

Pre-fabricating the Future

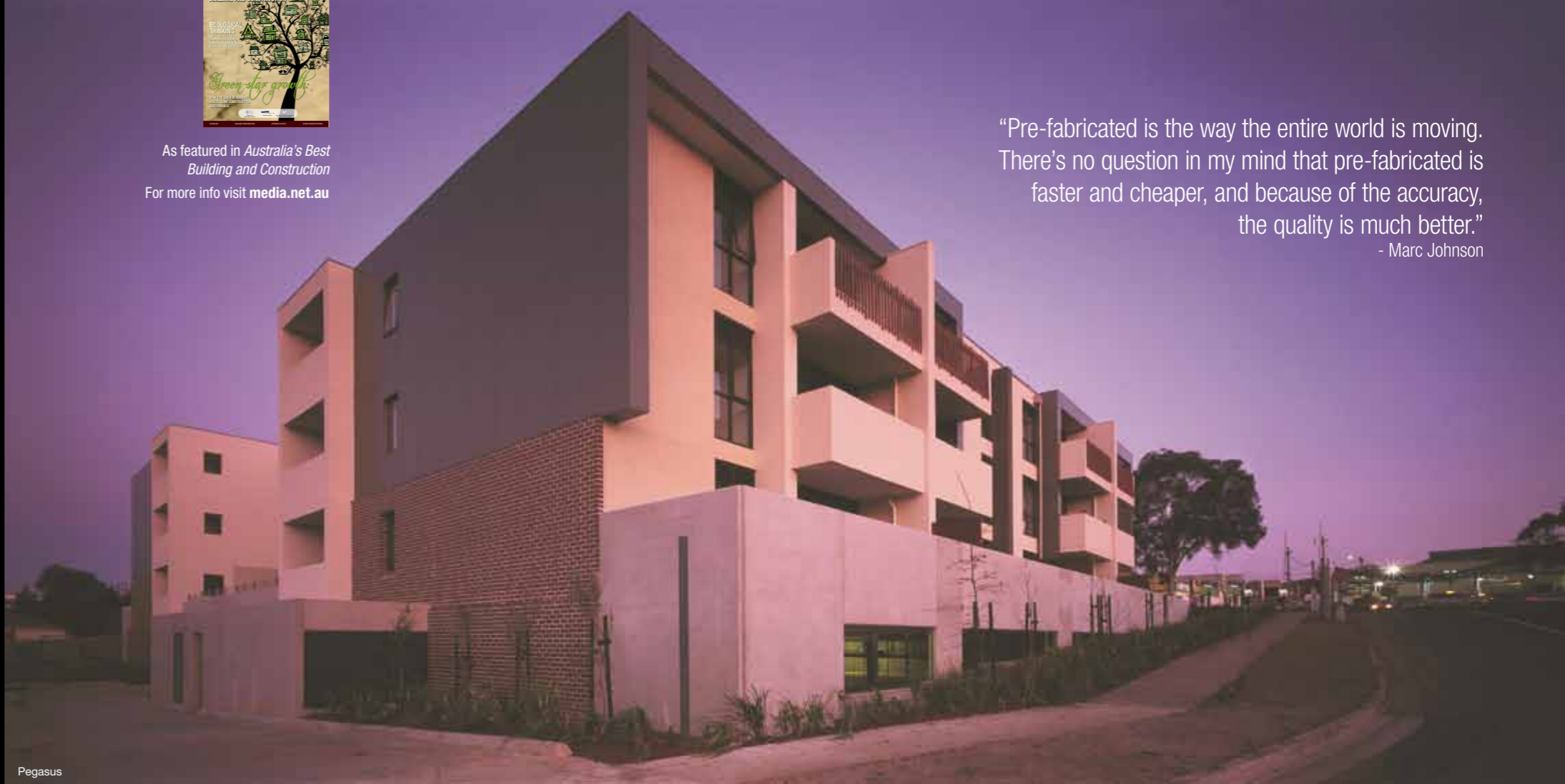
BY SARAH LINNEY

THE POPULARITY OF PRE-FABRICATED CONSTRUCTION IS RAPIDLY GROWING AROUND THE WORLD; HOWEVER, MANY AUSTRALIAN COMPANIES ARE RELUCTANT TO ADOPT THE TECHNIQUE.



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Pegasus



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- Marc Johnson

'Pre-fab' is a method where sections of a building are manufactured and assembled in a factory, then transported to the construction site to be included in the structure.

In China, the Broad Group recently erected a 30-storey building in just 15 days using pre-fabricated construction methods. Pre-fab is also used extensively throughout Europe and the United States. In Australia this method is primarily used for residential homes and has yet to be universally recognised as a viable form of construction for a variety of other structures.

One Australian company, Unitised Building, is leading the pre-fab charge. Directors Marc Johnson and Nonda Katsalidis started the company in 2008 and have cornered the pre-fab market with their ability to tackle larger projects like hotels and apartment buildings. Unitised Building was recognised by *Business Review Weekly* in 2011 as the winner of the 'Fastest Growing Private Business (Turnover less than \$100 million)' award.

Marc predicts that pre-fab will be the future of the Australian construction industry.

"Pre-fabricated is the way the entire world is moving. There's no question in my mind that pre-fabricated is faster and cheaper, and because of the accuracy, the quality is much better. So it is the way the rest of the world is building and increasingly that's the way buildings will be built."

Unitised Building draws on unique technology that allows the construction of custom-sized components for a range of building sizes. Marc says the UB System sets them apart from their competitors.

"Unitised Building is the world leader in terms of the advanced nature of the technology. We can do things that most other pre-fabricated construction companies in the world can't do. Because of the technology, we don't have a height limit.

"Builders can use a pre-fabricated structural system to efficiently build large

residential and hotel developments. Its best use is for multi-storey towers – anything from five to 60 storeys. The core of the business is 20- to 30-storey buildings, that's what we excel at, but we have one in planning that's up to 70 storeys. It's a structural technology that allows you to have a high degree of accuracy. You can build sections in a factory, bring them to the site and generally put the building together in half the time."

An example of this capability is The Nicholson project in East Coburg, Victoria, a 199-unit apartment block that Unitised Building completed in nine months.

The UB System was also utilised for the eight-storey Little Hero retail and residential development in the heart of Melbourne's CBD, erected in four weeks.

The UB system accurately measures the columns and components of a building to plus or minus one millimetre. Marc says this accuracy is what allows them to construct tall buildings.

"Most pre-fabricated methods use container technology – where they basically take containers and stack them together in some configuration. Two problems with that: one is that the buildings are pretty boring, and two, they have to fit containers to containers which are very small and not very great living spaces.



Little Hero

"So they're generally used for lower costings like student housing or very cheap hotels. Another thing is that our system is completely flexible, so we can take an architect's design for a building and then build the structure exactly as it was designed."

Most Australian pre-fabricated construction companies focus on residential buildings; however, due to Unitised Building's technology, they now have a much wider scope.

"The market for housing is very competitive so we think it's more expensive to do pre-fabricated for housing and town houses. ►

However, in apartments, especially taller apartment buildings, it's significantly cheaper to do pre-fab. We also focus on hotels as they are similar to residences. They're even easier than apartments because hotels have a lot of duplication. A lot of the rooms are the same," says Marc.

Marc is now pushing the company in a new direction for the future.

"We're starting to get into mining accommodation, not the very basic sort but what's called 'fi-fo' or 'fly-in and fly-out' housing accommodation. Fi-fo is a slightly higher standard; they're more likely to be three- to five-storey hotels around mining camps, villages and cities near the mines in Queensland and other places where miners are now working. So three, five-storey buildings would be something that we could build in a factory and ship to a remote mine-site very cost-effectively."

Unitised Building is also exploring another potential market for pre-fab in Australia: hospitals. As Marc explains: "We're working with a couple of groups in Australia to design pre-fabricated smaller hospitals for remote areas."

Surprisingly, Marc says there is not a lot of room for growth in the commercial office building sector.

"Generally, office buildings need wide open spaces. They have large spans and open office plans, and that's generally not very well-suited to pre-fabricated. Whatever system you use, pre-fab generally has more structure, more columns or walls, so this would be unsuitable for an open office environment.

"If you're talking about strata title offices, that's different. Where there are individual compartments, say, where a floor of the office building would be divided into 20 parts, each separately owned by different companies – it's almost like an apartment, but it's actually an office. It would be suitable for that but not for traditional commercial construction."

According to Marc, Australia will eventually accept pre-fabricated construction.

"Theoretically, it should do so because of the wage-cost structure we have in this country. It should be very appealing. We have lots of construction companies and competition in the building industry. I think people here will see what's happening around the world with pre-fabricated, things like the Broad Group is doing, and start to investigate it more. But it always takes time to adjust to something new."

Marc says there are several factors preventing Australia from completely embracing pre-fab, and gives an example.

"One of the things would be the banking system we have. Banks here are very conservative compared to lending institutions internationally. It's a good thing for our country, in one way, that we have strong, stable banks, but it does make it more difficult to adopt new technologies. If you went to them with a proposal for a large building and said you wanted to do it pre-fabricated, a bank would probably play it a bit harder with you than if you were building it traditionally."

Another factor is that there are some drawbacks to pre-fabricated construction, and Marc concedes that pre-fab turns construction into manufacturing.



The Nicholson

"Manufacturing has to be absolutely precise and well planned in advance, which means that if you're building using pre-fabricated manufacturing, that structure has to be fully designed and documented much earlier in the process than a traditional building. Builders, architects, engineers and everybody would have to do a lot of work up-front to make sure the building is ready to go. Once you start the manufacturing process, then it just goes straight through. And because it's so fast, that work has to be crunched into a very small amount of time."

On the other hand, Marc argues that this may not be such a drawback.

"I don't know whether that's a real disadvantage, because the advantages – the speed, accuracy and quality – can outweigh it. But it does mean that if you'd normally build an apartment block in 18 months, you have a lot of time to procure items, and you have a lot more lead time on many other things. In manufacturing, your lead times are very short and narrow, so you have to do a lot more work up-front to get it right."

Marc says these changes in operation can be difficult to adopt.

"From an architect's point of view, you don't have the ability to change the building as you go along. If you have 18 months to build, typically architects only do part of the work up-front, and then they continue to design the building and change things as they go along.

"In a manufacturing environment, that's not possible. You can't stop the production line and then change the kitchen, for example; you must have it all planned in advance."

However, despite these downsides, Marc says more and more companies are recognising the significance of pre-fabricated construction.

"Historically, pre-fab has been associated with lower quality. That's changing because nowadays pre-fab is actually a better-quality construction than traditional. The acoustics are better, and the quality of the finishes can

be better because of the accuracies you're incorporating in the factory. There are no other real disadvantages to it other than more work needs to be put in up-front."

Pre-fabricated construction is on the rise both nationally and globally, and Unitised Building is ready to capitalise on that growth.

"There's a lot happening in mining and the technology that we have in Australia with UB is far superior to what's coming in from overseas. That's going to be a big market. Another will be residences in 10- to 20-storey apartment buildings," says Marc.

"It's important that we do adopt pre-fab. It's already happening around the world, and if we don't adopt it, it's going to be shipped in nonetheless. It's already being done! If you look at the big mining camps that the big guys are putting up right now, those are all coming in pre-fabricated from overseas.

"And the Australian National University's student accommodation in Canberra was pre-fabricated in China.

"What we don't want, as a country, is to end up with all these imported buildings from Thailand, China and other places.

"It would be better for us to learn how to do it so we keep the knowledge and skill base here. That would be my hope, that we adopt it locally, because it will happen anyway." 🚫

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