

Technology and innovation improve speed of construction



Technology is a significant enabler of construction speed, cost optimisation and quality, says **AMIT PAL**, Vice President-Operations, Mahindra Happinest

With a stringent deadline in force what are the latest technologies you have adopted for fastest completion of affordable housing projects?

As developers of affordable homes in India, we are faced with multiple challenges – the need to ensure low ticket size, plus the requirement for swift execution and consistent quality of construction. The solution lies in innovation and technology so that challenges are mitigated and a quality product is offered to home buyers. It must be pointed out that technology is a significant enabler of construction speed, cost optimisation and quality. This is especially critical in the case of affordable housing wherein costs and completion timelines remain sacrosanct. The innovative use of construction technology, building materials and ready to fit techniques can boost productivity, while enhancing quality, improving speed and reducing waste.

At Happinest, we studied more than 32 different types of technology, of which we shortlisted three based on an evaluation of how conducive they were to our needs. Finally, we adopted a hybrid approach. We have embraced a customised manufacturing approach via the use of Aluminium Formwork along with Cellular Lightweight blocks for construction of the core structure. Hybrid

technology helped us construct the building envelope with light weight blocks, thereby reducing thermal conductivity and heat ingress. We also tied up with IIT-Madras and found trench foundation technology.

What are the advantages of these technologies compare to the previous technologies?

The usage of new-age technologies can definitely reduce construction costs since wastage will decrease and efficiency shall be higher. In addition, it must furthermore be remembered that any delay in project completion leads to cost escalation. Few of our technology aided initiatives towards spurring affordable housing segment includes:

Technologies used in walling (reducing the number of joints, etc): Conventional bricks and concrete blocks are heavy. Red-clay bricks, which are lighter, are not available in the best quality nowadays. So the options are concrete blocks, AAC blocks and a concrete wall. We certainly do not want to make a building envelope with a concrete wall because we need better thermal efficiency. In this scenario, Cellular Lightweight Concrete (CLC) is a lightweight solution with a density between 600-700 kg per cu m, which actually floats into the water. This also results in faster productivity as it becomes easier for labourers

to lay the blocks and offers thermal insulation properties. CLC has specifically been designed and developed by us, for us, and we have filed a patent for the same. It is also produced in our own in-house plant.

Flooring (tiles and patterns used): The use of specially designed formwork panels enables the construction of one typical floor every eight to ten days (versus traditional construction, which takes around 20 days). This technology also facilitates uniformity and consistent quality of construction (minimises leakage), improves durability and reduces maintenance costs. The Burj Khalifa was built with Aluminium Formwork. **Doors and windows used:** We have also used the concept of modularity - ready-to-fix components - in our affordable housing projects. Moving away from the conventional marble and granite used in kitchens, we have made a frame with mild steel structures; it is like box sections. This frame is then brought to the kitchen, we fill it with marble and the kitchen platform is ready. This activity does not take more than three to four hours. This concept is cost effective, durable, quick and easy to install.

We are, however, not limiting ourselves to anything in hybrid technology and consistently trying to find more cost-effective, design-friendly, soil condition-friendly and time-effective technologies, starting from the foundation level. Our endeavour has also been to study a few more unconventional techniques for foundations. The aim is to start putting newer and newer technologies to use that would help us achieve our projects affordably.

How fast a real estate projects get completed using the latest technologies compare to the previous technologies?

As mentioned previously, in Affordable Housing, the horizontal spread is greater than the vertical spread and hence, there is a need to develop a technology for the foundation that is not time consuming,

and is more cost-effective. With the trench foundation technology, the foundation work for a building can be completed in 20 days or less, as compared to conventional methods, which would typically take months. Yet another simple, time-and-cost-effective technology we used in our Happinest Palghar project is the grillage foundation. It is like a closed grill at a low foundation depth that does not need much time to construct. This technology has helped us improve the speed of construction.

With the use of hybrid technology, we are developing 6-7 lakh sq ft in 18 months at one location at competitive costs of development (which includes the construction of buildings with all infrastructure — beginning with the road, boundary wall, STP, UGT, landscape as well as all electrical and plumbing works). For Happinest, Avadi project in Chennai, we completed and handed over 4.35 lakh sq ft of the total 7.35 lakh sq ft in about 18 months. We have a 1 million sq ft project coming up in Kalyan, which we are aiming to complete in 24 months.

Which are your marquee affordable housing projects? Can you please share with us anecdotes of how technology helped in faster completion of these projects?

Mahindra Lifespaces has been present in the affordable housing segment since 2014, through its category brand 'Happinest'. More than 1,900 apartments have already been sold across the Company's ongoing affordable housing projects in Chennai (Happinest - Avadi) and MMR (Happinest - Boisar, Happinest - Palghar). Moreover, nearly 1,200 Happinest homes have already been handed over. Each Happinest project is certified by the Indian Green Building Council (IGBC), and utilises environment-friendly and energy-efficient materials and technologies to enable balanced and healthy living. Happinest, Avadi is Mahindra

Lifespaces' first affordable housing project in India. Spread over 13 acres, the project is home to 530 families. The development consists of 1 and 2 BHK apartments with sizes ranging from 396 sq ft to 677 sq ft. Avadi, is one of the fastest growing suburbs of Chennai and the project is strategically located with close proximity to social infrastructure like public transport, education & healthcare. The project has also been awarded India's first IGBC 'Platinum' certification in affordable housing, for its Phase 1. Innovative technologies and value engineering approaches such as the use of Aluminium formwork and HVFAC (High Volume Fly Ash Concrete) have ensured speedy construction and timely delivery within 20 months of the launch of Happinest, Avadi. Among various other initiatives that accelerate the pace of construction, is the use of Ready-to-fit components like UPVC Windows and FRP encased Cellular Light Weight Concrete door frames.

Spread across 14 acres, Happinest Boisar comprises 800 plus 1 & 2 BHK apartments. The project is being developed in 4 phases with Phase one already handed over. The project is centrally located with easy accessibility. The project is in close proximity to the railway station, bus stands, hospitals, schools and colleges. Happinest Boisar has been pre-certified by the IGBC (Indian Green Building Council) as eco-friendly, thus ensuring low maintenance costs.

Happinest Palghar, the third affordable housing project from the Mahindra Lifespaces' stable is strategically located in Maharashtra's newest district, Happinest Palghar and comprises around 850 apartments spread across 8.35 acres. The project is pre-certified a 'Platinum' under IGBC's Green Affordable Housing Rating System. The project received tremendous response as 400 units were sold out within 45 days of launch. EPCWorld