

Ferrocement News



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Faculty Devp Program in Indira College of Engineering

Department of Civil Engineering conducted a two days Faculty development programme at the Indira College of Engineering and Management, Parandwadi on 11th and 12th October 2018. The main objective of the FDP was to provide platform to faculties, Industrialist and research scholar to enhance their knowledge in Concrete and Its advancement. The FDP program received an overwhelming response with more than 40 participants from various institutes/colleges approved by AICTE and affiliated to various Universities across Maharashtra.

The programme was inaugurated at Vivekananda hall on 11th October 2018 by hands of Mr. Vijay Ghugre (Ex. VP Panchsheel Group), Dr. Sunil Admuthe (Principal, ICEM Pune.).

Dr. J. D. Bapat, Mr. Chandramohan Hangekar, Dr. Milinada Mahajan, Dr. Hemant Dhonde and Prof. C. S. Patil were the resource persons. Er Chandramohan Hangekar, President of Ferrocement Society explained the use of Ferrocement in the world. The faculty members are interested in Institutional membership of Ferrocement Society. A student chapter will be formed within few days.

Workshop in MIT Academy of Engineering

MIT Academy of Engineering, Alandi and Ferrocement Society, India jointly organized this one day workshop on 28th September 2018. Prof Sumit Patil was the co ordinator of this event. Students are searching for new technologies which will be helpful after graduation. The intention of this workshop was to expose the students to the new technologies which can help them to become successful entrepreneurs. 45 third year and last year students participated with 2 faculty members of their college.

Er Girish Sangle, Hon Secretary of FS explained how rates of ferrocement items are derived and how the estimate is prepared. In the next session a demonstration of the construction was arranged on the open ground near the workshop. Er Girish Sangle showed the various meshes and skeletons. He demonstrated how they are welded and tied very tightly. The cement mortar was made by students in one part cement and three parts of fine sand. Water was then added to the dry mix so that water to cement ratio was 0.35. The mortar was quite thick and could not flow at its own. Small balls could be easily prepared by taking a lump in the hands. He said this is the field test to ensure that the mortar is very thick. Some students turn by turn in batches of four actually performed the press-filling of mortar in the meshes. Two plane trowels were used on both side of mesh to press the mortar in the gaps of the wire meshes, which tightly tied with the skeleton. After this method the hand filling method was also demonstrated. The students realized that the mortar is remaining in its place without any shuttering or form work. This is the main advantage of the Ferrocement that no timber planks and shuttering are necessary. This makes Ferrocement as eco-friendly. Any shape can be given to the skeleton and it makes the structure beautiful

Winner of this year's Pritzker Prize– B V Doshi

M F Hussain and B V Doshi could use ferrocement for the Amdavad ni Gumfa. Organic shapes could be easily constructed with ferrocement.

Realigning contemporary design and architecture to the needs of India has been a major theme in the life's work of B. V. Doshi. He is the winner of this year's Pritzker Prize, often described as the Nobel Prize of architecture. It is invariably awarded to architects of great talent, most of whom are very well known. The Pritzker family fortune that funds the award was derived in large part from the Hyatt hotel chain, and the honorees tend to be the sort of starchitects whose name recognition resembles that of the chain—and whose commissions are about as widespread as its locations. Most require a map of several continents, if not the full world, to encompass their work.

By contrast, all of 91-year-old Doshi's built works are in India. Sure, India is the seventh-largest country by geographic area and the second-most populous, but Doshi's focus on his homeland is still radically narrow by the standards of today's jet-set architects. When, directly after [his Pritzker Prize acceptance lecture](#), he was asked in a Q&A whether he regretted “not having built in other countries,” his reply was a simple “No.”

The intriguing wrinkle about this dedicated regionalist is his connection to two Brahmins of international modernism. Doshi's first employment was at Le Corbusier's atelier in Paris, where he worked on that architect's planned city of Chandigarh, India. Doshi subsequently forged a close relationship with Louis Kahn as well. The influence of Le Corbusier and Kahn is plain in Doshi's work, and he is given to invoking them in conversation; he has likened Le Corbusier to an acrobat and Kahn to a yogi—not a bad balance of muses.

Balkrishna Vithaldas Doshi was born in Pune in 1927, into a family with two generations in furniture and carpentry. In his Pritzker lecture he recalled his youth living in his grandparents' home with 15 to 20 family members: “My memory of the house was not

static; it was an amorphous place. And I thought even houses change, trees transform, and everything is transformed”—a principle that would go on to inform his sense of design. He had an early gift for art and was introduced to architecture by a teacher. In 1947—the year of India's independence from Britain and its partition from Pakistan—Doshi started formally studying architecture in Mumbai.

His career began with the era's most emblematic modern effort. Chandigarh was created to serve as a capital for Punjab, a state in northern India, after Punjab was divided in the partition and its historic capital, Lahore, became part of Pakistan. In 1950, the Nehru government, unhappy with other plans it had been offered, reached out to the famous Swiss-French architect Le Corbusier and invited him to propose a grand modernist scheme for the new city. Construction quickly got underway, and Le Corbusier placed his cousin in India to oversee the work sites; conversely, he hired Doshi to help him in Paris, where they worked together for four years. Photos from the time show Doshi, slender and bespectacled and looking not very different from how he



still does, huddling earnestly with the modernist master.

Chandigarh is rigorously gridded, organized around four-lane roads on which today's motorized traffic proceeds far more effectively than in most Indian cities. Several of Chandigarh's most notable and impressive structures were designed by Le Corbusier himself, and while they employed some methods less than ideal for Indian building circumstances he did make considerable efforts to adapt them to the locale.

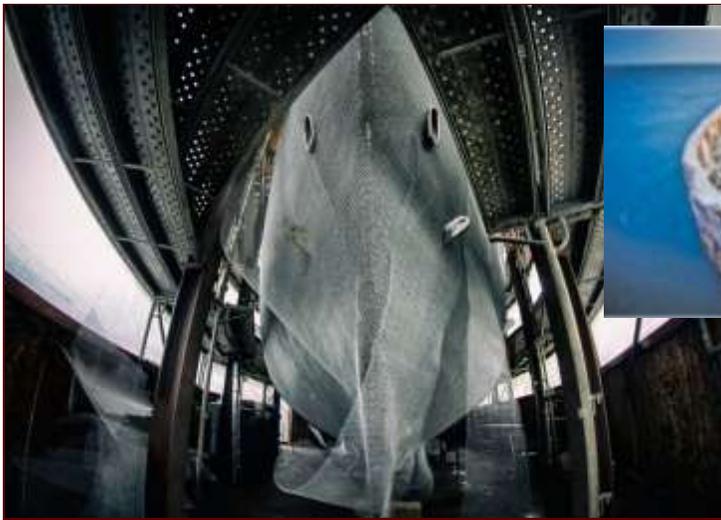


QUORA website becomes popular for questions

https://www.quora.com/topic/Ferrocement/all_questions

See discussions on following questions on the website.

- What is the purpose of using ferrocement for precasting?
- Can we use ferrocement instead of timber in construction?
- What is it like to live on a boat made of ferrocement?
- How would you combine a Ferrocement tank and sand filter?
- What is Ferrocement, and how strong is it?
- How is a ferrocement casting done?
- What is ferrocement?
- What are the practical examples of ferrocement technology?
- When do we decide on a cathodic protection retrofit for the jacket of an offshore platform?
- When do you decide to do a CP retrofit for offshore structures?
- What should my title be if I want to use ferrocement for a shell structure?
- Can we use Ferrocement with sand to strengthen concrete?
- Can we adopt retrofitting by ferrocement method for all type of structure?
- Do ferrocement cisterns crack and leak?



THE RESEARCH VESSEL 'HERACLITUS'

A remarkable ship, a 25 metre ferro-cement Chinese junk rigged vessel, is in the midst of a total rebuild from keel on up.

The Research Vessel *Heraclitus*, owned by the Institute of Ecotechnics (US/UK), has sailed 270,000 nautical miles since being built in Oakland, California in 1975. IE is an US/UK independent research organization created in 1973 by radical scientists, ecologists, artists and performers to harmonise technology with the global biosphere.

The Institute of Ecotechnics was motivated to build the *Heraclitus* since the ocean and its sea-people cultures are crucial elements of both global ecology and humanity's historical development. The aim was to create a cadre of people who live at sea and champion the oceans. The ship is the Institute's ocean biome project.

EXPLORATION

Decades of exploration by *RV Heraclitus* have combined scientific exploration with arts and cultural exchange programs. Some highlights: three round-the-world voyages, 2000 miles up the Amazon for ethnobotanical studies, a circumnavigation of South America and a decade mapping and studying coral reef health in remote areas of southeast Asia and the Indian and South Pacific Oceans. *RV Heraclitus* has also studied whale migration routes, genetic studies to determine interbreeding of whale populations and participated in the first successful release into the wild of previously captive dolphins. The team have trained hundreds of volunteers who take part in real-time science and exploration and has conducted educational and cultural outreach programs in ports around the world.

The original ship design was inspired by ancient ocean-going Chinese junks. The ship uses Chinese sails, fully-battened lugsails, for their ease of shortening (reefing) sail. Hull and decks were built with ferro-cement, chosen for its strength and low cost (for an Institute with plenty of volunteers and little capital) and ability to be

repaired quickly in emergencies. Junks have great stability in turbulent seas and are not built for speed. This can be an advantage as the vessel permits the experience of the natural rhythms of wind and current; its auxiliary engine is only used when required. Its 40 years of sailing, to every sea except the Arctic, has demonstrated the wisdom of the choice.

The *Heraclitus* is dry docked at Roses Shipyard at Carretera del Far, Puerto de Pesca, in Roses, Spain. The excellent facilities, location and available space have permitted the building of a protective wooden "cocoon" to shield the ship and crew of rebuilders from the weather. Since the *RV Heraclitus* was virtually hand crafted, replicating its internal dimensions was a challenge. Factum Arte of Madrid, working with Scan Lab Projects in London, used state of the art scanners to prepare a complete 3D visualization of the hull and ship interiors to assist the rebuild. "*Heraclitus* - the New Generation" will have upgraded engineering, hydrodynamics and structural integrity.

MORTAR LIFE

Ferro-cement is a composite material made up of mortar, small diameter steel rod and wire steel mesh, a very versatile form of reinforced concrete also called thin shell concrete. It combines the flexibility of steel with the compressive strength of concrete. Ferro cement boat building had its peak in the 60s and 70s in New Zealand, Australia, US and UK but was then rapidly overtaken by GFK glass fibre technologies.

Upon launch, the ship will undertake a five-year Ethnosphere Expedition to West Africa, South America and the Caribbean. The experienced expedition team will document sea people of the Atlantic Ocean and at-risk coastal cultures creating an oral history treasure of records of their lives and traditional ecological knowledge. This follows the successful oral history "Lives and Legends of the Mediterranean Sea" the expeditioners ship conducted from 2010-2013.

Facts about Ferrocement and Concrete ships

Perhaps the most bizarre choice of material humans ever made to make a vessel that floats was reinforced concrete. For centuries, ships have been made of wood, which later gave way to tougher materials such as steel. But steel was expensive and not readily available, which became a major issue during the World Wars when there was an acute shortage of the metal.

Long before the war, in 1848, Joseph-Louis Lambot, the inventor of reinforced concrete, tried and successfully fashioned a small boat out of ferrocement, jumpstarting the small and shortlived industry of concrete shipbuilding. Before long, ferrocement barges were regularly plying the canals of Europe, and just as the century was drawing to an end, an Italian engineer made the first concrete ship.

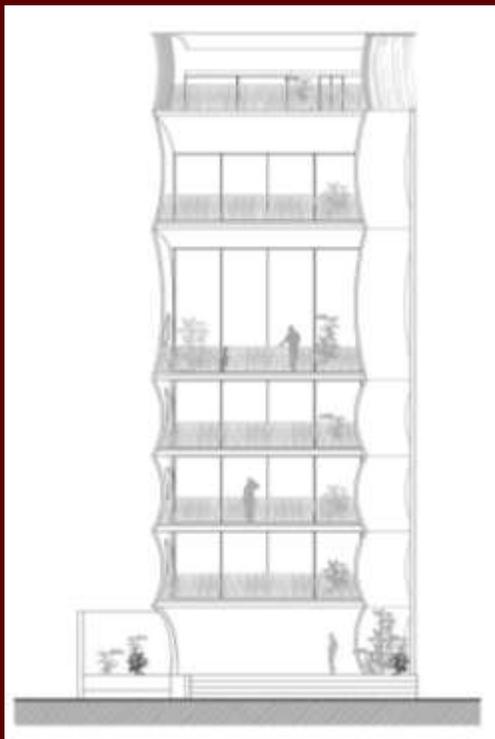
As suspected, concrete was not the most ideal material to build ships with. The basic problem with concrete ships is that they require a very thick hull to be as strong as a steel ship. This made the ship very heavy and consequently burned more fuel to move around. If the hull is breached, they sink quickly owing to their weight. The sailors of WWI hesitated to serve on them. Nevertheless, ferrocement ships continued to be made and their sizes gradually increased. The largest of these was the 425 foot SS Selma, an oil tanker launched in 1919. Today, its wreckage remain partially submerged in Galveston Bay in Texas Gulf Coast and visible from both the Houston Ship Channel and Seawolf Park.

After the US entered the First World War, President Woodrow Wilson approved the construction of 24 concrete vessels as support ships to the Navy. However, none of them could be completed on time and put into service.

314 ARCHITECTURE STUDIO ERECTS LIGHTWEIGHT RESIDENTIAL TOWER IN ATHENS

314 architecture studio's la torre de la nostalgia is a residential building under construction in the heart of glyfada, a coastal suburb on the southern part of athens. the sculptural tower appears strikingly lightweight next to its neighboring typical blocks of flats thanks to its **ferrocement construction**, a composite material consisting of mortar reinforced with a metal mesh.

Drawing from the form of bruno munari's falkland lamp, the suspended column of light designed in 1964 for italian brand danese, 314 architecture studio has created a dynamic structure with curved walls and irregular openings. with a name that combines a retro nostalgia with a futuristic approach, la torre de la nostalgia is shaped with concrete (ferrocement) and white marble, which manipulate its shape and light conditions. featuring a total area of 460 sqm, the a+ energy efficient tower is divided in five apartments, all equipped with enough privacy and interiors infused with amazing sea views.



Architects: 314 architecture studio

Design team: pavlos chatziangelidis, eirini anastasiou, eirini bouliou, giota chala ,eve apo-diakou, Alessia arca, alberto crobe, denitsa dincheva, eleftheria fatsea, andrius keras, dimi-tris koutouvalas, Nikos panagiotis markou, zahari merdzhanof, eirini mpouliou, dimitrios panagiotoy, friny papadopoulou, ourania pikramenou, candice pouzout, lukas ramanauskas, robin rouillier, emilija tekoriute, andriana triantafillopoulou, alessandro tucci, danai tzeni, dafni gerodimou, gabriela marco martinez
Structural design: foteini karagianni
Electrical engineer: stefanos karagiannis
Development: G.Q. green tech constructions

SHUN BURNT BRICKS TO SAVE TOPSOIL

Use of environment-friendly hollow blocks is the answer, experts tell a roundtable.

Turning to alternatives like compressed, hollow, and thermal blocks was crucial in ensuring food security and sustainable development, they said. The conventional brick manufactured by burning coal and ruining invaluable topsoil has a devastating effect on agricultural production and achieving sustainable development, said Mohammad Abu Sadeque, immediate past director of Housing and Building Research Institute (HBRI).

Sadeque said alternative hollow blocks could be made of river-dredged soil and **ferrocement**. The blocks also reduce construction cost by at least one third, he added. Alternative concrete blocks are made using modern technology without burning.

Citing official information, he said the country loses one percent agricultural land annually. As much as 80 percent of the loss is attributed to unplanned rural housing while over 17 percent to brick kilns. The former HBRI director said around five crore people would face food shortage by 2050 when the country's population would reach 24.5 crore.

Sadeque said the country emits 80 million tonnes of carbon dioxide annually, of which 20 million tonnes is emitted by conventional brick kilns, including 7,900 registered ones. The number of unregistered conventional brick kilns is much higher than the registered ones. According to him, 58 percent of air pollution in Dhaka comes from conventional brick kilns.

Housing and Public Works Minister Mosharraf Hossain said operation of conventional brick kilns would be stopped by 2020 to save the country's agriculture. He said the government should offer significant tax incentives to the prospective investors to promote manufacturing of alternative hollow blocks. The minister mentioned that he would take steps to incorporate use of alternative bricks into a related law. Nagar Unnayan Sangbadik Forum President Amitosh Pal chaired the discussion.

WELCOME NEW LIFE MEMBERS

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