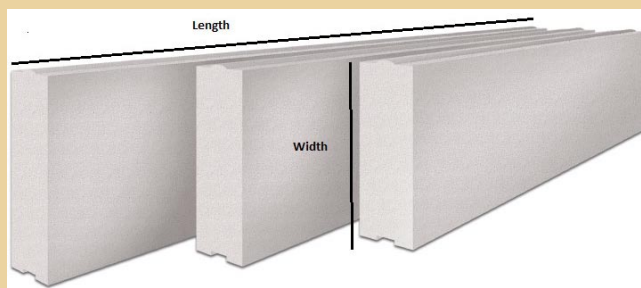
Advantages of AAC

AAC has been in use since nearly 60 years, the first production being in Sweden around 1930. Since then, production has spread to most parts of the world and the material has proved its durability under extreme different climatic and chemical conditions.

AAC is an industrial produced uniform and homogeneous material, which is autoclaved. Consequently its chemical and mineral composition is stabilized to form a solid structure with stability more than products formed from normally cured concrete. However, due to its porosity, AAC can be penetrated by liquids and gases, which, in some cases, may cause partial destruction of the matrix, either by dissolution or pressure caused by re-crystallization.

AAC is mainly attacked by acids, solutions of acid salts, and acid forming gases. The degree of attack depends on the acid concentration, relative humidity and temperature. Moreover, destruction of AAC can be caused by the formation of ice or salt crystals. In cold countries, possible damage caused by freeze/thaw action is very important.

However due to moisture movement in case of Reinforced AAC panel, steel bars which are embedded inside may get corroded but the most popular practice is to dip the whole cage into anti-corrosive paint tank before putting it in AAC cakes. There is standard method as per Indian standard to measure the effectiveness of anticorrosive coatings on reinforcement bar.





Sensitisation of Technograhis at LHP Sites

MoHUA has initiated an Online Enrolment Drive for all stakeholders to register themselves as Technograhis to visit Light House Projects, learn the use of latest innovative technologies, innovate and adapt them as per their local needs and contexts. These new construction technologies are to be adopted and adapted as 'Make in India'. Technograhis will act as Catalysts to Transform the Urban Landscape for New Urban India to full the vision of AatmaNirbhar Bharat. Technograhis are being exposed to the innovative construction technologies through on-site activities to learn different phases of use of innovative technologies in LHPs. BMTPC along with IITs and other resource institutions are providing technical support in implementation of Technograhis programme. There has been very encouraging participation in the Technograhis programme.

In this series, BMTPC organised sensitisation of Technograhis at Rajkot, Gujarat and Lucknow, UP.

Rajkot, Gujarat

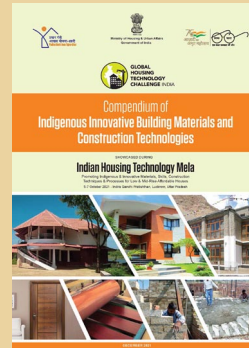


Lucknow, UP



Recent Publications

Compendium of Indigenous Innovative Building Materials and Construction Technologies



Ministry of Housing & Urban Affairs (MoHUA) organised Indian Housing Technology Mela (IHTM) as part of New Urban India Conference cum Expo during 5th-7th October 2021 in Lucknow, UP. During IHTM, 84 innovative technologies /systems /products /materials /machinery were showcased by exhibitors. All these technologies have been published in the form of a Compendium which provides various details such as technology brief, salient features, etc. The compendium will serve as a useful resource for further learning & adoption of new and cost effective technologies in building projects being undertaken by the State Governments. This compendium will be helpful to policy makers, public & private construction agencies and other concerned stakeholders for its adoption in their future housing projects.

(Download: https://bmtpc.org/DataFiles/CMS/file/PDF_Files/Compendium_IHTM_V08_231221_Final_web.pdf)

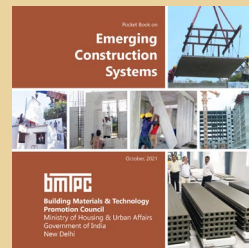
Compendium on Building Technologies



BMTPC jointly with CSIR-CBRI have brought out the Compendium on Building Technologies. The Compendium contains information pertaining to existing 66 alternate materials & construction technologies which are time-tested & proven. Each system has been explained in detail along with technical specifications, tools & equipment, salient features, cost, sustainability & economic aspects, material requirements, limitations, market linkages, structural drawings/detailing and relevant standards & references. Also, the geo-climatic suitability of the technology region has been specified.

(Download: https://www.bmtpc.org/DataFiles/CMS/file/PDF_Files/BMTPC_CBRI_Compendium_Building_Technology_2021S.pdf)

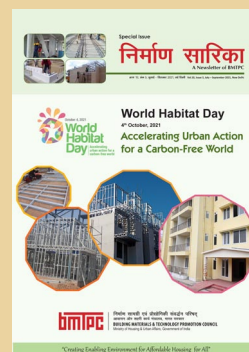
Pocket Book on Emerging Construction Systems – Fourth Edition



BMTPC have brought out the fourth edition of Pocket Book on Emerging Construction Systems with a view to sensitize professionals including common man. The Pocket Book presents general information on 39 technologies in pictorial form.

(Download: https://www.bmtpc.org/DataFiles/CMS/file/PDF_Files/ET_Pocket_Book_Oct2021_Final_S.pdf)

Special Issue of Newsletter "Nirman Sarika"



BMTPC brought out a Special Issue of its Newsletter "Nirman Sarika" on the World Habitat Day 2021 theme "Accelerating Urban Action for a Carbon-free World". The special publication focuses on important issues related to the theme and contains invited articles/papers from experts in the field.

(Download: https://www.bmtpc.org/DataFiles/CMS/file/PDF_Files/BMTPC_NirmanSarika_Oct2021_S.pdf)



Handing over of Demonstration Housing Project (DHP) at Agartala, Tripura

Under Technology Sub-Mission of Pradhan Mantri Awas Yojana (Urban) (PMAY(U)), Ministry of Housing & Urban Affairs has taken an initiative to construct Demonstration Housing Projects (DHPs) through BMTPC. BMTPC propagates use of new / alternate building materials & technologies in housing through identification, evaluation, standardization, certification, capacity building, training and field level application by demonstration construction. BMTPC, in continuation of its efforts, recently constructed Demonstration Housing Project (DHP) for Social Purpose at Mouja-Narsingarh, Tehsil-Gandhigram, Agartala, Tripura (West) under PMAY-U.

The DHP consists of 40 typical units (G + 1) having built up area of 29.90 Sq.mts. and carpet area of 25.84 Sq.mts of a room with pantry, toilet & balcony. The other provisions including Office, Medical Room, Care Taker Room, Dining Room with Kitchen & Activity Rooms. The total built up area of the project is 1833.74 Sq.mts and the technology used is "Structural Stay in Place Formwork System (COFFOR)", one of the shortlisted technologies under GHTC-India.

The DHP also includes on-site Infrastructure work i.e. road and pavement, boundary wall with gate, landscaped court, UG water tank, septic tank, rain water harvesting tank, external electrical work, solar street lights and provision for firefighting etc. The project was undertaken with the aim to popularize emerging building materials and technologies in the area as part of BMTPC's mandate to disseminate sustainable technologies. The project was handed over to the State Government on 30.12.2021.



Completed Demonstration Housing Projects at Agartala, Tripura

For further details, please contact:



Executive Director
BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL
Ministry of Housing & Urban Affairs, Government of India
Core 5 A, 1st Floor, India Habitat Centre, Lodhi Road, New Delhi – 110003
Phone: +91-11-24636705; 24638096; Fax: +91-11-24642849
E-mail: info@bmtpc.org

 @bmtpcdelhi

 bmtpc.mhua

 www.bmtpc.org