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PREFABRICACIÓN: ¿QUÉ NECESITA AÚN LA CONSTRUCCIÓN PARA GANHAR ESCALA, VELOCIDAD Y CALIDAD?

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EDITORIAL

WHAT CONSTRUCTION STILL NEEDS TO GAIN SCALE, SPEED, AND QUALITY?

***“Construction cannot continue building at the pace of the last century.
Prefabrication: from a promising alternative to a strategic necessity.
Building better, faster, and with less waste.”***

For a long time, prefabrication was seen as a peripheral, almost experimental solution, associated with niche markets or emergency responses. Today, that view no longer reflects reality. In a context of housing shortages, cost pressures, lack of skilled labour, and increasingly stringent environmental requirements, industrialised construction is no longer a technical curiosity. It has become a strategic necessity.

The question, therefore, is no longer whether prefabrication has a place in the future of construction. The question is why it still occupies such a limited space in a sector that urgently needs to gain productivity, predictability, and responsiveness.

Traditional construction continues to rely, to a large extent, on lengthy, fragmented processes that are highly exposed to the variability of the building site. Between delays, waste, incompatibilities between disciplines, execution failures, and costs that are difficult to control, the conventional model reveals limitations that the market can no longer accommodate with the same tolerance as in the past. And this is precisely where prefabrication becomes relevant.

By transferring a significant part of production to an industrial environment, it becomes possible to build with greater precision, greater repeatability, and better quality control. Instead of depending exclusively on on-site improvisation, construction can benefit from factory-produced components, with tighter tolerances, less exposure to weather conditions, and better coordination between design, production, and assembly. The gain is not only in speed. It is also reliable.

Technologies such as Light Steel Framing (LSF), engineered timber systems such as CLT, reinforced concrete panels and modules, and even 3D printing show that the industrialisation of construction is no longer limited to a single technical solution (Figure 1). On the contrary, the sector now has a plurality of systems capable of responding to different scales, programmes, and construction contexts. When combined with digital tools such as BIM, these systems become even more effective because they make it possible to anticipate problems, improve coordination between disciplines, and reduce errors before construction begins.

But prefabrication should not be defended only for reasons of speed. That would be too narrow an argument for a much broader issue. Its true potential lies in the possibility of transforming the productive logic of construction. And that means thinking of the building not merely as something constructed on site, but as something designed, coordinated, manufactured, transported, and assembled in an integrated way.

This change in logic brings obvious benefits. It reduces waste. It improves resource management. It allows greater predictability of costs and deadlines. It facilitates repetition with quality. And it opens the way to more scalable production models, particularly important when discussing affordable housing in urban contexts.

Even so, it would be naïve to present industrialised construction as an automatic solution to all the sector's problems. Speed of assembly, by itself, does not guarantee lasting quality. Factory production may raise the level of control, but it does not remove the need for a serious assessment of in-use performance, maintenance throughout the life cycle, and the capacity of systems to adapt to the real demands of buildings and their users.

It is precisely at this point that the debate must mature. Prefabrication cannot be promoted merely as a synonym for speed or cost reduction. It must also be considered in terms of durability, flexibility, maintenance, and genuine sustainability. This includes looking at embodied carbon, the origin of materials, and the potential for disassembly, reuse, and recycling of components, in line with the most recent European guidelines for the construction sector.

There is also a less visible, but equally decisive challenge: the cultural one. The industrialisation of construction requires a change of mindset throughout the value chain. It requires new design methods, greater integration among stakeholders, regulatory adaptation, investment in production capacity, and specialised technical training. It also requires the traditional sector to stop seeing innovation as a threat and start embracing it as a condition for competitiveness.

The problem, therefore, is not the absence of technology. The systems exist. The technical knowledge exists. The digital tools exist. What is often missing is the creation of the conditions that allow innovation to stop being the exception and become standard practice.

At a time when access to housing and the need to build more and better are so widely discussed, continuing to depend on slow and weakly industrialised processes seems increasingly indefensible. Prefabrication will not eliminate all the sector's constraints, but it offers a credible response to several of its structural bottlenecks.

Perhaps, then, the most important question is no longer whether industrialised construction represents the future. Perhaps the right question is this: how much longer can the sector postpone a change that should already have begun?

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Figure 1 – Different prefabricated construction systems: (a) modular concrete construction; (b) LSF construction; (c) CLT panel construction