

AGACAD Ltd., 09303 Vilnius, Lithuania

Platform for collaboration in a common environment

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Precast concrete is an area where adoption of Building Information Modelling (BIM) in general, and Autodesk Revit in particular, has lagged. That is changing. In this article we discuss the industry dynamics and practical reasons making it increasingly attractive to do precast design in 3D and, ideally, using Revit.

3D design is inevitable

Two decades into the BIM revolution, most precast concrete firms are still doing 2D design. But everyone is thinking about 3D and BIM. The old way is no longer efficient. The transition is inevitable. And it is accelerating. Switching sooner offers competitive gains. And despite some engineers' resistance to change, none who has worked with 3D models for a time would ever go back to 2D.

Does it take any longer to make a 3D model than 2D drawings? Many find the time needed is roughly the same. Yet BIM automates the creation of all 2D drawings right from the 3D model along with quantity take-offs and bills of materials, plus it offers precise geometric parameters, clash detection and

resolution, and so on. From a BIM model we can get all the information needed for erection, for production and planning, for transport and logistics.

Consider having to adjust drawings if your architect or MEP engineer changes something. In BIM it is all automatic. There is no need to redraw anything if a column is moved or a wall's length changed. Quantities update too.

Similarly, if a ventilation system is moved half a meter, with BIM you immediately detect the clashes and can update openings –and drawings– automatically. You can add any number of openings in structural elements based on the MEP model, confident you have not forgotten any.

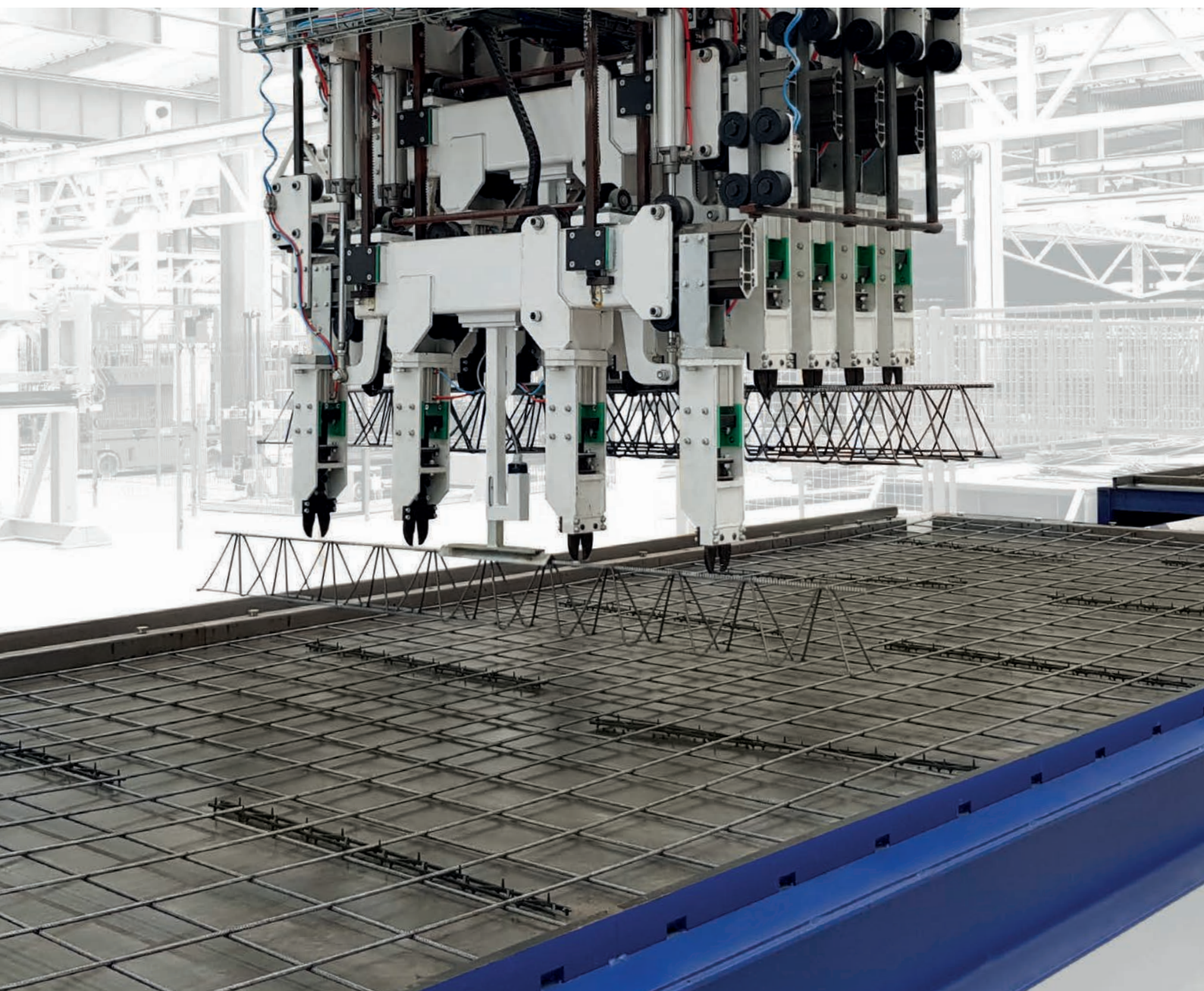
Precast is advancing

The case is clear. BIM means less work and stress, lower costs, fewer mistakes, and overall better quality. We live in a world of "digitize processes or die" and BIM, as part of that, is highly relevant today amid advances in the precast concrete industry.



3D view of a precast concrete structure in a Revit model

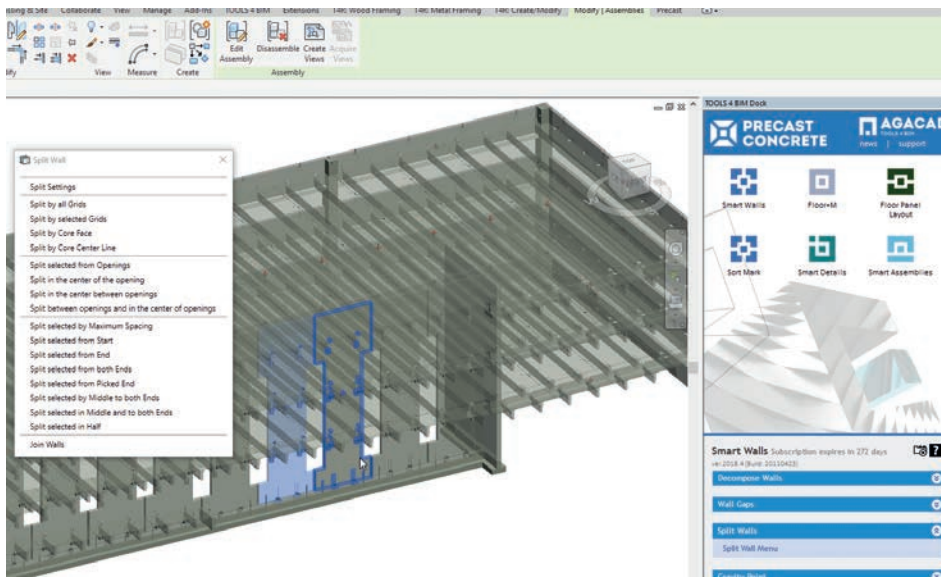
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Splitting walls into panels with AGACAD's Precast Concrete suite

Precast use is growing as part of the broader move to prefabrication. The draws are less waste, shorter time on site and thus lower costs, less noise, easier logistics, etc. More elements and modules are being made in a factory and brought to site for assembly. Precast is getting attention in the Nordics, where labour is costly, in the U.S., where it is scarce, and in places like the Middle East and China for pure efficiency. Supporting factory production of concrete structures are new lighter materials, architectural solutions, machinery and design technologies.

We are seeing a virtuous circle at precast factories. Machinery is demanding more precise data that 2D design cannot deliver. So automated processes are pushing firms into BIM. And if you are doing BIM, you have a model with information you can transfer to machinery, making factories even more efficient relative to casting on site. So the use of BIM, for its part, is encouraging further automation.

Revit aids collaboration

Among BIM software, the most widely used is Revit. That fact and various features make Revit an ideal platform for collaboration. It is a common environment where architects, MEP engineers and structural engineers can do their designing all together, without having to exchange different kinds or formats of models. There is no need for IFC. That is a huge value – both in terms of efficiency and because how you bring together the work of the different disciplines influences a model's accuracy.

For precast, in the past some saw Revit as weak. It is a great all-encompassing common platform for 3D design and BIM. But the market lacked add-on software to handle a precast factory's specific processes. Over the years, AGACAD has helped fill that gap by creating specialized solutions for Revit.

That is why Autodesk in late 2018 named AGACAD an "AEC Industry Partner" with special reference to precast concrete.

Its extensions enable Revit to do everything alternative BIM packages for precast concrete do, but with Revit's collaboration advantage. So, partly thanks to AGACAD, Revit is now arguably one of the best places to do precast BIM. Indeed, Revit is gaining popularity in the precast world, since structural engineers want to share the same model with external architects and MEP engineers.

Tools boost BIM's benefits

AGACAD's Precast Concrete suite helps structural engineers capture all the value BIM offers. There are tools to split walls automatically into precast panels and layout floor slabs, insert connection details throughout a model all at once, and create reinforcement for solid and sandwich walls, for example. Documentation features let users quickly renumber elements and automatically create shop drawings, calculate assembly mass, add dimensions and schedules, and place all views on a sheet.

New tools and features are continually added to the suite. Current areas of R&D at AGACAD include designing reinforcement, paperless construction, export to machinery and automation of production. ■

FURTHER INFORMATION



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