

India's economic growth rate is the fastest in the world, surpassing China with huge foreign direct investment in manufacturing and infrastructure projects. The thrust being provided to the manufacturing sector is one of the major reasons for the growth rate of the industrial and commercial segments. These two segments have been growing at a rate of 15%-20% in recent times. The size of the industrial and commercial flooring segments in the country is estimated to be around Rs. 4,000 crore and growing. Apart from many industrial townships and industrial corridors, food and beverage industries, logistics, warehousing, and packaging industries have also played vital roles in boosting the industrial flooring market. At the same time airports, metro-rail projects, shopping malls, IT parks, and SEZs, are major infrastructure and commercial projects causing the upward growth of flooring industry in India. Considering the recent developments and new products in flooring, we have dedicated this issue of ReBuild on industrial flooring and particularly on self-levelling flooring for the benefit of our readers.

The areas of industrial floorings and pavements with high performance concrete are abrasion-resistant flooring, ultra-thin white-topping, floor repairs, coloured floorings, and tremix floorings. Considering the types of materials the different types of floorings are decorative epoxy terrazzo, decorative stamped concrete, PU parking deck flooring, Epoxy/PU industrial dust-free flooring, epoxy ESD flooring, steel fiber reinforced concrete (SFRC) flooring, and polymer fortified cementitious self-levelling underlay. New product developments are always in the offing from the top construction chemical companies. This has led to latest innovations like toppings for a wide variety of applications in pharma-clean rooms, ESD (Electrostatic Discharge) floorings, UV resistant coatings, liquid plastics for use in freezing units. Latest polymer technologies help make better underlayment and screeds offering higher chemical resistance and better toughness. Further, the anti-slip and chemical resistance profile suits the individual application. Each system within the range includes a natural thermosetting anti-microbial agent. In all these floorings, the basic materials being used is epoxy, EPU (Epoxy Polyurethane), MCU (moisture cure urethane), PUD (Polyurethane dispersion), acrylic, polysulphide, and polyurea, offering a wide range of flooring solutions. One of the common features in all these flooring is the self-levelling ability of the construction material. It provides a seamless, joint-less, aesthetic, chemical-resistant, hygienic, and dust-free environment.

Self-levelling epoxy flooring has, in fact, become synonymous with high performance and aesthetic flooring in industrial and commercial projects nowadays. Cementitious self-levelling flooring is being used in commercial remodeling/renovation projects to reduce the cost. Epoxy and PU are most commonly used in self-levelling flooring in the industry.

Though self-levelling flooring has been used often in the recent past, the durability is not as satisfactory as claimed. Major defects that occur are de-bonding, bubbling, scratches, uneven surfaces, and so on. Many of the issues related to selection, execution and the aftercare of such self-levelling floorings are nested upon the contractor/manufacturer because of the ignorance of the properties of these materials. All these defects can be avoided if one follows the pre- and post-installation guide-lines. It is also important to give more attention to the surface preparation and follow the step-by-step procedure of mixing, laying, and application of self-levelling flooring during the installation. One of the key factors is the surface moisture content that needs to be checked before installation of the flooring. The detailed guidelines for execution of epoxy/PU flooring have been described in 3rd article of this issue of ReBuild.

Though the acceptance of self-levelling flooring in industrial and commercial segments is very high, in the residential and real-estate markets, the usage of self-levelling flooring is very rare. This is because of the initial cost of the material and absence of any specification for floors and flooring materials. The most common flooring in residential buildings is tile and marble. There are many disadvantages in tile and marble flooring which need to be understood. Tiles and marble flooring needs to be installed by an expert tile layer to ensure thin, even, and neat joints between the tiles. In wet areas, if the joints are opened they become source of leakages. The tile grout must be resealed after certain years or it will begin to look dirty. Worse still, the sealant will create a hazy finish on the tiles if allowed to dry. Vitrified tiles are slippery when wet, which can cause fatal accidents. Vitrified tiles or marbles are not environment friendly. The process of making them causes a significant expenditure of energy and increases carbon dioxide emission. Quarrying and transportation of marble is also not environment friendly. So the time has come to switch over from traditional practices of tile and marble flooring to the more eco-friendly and durable self-levelling flooring.

During the selection process of a flooring material one has to consider the required properties of the flooring based on the area of application, proper material application, and long-term performance as well as the lowest life-cycle cost. Another attractive feature of self-levelling flooring is 3D flooring, which allows the application of decorative images on the floor that can be covered with a glassy polymer layer. The result is a realistic three-dimensional image, adding to the style factor and creating a fantastic decorative effect.

This issue of ReBuild describes all these subjects, along with some interesting case studies on self-levelling epoxy flooring.