Faster Housing

Housing is in short supply, especially in metropolitan areas. Nearly two million affordable units are needed in the large cities of Germany alone. Wherever new living space is under construction, costs are skyrocketing and the work takes a long time. But in many places things could go differently. Leaving aside the vexed matter of permit application processes, multi-unit buildings could be built much faster—and also more economically—thanks to shorter construction times.

Text Michl Koch

Photo Reinhard Mederer

En route to the site: Prefabricated and rapidly assembled modules from Max Bögl make economic sense because they dramatically shorten waiting periods for clients. For example, it takes only ten working days to assemble a building with 60 of these modules.

The housing market is tight, and affordable apartments are few and far between. According to the Hans Böckler Foundation, the German city that suffers the most from this shortage is the capital, Berlin, which has an urgent need for 310,000 units. Some 150,000 are needed in Hamburg, and 86,000 in Cologne. The country's large cities are short by nearly 1.9 million units, including 1.4 million studio and one-bedroom apartments of around 270 to 485 square feet, which are especially popular among singles and couples of all ages. Solutions and innovative strategies are needed.

A construction company based in the Bavarian town of Sengenthal is showing what can be done here. The Max Bögl Group manufactures apartments almost entirely in advance, and delivers them right to construction sites on low-loading trucks. These reinforced concrete modules are more than 80 percent prefabricated—including windows, doors, floor coverings, and even bathrooms. That dramatically shortens the time needed to assemble them at the actual site.

Photo Max Bögl

After the building is planned and the rooms are prefabricated at the factory, final assembly takes place at the construction site—largely unaffected by rain or snow.

By way of comparison, it takes about a year to complete an average construction project with 20 residential units using conventional means, whereas the same project with prefabricated modules takes only three months.

"Prefab does not mean any loss in quality, or a less sophisticated design," says CEO Stefan Bögl. On the contrary. "We place a high priority on modern architecture and harmonious integration into the surroundings. The standardized processes and sequences at our factory enable us to attain a considerably higher level of quality than conventional practices. Our catalogue of products and furnishings enables clients to design each apartment individually, with everything from the exterior façade to the interior decoration," says Bögl in explaining the company's "maxmodul" method.

The aim is to achieve the maximum degree of prefabrication. The production process for these residential units is divided into small steps and all the skilled trade work is planned entirely in advance. Modules run through 16 production stations, with intervals of 60 minutes at each station. They are then delivered to the location and assembled on-site. The prefab room modules contain everything their future residents will need: power, water, and heating lines, floor coverings, painted walls, integrated light switches, and bathrooms furnished with everything from tiled surfaces to sinks.

For this type of modular construction to succeed, the factory needs highly precise and structured planning as well as very efficient production processes. "We cannot afford to make any mistakes, because the finished products that we supply have to fit exactly and work perfectly," says Bögl.

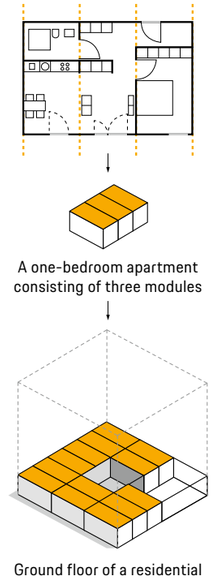
Roland Sitzberger, a civil engineer and Associate Partner at Porsche Consulting, is supporting the innovative work by Max Bögl Modul AG in the construction industry. "The maxmodul concept is revolutionary," he says. "It combines standardization, individualization, and industrialization in a single product for construction sites—at a uniquely high level of quality."

The logistical effort involved quickly starts paying off in the form of shortened construction times. A new building with 20 units is ready for its residents in just 90 working days. Its approximately 13,995 square feet of living space are split among units of around 195 to 1,335 square feet in size. In theory, the new residents could start laying carpets and bringing their furniture the day after the modules are assembled. Practically speaking, however, they need to wait a few days for the paint to dry, the insulation to be installed, and the job to be inspected and approved.

The standardized modules allow for a wide range of variation and design in the later stages of production, which means a large amount of leeway for the architecture and for individual wishes on the part of clients. After the type and design of the stairwells are selected—the maxmodul system offers eight different versions plus three more with elevators—the characteristics of the site itself are used to plan one of many spatially suitable layouts for doors and windows, as well as for exposed or covered balconies if desired. The four different bathroom floor plans naturally also take account of the requirements for wheelchair and universal access. As Sitzberger explains, "The people at the construction sites actually consider each of these units to be unique. Maxmodul is a high-quality standard product that enables the greatest possible degree of individuality."

The urgent situation in the housing market has intensified pressure on policymakers to invest in new construction. Innovative strategies from the construction industry will be welcomed by urban planners worldwide. Bögl certainly sees a high potential for modular systems. "In my view, this modular approach could be used to erect at least one-third of all buildings in our cities."

From floor plan to building



A one-bedroom apartment consisting of three modules

Ground floor of a residential building, with six units composed of 16 modules