You may not immediately put "precast" and "residential" in the same sentence. With a strong commercial construction market and the long-standing commercial applications of precast, many precasters haven't the time or inclination to go after new markets. But that might be short-sighted.

"Looking at all the types of concrete building systems, we've got about a 16 percent market share," says Jim Niehoff, residential promotion manager for the Portland Cement Association. "That means 84 percent of the houses in the United States are still built with wood framing, essentially. There's an awful lot of market share yet to capture."

Some of the nation's largest precasters agree and are taking their cues (and their technology) from Europe, where concrete building systems are standard. As a result, precasters are seizing opportunities for themselves and opening doors for others to take a bite out of that 84 percent.

**European Technology**

Dukane Precast, based outside Chicago, Illinois, markets a residential product, Double Wall. It's a concept imported from Europe, where more than 250 plants produce precast panels for residential applications.

The "double" in Double Wall carries double meaning. Panels consist of a layer of rigid polyurethane foam sandwiched between two wythes of concrete. Secondly, both surfaces of the completed panels are smooth and ready to finish. This flawless double finish, formed with self-consolidating concrete on perfectly smooth steel casting tables, is thanks to a mechanism that rotates the first wythe of concrete, moving the finished surface to the top, then places the first wythe on the newly formed second wythe (with spacers providing room between the...
The company has introduced a new precast residential product line whose components make up a house: a below grade wall panel, an above grade wall panel and a floor panel. The products have been extremely well received. “We have a growing backlog of orders,” says Messenger. With the product line, the company hopes to go after two very specific market niches: “all types of housing with our Oasis product and affordable housing with our Castle-Star product.”

“Right now we’re building some Habitat for Humanity homes in Yonkers, New York, and at the same time we’re building $2 million home foundations north of Boston with our Oasis product,” says

VARIABLE SYSTEM: Precasters have discovered the techniques to build single-family homes can be applied to the mid-rise or 10-story buildings. "The incremental cost of bringing out 100 panels vs. 40 panels is not all that tremendous, especially if you are within close proximity to the plant," says Niehoff.
Messenger. These opposite ends of the spectrum offer unique opportunities for precast building systems. Consumers on the high end are looking for a premium product and are willing to pay for it. Plus, he says, this end of the market is much less price sensitive and less impacted by market swings that sway mid-range home buyers.

In addition to the Habitat homes in Yonkers, Oldcastle has entered the affordable housing market by bidding to build homes in the New Orleans area. They are also working on creating online resources so builders can simply order 20 chocolates, 15 vanillas and 30 strawberries.

ECONOMIES OF SCALE: Precast building systems come with energy efficiency, noise reduction and disaster resistance benefits, but they also allow you to produce many components of the project. "The bigger the project, the more components that are similar, the less expensive and the more efficient they are," says Shultes.

On the other end, the company hopes to capitalize on the economies of scale that make precast a logical choice. "The name of the game in precast economies is repeatability," says Messenger. "What we're doing is offering kind of a chocolate, vanilla, strawberry choice. Here are your basic models. We can offer them at a very affordable cost because we don't change them. You can change the color, you can change the style of windows you put in, you can add dormers to the roof structure, but you can't change the size."

Messenger points out that potential home buyers trying to qualify for their first house or get out of a rental situation are much less particular about the extras and are much more concerned about the necessities. They want to know how many bedrooms and baths a home has, not whether there is a bonus room over the garage.

"We're aiming at that market because we think we can offer a high quality product that can be upgraded in the future. But you start with a basic structure that's very affordable," says Messenger.

The Cold Facts
But for builders to use precast, they have to have room at the job for a crane and be close to a precast plant that has made the up front capital investment to get into residential wall panels. So while precast has several benefits to offer the residential market, there are some constraints as well.

"It's an uphill battle and some of the smaller precasters don't have the wherewithal to take that on," says Shultes. "Some of the bigger guns are willing to fight that battle."

You can understand why. There are certainly advantages to builders who use precast. "Probably the biggest benefit to a builder is the speed of construction," says Niehoff. "Once the panels are produced and on the job site, they can be put together very quickly and you can put up the shell of a building in very short order. For a single family house you might get it up in a day, for a larger building maybe a couple of days. It can be a very quick method of construction."

Precast building systems also come with the same benefits of other insulated concrete build-
ing systems: energy efficiency, noise reduction and disaster resistance. But there are reasons precast has been more common in larger commercial projects and less in smaller residential projects. The economies of scale top the list.

"The efficiencies of precast lend themselves to producing many components of the projects, so the bigger the project, the more components that are similar, the less expensive and the more efficient they are," says Shultes.

Oldcastle's chocolate, vanilla, strawberry approach is one way to capitalize on those efficiencies. Dukane's multi-home subdivision is another. But if you are building individual homes scattered around town or are building very customized homes, you can quickly lose those economies of scale. "Precast products need to be erected by a crane and sometimes a single family home site doesn't allow that or can't sustain that," Shultes says. "And sometimes it's inefficient to have a big crane out there just for a few pieces." Nor is it ideal to move a crane from site to site if those sites are miles apart.

Another issue to consider is proximity to a precast plant. "Obviously, if you get hundreds of miles away from a precast plant, the costs of shipping may become prohibitive," says Niehoff. But if you are looking within a certain radius it may make more economic sense.

So yes, there are things to consider and there may be challenges to overcome. But that's not to dissuade precasters from taking a hard look at the residential market. "There's an increasing consumer demand for better construction practices, there's an increasing demand for hurricane and tornado resistant structures, and energy efficiency will be with us for years to come," Niehoff says. "Seeing the success of ICFs and the resurgence of masonry and even removable forms [used to build homes], I think it bodes well for precasters. The residential market is something they should definitely take a hard look at—even if they continue to be successful in other markets."

"The goal here is to raise the bar for all building systems," says Bock. "There are a lot of great systems and a lot of great uses [of concrete]. Sometimes it's a perfect fit, sometimes it's a pretty good fit, and sometimes you look at the numbers and the application and say, you really don't need that. But by doing education along with making money, the net gain is you're building better communities."

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