DRIVING PRECAST INNOVATION IN RESIDENTIAL CONSTRUCTION

Traditionally, residential homes aren't a typical application for precast, other than in medium and high density builds of course. The other exceptions are architecturally designed high-end builds and homes in aggressive or fire-prone environments, where precast homes are revered for their durability.

One National Precast member, Rezicast, is turning this thinking on its head. While the company is not itself a precast manufacturer, it has developed a patented home-building system and is working with fellow National Precast Master Precaster members – as quality precasters already established in the industry - to offer builders precast supply options.

National Precast CEO Sarah Bachmann says that while a superior construction product and method in many ways, getting the best value from precast has typically required repetition to achieve the economies of scale that make it a cost-effective solution.

"There's no doubt that precast construction is superior," she says. So much so that precast was her go-to when constructing her own home in the fire-susceptible Adelaide Hills.

"It's fast to construct, thereby saving site time and allowing earlier occupancy. It's safer as it removes on-site works to a controlled factory environment. It reduces waste, with no site waste and factory waste recycled, and being factory manufactured, it is better quality than site-poured concrete."

"Precast structures are durable against fire, floods and rodents and they are long-lasting. And importantly, precast can deliver incredibly thermally efficient buildings," she adds. "That in itself can almost eliminate the need for heating and cooling, thereby minimizing the building's impact on the environment."

Amid the ACT and NSW's Black Summer bushfires in 2020, which saw 510 properties destroyed and tragically four deaths and hundreds of injuries, builder and Rezicast™ Systems Owner/Director Mick Johnson, was keen to participate in the rebuild. Having struggled with shortages of bricklayers, and even bricks on occasion, he knew that speed of construction would be an important component of any alternative solution to traditional building methods.

"After seeing what I saw on that New Year's Eve I knew it would be a massive effort to rebuild and I knew that the Rezicast™ System could make a difference and we could help immediately," Johnson says.

He has devised a way for traditional commercial precast construction methods to be adapted to suit the residential market. It's a building system that uses engineered precast concrete panels for rapid construction, durability, good energy performance and bushfire resistance - a quality that would be particularly relevant for rebuilding these devastated communities.

Fast forward three years and there is another crisis with a housing shortage

across all of Australia. Building durable homes faster will surely play a role in assisting to fill the gap that traditional methods are struggling to do.

The Rezicast™ Home Building System has a BAL29 rating as standard delivery but Johnson says with minimal additional costs, a BAL40 or higher, rating is easily achieved.

NO STRANGER TO PRECAST HOMES

According to Johnson, he wasn't a stranger to precast construction.

"I built my first precast home in Bungendore NSW in 2012, which we completed in just eight weeks," he says.

"Since that first home, we've tweaked the process to speed the build time and to make using the system more affordable, meaning it is comparable to other traditional building methods."

"We've built approximately 80 homes using the system across ACT and NSW over the last eight to nine years," Johnson adds.

PROVING THE SYSTEM'S VERSATILITY

The homes have been an eclectic mix of custom builds, as Johnson took up the challenge to prove the versatility of the system. They have ranged from granny flats, accommodation pods, single and multi-level family homes, and high-end duplexes, selling for $1.8m for one side only in 2022 in the Snowy Mountains region of NSW.

The most common layout is using precast panels on the outside, finished in any number of ways. Alternatively, panels can be used internally, with lightweight cladding on the outside. This 'reverse veneer' method bolsters natural energy efficiency, maximising the designs' thermal mass benefits. It can also provide strength and security to cater for Speciality Disability Accommodation (SDA) for participants with high physical disability needs (another area of enquiry that is gaining momentum).

A SOLUTION FOR SOCIAL HOUSING?

"While we have not yet built a home, village or complex for this demographic, this is where most of our enquiry is coming from. One of the established builders we are working with has just submitted a State Government Housing Authority tender which integrates the system into their business. Social Housing suppliers across Australia are very keen to improve delivery times which has driven the enquiry from this sector."

BENEFITS FOR ALL

Architect Hugh Gordon says "...the system is incredibly flexible and caters for most designs with any number of finishes available to achieve affordability targets or, scale up to meet the expectations of high-end customers as required."

There are benefits for both the builder and the client too. Lock-up can be achieved in as little as 14 days, assisting the builder to be cash flow positive throughout the project and benefiting the end user by getting them into the home sooner. The livability of the home is also better with lower energy costs, less maintenance and superior acoustics.

Passionate about what he has developed to assist the construction industry, Johnson finishes by saying "At Rezicast we have a genuine desire to make a difference and, we firmly believe our system has a role to play in assisting builders to meet the demand for much-needed homes across Australia."

SMILES ALL ROUND FOR WOOLGOOLGA PRECASTER

National Precast Precaster member Fine-Form Precast has been given a huge pat on the back for its precast work with client Lipman Constructions, winning an award in the *2023 Northern Regions NSW Master Builders Excellence in Building Awards*.

Supplying a range of precast elements across a variety of projects in New South Wales, the precaster faced tough competition against several other specialist contractors in the awards, taking home the *Subcontractor of the Year Award*. Celebrating building excellence in the Northern Regions, the Awards showcase local craftsmanship, expertise and excellence, whilst contributing to a vibrant regional building industry. They cover the Tweed, North Coast, Mid North Coast and New England Regions.

According to Fine-Form's owner Jukka Ylinen and manager Steve Russo, the precaster's strong reputation in the Coffs Harbour area for over 25 years ensures that clients like Lipman have a positive precast experience and achieve maximum design efficiency with their precast projects.

"Because we install most of the precast we supply, we have a thorough understanding of the entire process from design through to installation. Our experience with precast extends way beyond simply manufacturing and we do a lot of early stage design work to make sure the benefits of using precast are maximized," Russo comments.

Two of the noteworthy Lipman projects the precaster supplied include Mission Australia in Coffs Harbour and the Mid-North Coast High Performance Centre in South West Rocks. Darren Ferguson of Lipman worked closely with Steve Russo of Fine Form to change the design of the Mission Australia building from brickwork to precast. Darren has always been a progressive builder that advocates the use of precast whenever possible.

Over 365 panels – including brick faced panels – as well as balcony upstands, were supplied for the Mission Australia project, for staircases, lift shafts, and internal and external walls.

"Good planning during the very early stages of the project allowed the job to be finished well ahead of time, despite the high volume of panels and tight access," comments Ylinen.

"From a logistic perspective, the Mid-North Coast High Performance Centre was an exciting challenge," he said.

Internal and external Class 2 panels were supplied for the project, as well as stairs, lift shaft panels, floor slabs, seating planks and step treads. Panels ranged in size from 10 to 29m^2, weighing 12.6 tonnes each.

All top-level 11m long panels required rotation during installation.

"Given the tight access for trucks and cranes, sorting out lifting plans at a very early stage was necessary so we could allow for the limitations of the crane's capabilities," Ylinen added.

"We were honoured to accept the Award on behalf of the whole team at Fine Form. It's a wonderful reward given the effort we all make to ensure our projects are a success."