EDITORIAL

Social interest housing (SIH) must be efficient and sustainable, and must respond to technical, environmental, and social needs. For this, the critical factors of the value chain must be identified during the design process. These factors range from their conceptualization in the architectural and structural design, the production of the material, and the manufacture and transportation of prefabricated products, to the commercialization and construction of the home.

In search of mitigating the quantitative and qualitative deficit of housing in Colombia, the development of residential projects has been promoted during the last five years. These projects have been built using traditional construction systems, such as structural masonry and confined masonry (DANE, 2017). For example, 67% of the almost 68 million square meters of housing, started in Colombia between the second quarter of 2012 and the first quarter of 2017, was built with traditional construction systems. In the case of SIH homes, which for the same period meant 30% of the total area started in homes (just over 20 million square meters), 55.8% was made with these traditional construction systems (DANE, 2017). These figures demonstrate how housing in Colombia is mostly built with construction systems with a low degree of industrialization and technological development. In addition to high labor costs and lower construction yields, this causes higher housing prices and less affordability.

On the other hand, although a little more than 43% of the SIH were built with industrialized construction systems, it must be considered that this type of system in the Colombian construction environment refers to technified construction systems on-site. These systems are composed of modular metal forms, easy to transport, which within a scale of technological development of construction is three levels below the highest level of industrialization (Paye Anco, Peña Castillo, & Franco Sanchez, 2014). Therefore, the percentage of homes that were built with low-tech construction techniques associated with total homes and total SIH homes, could be much higher. However, another problem is the purely economic approach to architectural and structural designs, which affects the efficiency of social housing built in Colombia. These designs do not contemplate the environment and do not meet the user's needs in terms of quality of housing, comfort, adaptability, and future growth (Jaramillo, 2002).

The sum of these factors leads to facing a technological development challenge, which in turn can become a field of work for innovation: the development of advanced and high-performance materials for housing construction. When building, it is important to consider several aspects that guarantee the efficiency of the final product. Aspects such as the reduction of weight in the structural and precast units, the decrease in the size of the elements, the greater capacity, the better performance in aggressive environments, guarantee a more sustainable and environmentally friendly development compared to traditional concrete.

Given these approaches, it is necessary to look for technological solution alternatives with the participation of the research groups present in the faculties of engineering and architecture. Furthermore, these alternatives must have an impact on the housing problem in Colombia, since the aim is to improve the key factors that affect the value chain of social housing, rather than just achieving a technical solution. This would be achieved through the use of a comprehensive approach that forms a sphere of knowledge around the construction system and made up of architectural and structural designers, the precast industry, the builders, and the end users.

César Augusto García-Ubaque
Director