

Published 15-03-2012

## **Brief summary of the “Architecture and Industry: Industrialised Construction” Seminar**

Madrid. On 24 February 2012, almost 160 architects, industrialists and others with an interest in the relationship between architecture and industry filled the María Zambrano Room at Madrid’s Círculo de Bellas Artes for the “Architecture and Industry: Industrialised Construction” seminar.

In line with the guiding philosophy behind this line of the Foundation’s activity—to analyse the relationship between industry and architecture and the benefits thereof—this year’s event, which was directed by Ignacio Paricio and coordinated by Cristina Pardal, focussed on examining the effects of this relationship on Industrialised Construction. As Ignacio Paricio pointed out during his introduction to the seminar “the most creative and interesting moment of the construction process is when architects and industry come together”. However, innovative contributions are often negatively affected by the limited amount of institutional support they receive. “What is more”, said the seminar director “such collaboration is penalised and marginalised by legislation and the sector itself”.

Another aspect that Paricio highlighted was the role of architects in their exchanges with industry, “a role” he said, “that should go beyond merely formal suggestions”.

As well as introducing the various speakers throughout the day, Cristina Pardal talked about two of the building systems presented during the seminar. First of all, Compact Access Flooring (STC, *Suelo Técnico Compacto*) by Sistemas TDM, a company engaged in developing technical interiors. The result of this system is a two-dimensional meshed grid of encased ducts along which installation cables can be run, with inspection points at intersections. Given the parallels between this system and the Biopix façade, this presentation also acted as an introduction to the talk by César Ruiz-Larrea.

Cristina went on to introduce Teccon Evolution’s Light Steel Frame-based construction system, a system based on flat prefabricated components formed via the assembly of folded galvanised steel plate profiles. Teccon assembles products supplied by subcontractors. The system is an open one that permits the use of conventional construction methods. Another of the advantages of this method, which Ignacio Paricio refers to as a “pragmatic system” is that panels can be delivered to the construction site pre-assembled as larger-sized walls.

The first guest to speak was the architect César Ruiz-Larrea, who talked about the lack of contact between teaching and industry, and the need to find a sensible way of combining beauty and efficacy.

He also talked about the negative influence of the efforts by construction companies to optimise profit, something clearly prejudicial to the development of R&D.

Ruiz-Larrea expressed a great deal of interest in the commitment to sustainability and talked of the paradigm shift currently facing the profession: Architecture has moved from the sphere of physics (gravity) to that of chemistry (envelopes); architecture as something that can interact with its medium. “All of

the energy that is invested in architecture represents added value for the environment” he concluded.

In his talk, the architect cited the example of the Headquarters of the Andalusia Energy Agency in Seville. The concept behind the project was technological research: “In this case, we worked on a skin, on the envelope and on an interior space. The difficult part was resolving the envelope. Once we had done so we could deal with the internal parts in order to then resolve any issues that came up. As though the building were a human body”. The difficulty lay in connecting the envelope with the exterior (as this varies significantly in each area and in each season of the year), which is why it was necessary to optimise each façade. They therefore joined forces with TDM in order to make a “pixel grid” that concentrated solar and thermal panels, among others.

Miguel Nevado, architect of the company KLH, explained how wood could be used as a flat construction element. “The procedure is simple”, began Nevado, “it is important to emphasise that almost anybody can learn to assemble these structures”. Yet KLH’s technology has been used to build eight-storey blocks of flats and they are currently considering constructing a twenty-storey building. According to the architect, however “at this stage, the obstacles are not technological but regulatory”.

Other aspects that Nevado talked about in relation to this technology were the enormous and immediate temperature control capabilities of buildings and the possibilities that this material offers in fields such as renovation (by means of extensions using light materials such as wood). “Thanks to this material, the decision as to whether or not to build using wood is no longer a question of cost but rather construction” he concluded.

The architect Lluís Grau presented the Building System with Concrete Panels (BSCP). This system, based on reinforced concrete panels, can be used for the industrialised construction of any kind of building. It involves the mass manufacturing—on site or in factory—of reinforced concrete prefabricated elements, load-bearing enclosure walls, internal dividing walls, slabs and roofs for buildings, and permits the incorporation of any installations and thermal or acoustic insulation that may be required by the design.

Ignacio Paricio took the floor again to explain the possibilities offered by concrete and steel as flat construction elements. He focussed specifically on explaining the qualities of fibre-reinforced concrete, a material that can be used for very slender elements. “This enables us to break up the building and construct it anywhere” explained Paricio “just like an aeroplane”. The cost of this system is not an obstacle to construction; on the contrary, it offers an enormous degree of versatility; in other words, it can be shaped exactly as the architect desires. This system “offers the advantages of Steel Frame systems combined with the strength of concrete” he concluded.

The morning session, which was dedicated entirely to flat elements, ended with a joint presentation by Montse Pujol, from Prefabricados Pujol, and the architect Felipe Pich-Aguilera - a relationship that Ignacio Paricio defined as “exemplary and extremely rich”. Montse Pujol referred to industrialisation as a group task “in which the architect has to put his creativity at the service of the team”. Before handing over to Pich-Aguilera, she asked the audience a question “Have you ever seen anybody go into a car dealership with a set of plans under their arm, and request that the dealer make a specific model that is also cheaper than the cars in the factory? That is what is often asked of industry”.

Felipe Pich-Aguilera, on the other hand, emphasised the fact that the relationship between industry and the architect is essentially a relationship between people, between equals. "Industry does not work for the architect, nor is the architect there to serve industry. They work together to improve society", he said.

The afternoon session began with a presentation by Miguel Morte, from Compact Habit, who presented a construction system based on the fragmentation of buildings into finished spaces. According to Morte, experience has shown them that a large amount of time and effort is spent on joints. For this reason Compact Habit seeks to ensure that the elements that leave the factory are as near to finished possible, which is why they always seek to produce large elements with as few joints as possible, in order to ensure the shortest possible assembly time and maximum strength. This system obviously has both advantages and disadvantages. On the one hand, there are restrictions as to where parts can be transported (as this depends on transportation capacity). On the other hand, once parts reach their destination, the house is practically complete.

The next step, according to Miguel Morte, is to make integrated elements as standardised solutions. This will make it possible to make large series of parts, helping to optimise prices.

The architect Juan Roig presented the case of Modultec. This company's "radical idea", as Ignacio Paricio called it "was to break up the building in order to make transportation and assembly as simple as possible". In most cases, it involves a module stacking system, which does not necessarily mean repetition of modules, but rather segmentation of the building.

Modulab, which was presented by Pablo and Francisco Saiz, is a technical architecture studio that acts as a nexus between industry and the architect or client. Their interest in the industrialisation of construction led them to search for an optimal universal system. They were looking for an industry with experience in prefabricated modular constructions with which to design an industrialised housing prototype. In collaboration with IDM (Engineering and Design of Modular Constructions) they have created an industrialised construction system, based on conventional wood or steel-based techniques, which uses prefabricated three-dimensional supporting units that are finished in the factory, transported on lorries, and assembled *in situ*; the various units can be configured in a range of different ways through addition, superposition and juxtaposition.

The last presentations of the day were given by Verónica Meléndez (from the Juan Herreros studio) and the architect Ramón Sanabria, who presented the case of the Garoza House (*La Casa Garoza*) and the University of Barcelona project, respectively. Both projects were completed using industrialised constructions. The first, the Garoza House, was created as a specific solution to the needs of a client that needed a project to be completed much sooner than anticipated. The second involved the use of containers that permitted the construction of parts using an innovative, entirely industrialised procedure based on the combination of a series of steel modules; a method that offered all of the advantages inherent in this kind of system: speed of assembly, dry assembly, possibility of future recycling of modules, flexibility and reduced costs.