

# MAXIMIZING EFFICIENCY IN PRECAST

Optimizing Workflows to Benefit from the Prefabrication Trend

WHITEPAPER





**There has never been a better time to be in the precast concrete business. A range of market conditions means that demand for precast components is seeing unprecedented growth. The onset of a digital era combined with the climate emergency, labor and resource shortages, and a global pandemic has triggered lasting changes that have left no sector untouched. Yet, the precast concrete sector has grown as a result of these factors – the efficiency, cost-effectiveness, and enhanced eco-friendliness of precast components has attracted increased interest and driven demand. In fact, according to Grand View Research, the global precast concrete market is set to grow by 45% from USD\$95.76 billion to USD\$139.33 billion between 2021 and 2028<sup>1</sup>.**

However, change and growth also brings challenges. To stay competitive and keep up with demand, working efficiently is critical. With new, digital ways of working becoming increasingly common across the industry, achieving this efficiency requires digital tools, processes, and workflows that previously were regarded as an optional extra. Today, companies who design and fabricate precast concrete increasingly need a 3D solution to provide data for precast manufacturing machines. Additionally, more and more clients and project partners require BIM and expect to collaborate using 3D models. Internally, skilled staff are harder to find and retain, and younger professionals expect to work with the latest technol-

ogy. Furthermore, as budgets become tighter and projects become more complex, avoiding errors and their resulting time and cost overruns is more important than ever.

The solution lies in specialist tools that have been developed specifically for precast processes. Whether you want to collaborate more effectively with your project partners, manage your design and production process more efficiently, produce precast components perfectly each time, or attract and retain the best staff so you can take on more projects, the right software solution can help you achieve these goals.

#### **FACTORS DRIVING PRECAST MARKET GROWTH**

The reasons behind the recent precast market growth are solid and give confidence that precast concrete components will play an even bigger role in construction projects going forward. According to McKinsey's report, The next normal in construction, changes in the construction market characteristics are driving transformation across the industry<sup>2</sup>. Customer demand is shifting, due to tighter public budgets and housing affordability concerns, as well as the need for more structures that can be adapted later. In addition, the increasing complexity of projects is creating higher demand for simplified and digital interactions. Combined with these pressures are the persistent scarcity of skilled labor,

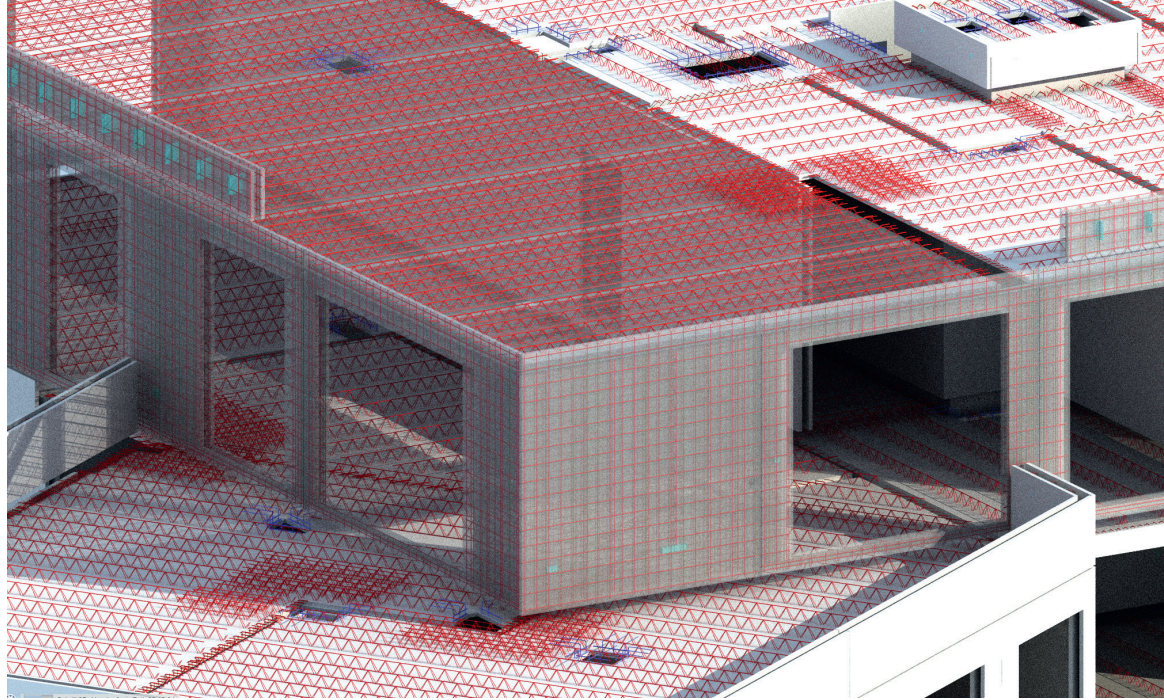
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#### References:

1. Grand View Research, Precast Concrete Market Size, Share & Trends Analysis Report By Product (Structural Building Components, Transportation Products), By End-use (Residential, Infrastructure), By Region, And Segment Forecasts, 2021 – 2028, February 2021
2. McKinsey & Company, The next normal in construction: How disruption is shaping the world's largest ecosystem, June 2020

ALLPLAN's solutions are specifically tailored to the requirements of the precast industry. With Planbar and Tim, ALLPLAN offers powerful tools that make your everyday work much easier and more efficient.

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stricter regulations on safety and sustainability, and incentives for modern methods of construction, all of which are driving disruption in the industry. The result is a shift in the dynamics of the construction industry. McKinsey predicts that more off-site production and on-site assembly will lead to a product-based approach, enabling the construction industry to transition to a manufacturing-style setup. This provides benefits such as standardized building codes and approvals for factory built products rather than individual site reviews, improved quality control and safety, and reduced carbon emissions – and all with fewer staff.

With these factors in mind, it is easy to see why precast construction is an attractive option for owners and designers. The efficiency of construction on site with precast components means less labor is required – as well as less time for the construction process itself – overcoming several of the challenges that clients and contractors face. In turn, these efficiencies lead to valuable cost savings at a time when there are persistent cost pressures.

#### **CHALLENGES FACING PRECAST DESIGNERS AND MANUFACTURERS**

While an increase in demand for precast products is excellent news for precast designers and manufacturers, the systems need to be in place to deal with this. Whether it is ensuring that the design and detailing of components is accurate, that projects are BIM compliant, or that manufacturing data is precise, there are a few areas that need careful consideration.

#### **Meeting higher demand for precast components.**

With precast construction becoming more popular for the many benefits it offers, additional pressures are created. Precast designers and manufacturers must find ways to design and produce precast elements even more quickly than in the past. This means either investing in additional resources, finding efficiencies, or potentially both.

**Handling increasingly complex projects.** Designs are becoming ever more ambitious. Materials are being combined in ways previously unseen (such as hybrid timber and concrete buildings), records are being broken for scale or height, and new technologies and approaches are being adopted (such as concrete core activation for heating and cooling). Added to this complexity is the rise of remote working, with a growing number of team members working from different locations. Sharing complex design and construction information easily and without any data loss – as well as collaborating and coordinating works – are challenges that are exacerbated by remote digital working.

**Managing projects effectively.** Keeping up with demand means that efficient workflows are required. While the 2D design and detailing process itself may not be a hindrance to completing projects, it is time-consuming and error-prone when managing changes, or for more general project management. Because any changes must be made manually to all affected components, any amendments have the potential to introduce errors into the shop drawings. Similarly, calculating quantities or checking parts

of the design takes longer as well, and can also be prone to discrepancies between documentation. This wasted time can mean the difference between delivering on time and budget or making significantly less profit.

**Fulfilling BIM requirements.** More and more clients are mandating the use of the BIM methodology on their projects. Consequently, project team members such as engineering offices and general contractors increasingly expect their partners to do the same. In fact, as the use of BIM grows and industry professionals become more familiar with its use and benefits, many architects, engineers, and contractors are using BIM irrespective of whether it is a client requirement or not. By not adopting BIM-enabled software for precast design, detailing, and manufacturing, the number of projects that are available to bid for will become progressively more limited.

**Providing accurate production data.** Industrialized construction is rapidly becoming commonplace – if not the preferred method of construction for many projects. The growing demand for affordable housing and rapidly rising commodity prices are further increasing the pressure on the industry to build even more cheaply and quickly. In turn, the industry is turning to more efficient delivery methods, such

as precast concrete. The rise of production machinery to reliably manufacture precast parts means that 3D design solutions are required to provide the data in an accessible format. At the same time, the solution must also interact seamlessly with a range of various software applications, such as CAD, MES, ERP, and BIM platforms, often from different software developers and in different file formats.

**Attracting and retaining skilled staff.** The construction industry is facing skilled labor shortages globally, and the precast sector is no exception. This affects all key areas of the company – from the design department to work preparation and production. Finding and keeping staff with precast knowledge and skills is difficult, particularly with the rise of remote working. The ability to work from anywhere opens up employment opportunities that previously were not available. Additionally, there are fewer specialists to choose from, which is predicted to only worsen in the future – McKinsey estimates that around 41% of the US construction workforce is expected to retire by 2031<sup>2</sup>, for example. Furthermore, younger professionals expect to work with the latest tools and technologies, therefore attracting and retaining young talent is more challenging.



"Planbar is our fundamental tool for any design activity. Every designer always uses Planbar daily, and the intuitive interface makes it an indispensable part of our design department. In Planbar, I always find a way to design complex parts and get them into our automated production line."

Gabriel Keller, Civil Engineer, BFU

## SOLUTIONS

A digital all-in-one solution developed for the needs of the precast industry is the key to overcoming these challenges and dealing with the increased demand. With ALLPLAN's innovative solutions, design offices and precast concrete plants can significantly increase the efficiency of their workflows. The powerful tools support precast concrete plants and design offices across all project phases: from the impressive 3D tendering model and high-precision 3D precast model to the complete sequence and production planning, as well as clear 3D stacking and seamless billing data. The automated workflows that ALLPLAN's solutions enable result in enormous efficiency gains, thereby ensuring that projects can be delivered profitably.

Whether you are designing precast parts or looking to streamline your manufacturing process, ALLPLAN's specialist tools can help. They include Planbar, the precast design and detailing solution, combined with Tim, the integrated work preparation and BIM Management tool, and mTim for mobile, on-site works. The following examples will show how these tools can improve existing precast workflows for more efficient and effective project delivery.

## AUTOMATED WORKFLOWS FOR WALLS AND SLABS

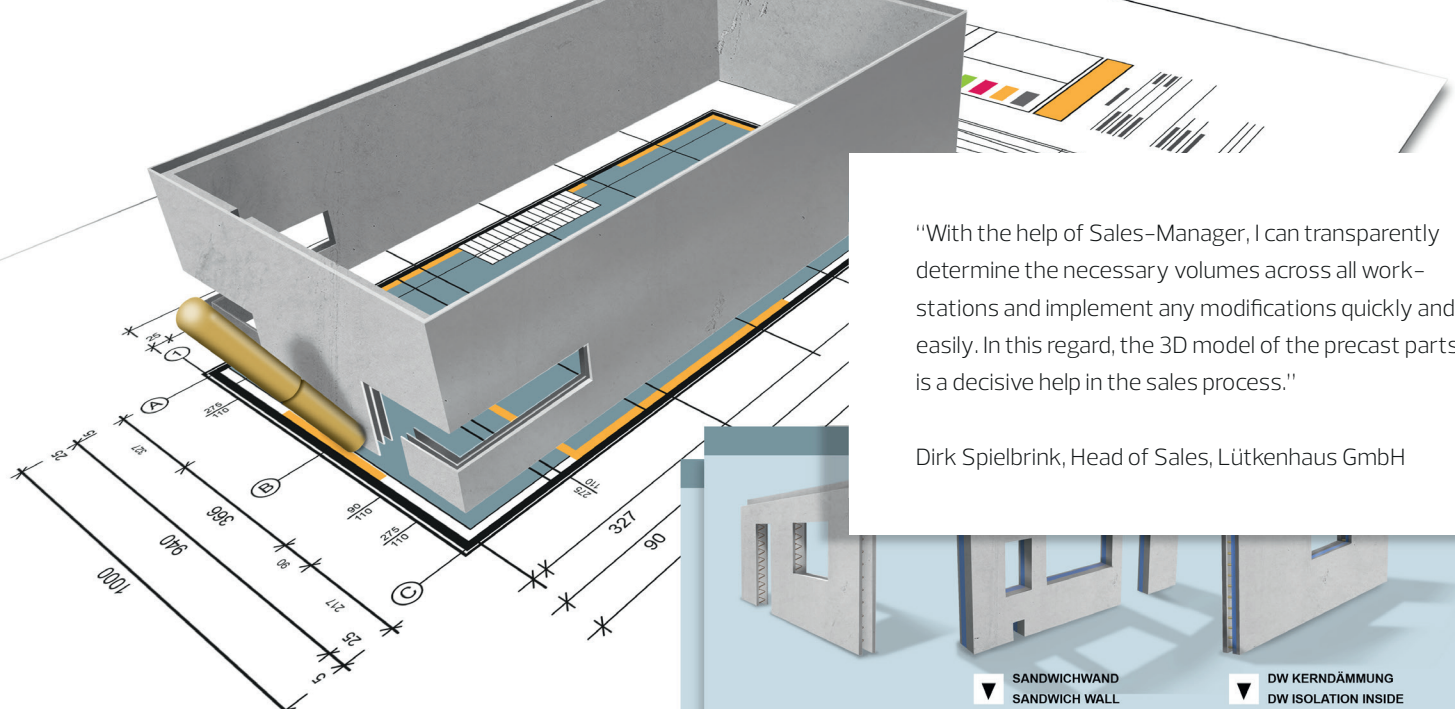
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- > **automated panel distribution**
- > **automated generation of basic reinforcement**
- > **automated generation of shop drawings**
- > **automated sleeves and transport anchors**
- > **automated further processing of imported IFC data**
- > **automated quality assurance mechanisms**
- > **efficient implementation of changes (e.g. automated adjustment of drawings, reinforcement, etc.)**

## AUTOMATED WORKFLOWS FOR STRUCTURAL PRECAST PARTS

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- > **automated generation of shop drawings**
- > **efficient handling of identical components**
- > **automated labeling with the correct position numbers**
- > **100% consistency of the model with all plans at any second (very efficient even with changes)**
- > **efficient further processing of any 3D bodies**
- > **possibility of efficient and simplified parametric design with PythonParts: automated creation of the 3D model including reinforcement and fixtures based on entered values – no manual modeling necessary**



"With the help of Sales-Manager, I can transparently determine the necessary volumes across all work-stations and implement any modifications quickly and easily. In this regard, the 3D model of the precast parts is a decisive help in the sales process."

Dirk Spielbrink, Head of Sales, Lütkenhaus GmbH

### PLANNING AND DESIGN STAGE WORKFLOWS

Moving to a digital, 3D workflow with software like Planbar helps improve the efficiency of the entire project, even from the initial planning stages.

**Accurate initial cost estimations.** With a 3D solution like Planbar, it is easy to import the architectural building model and quickly develop an accurate bid, even for sales staff with no CAD knowledge. The IFC-Assistant ensures that drawings, PDF files, or models can be imported and a 3D model created quickly. Once imported, it is a simple case of selecting the elements that will be precast components and telling the software to convert them. Tools such as the Precast Element tool automatically identify and collate identical elements into an auto-generated shop drawing. Even fixtures & openings for MEP equipment can be added easily with the MEP-Assistant and adjusted later in Planbar if needed.

The Sales-Manager tool then uses the 3D model to calculate volumes and quantities automatically, generating traceable lists and graphical reports for analysis. From there, it is easy to transfer the data to commercial tendering software to create an accurate bid with much less time and effort. If desired, a graphical visualization of the precast elements can be created as a 3D PDF file to include with the bid. Not only is this impressive, but it also demonstrates to the client that the design intent has been correctly understood.

**Precise design of precast elements.** Planbar's Elementplan-Technology makes creating precise

3D precast models as quick and easy as using 2D methods. The unique interface provides an ideal combination of 2D and 3D views which enable the designer to work in whichever view they feel most comfortable. Any elements created in 2D have the 3D model created in parallel automatically by the software, and vice versa. The 2D and 3D views are always consistent, so it is easy to switch between them as needed. For example, a precast column can be drawn in 2D and the geometry changed in the element's properties window. Planbar will then create the 3D model and automatically add the dimensions and labels. Even reinforcement can be added to an element with just one click, and the model and 2D views updated automatically by adjusting the reinforcement properties.

Another option is to use PythonParts to quickly create precast elements. These are pre-designed intelligent objects of commonly used precast components which can be easily modified to the desired geometry. For example, different types of precast walls can be inserted into the model as a PythonPart, and then the height or width adjusted to the correct dimensions. This reduces both modeling time and complexity, all while providing the flexibility to adapt the element as needed. The ease of creating the model and the intuitive user interface help ensure that moving from 2D to 3D is not a barrier to productivity.

**Efficient reinforcement detailing.** Reinforcement design and detailing in Planbar is significantly faster and more accurate. Because of the combined 2D

and 3D views, Planbar offers the familiarity of the 2D reinforcement design and detailing workflow with all the benefits of 3D modeling, such as a constant visual overview, better quantity control and improved change management. Sections can be quickly extracted from the 3D model rather than drawing them, and reinforcement added to the 2D view. In the background, Planbar will automatically create the 3D reinforcement model. Round steel, reinforcing mesh, mesh stirrups, and cages are all supported by Planbar and can be adjusted as required. Parameters such as bar size, spacing, cover, hook length, and other properties can be quickly changed in the properties window and the model will update accordingly. The reinforcement also automatically interacts with fixtures and other production restrictions, and clash detection reports highlight any areas that need attention.

Once completed, creating bar schedules and lists is as easy as running a report and placing the auto-generated schedule onto the layout drawings – no manual counting or spreadsheets are required. Production data can also be easily created and verified. By setting up your specific manufacturing specifications, Planbar can verify that the reinforcement can be produced and generate cutting and bending data, which can be sent directly to production systems. Planbar supports all conventional data formats, and the continuous process chain ensures that data only has to be entered once. Precision is improved and the entire process takes much less time than traditional workflows.

**Efficient handling of fixtures.** Fixtures are one of the core elements within Planbar. The user has complete freedom when creating them, and can define specific, individual graphical representations for both 2D and 3D views. The control extends to even being able to specify the detailing grade for animations in 3D, defining how fixtures react when clashing with reinforcement, meshes, or girders. When importing fixtures, the MEP-Assistant ensures that countless fixtures can be quickly and accurately synchronized with your catalogs for use in your designs. Even non-standard IFC objects can

be easily converted into customer-specific fixtures, making working with external parties much simpler and more efficient. In fact, up to 75% of the time required for importing and working with fixtures can be saved with the MEP-Assistant.

Fixtures can also have multiple attributes assigned. This allows individual bills of materials to be created, as well as providing control over how each fixture is exported within the production data to the production plant. It also includes commercial data, which can then be exported to an ERP system for further use and analysis.

**Rapid documentation creation.** Production documents will always be important in the prefabrication business. After the modeling and detailing process is finished, creating a complete set of documentation with Planbar is a straightforward and mostly automatic procedure. Shop drawings can be created at the push of a button, with Planbar automatically generating the layouts complete with sections, details, and dimensions. Legends and schedules can be derived from the model with one click, formatted to your specific requirements using the included or customized templates, and simply placed on the drawings. Layouts can be individually created if desired, or multi-page shop drawings can be batch created for you by Planbar. Either way, headers and title block information are always up to date. With Planbar, documentation production is streamlined and quality is considerably enhanced.

**Improved change management.** Changes are an almost inevitable part of construction projects. However, with Planbar's powerful tools, the impact of them can be significantly mitigated. For example, changes made to the 3D model are automatically reflected in the shop drawings, as the drawings are a view of the model and are always consistent. Equally, changes can be made to the shop drawings which are also then updated in the model. This greatly reduces the risk of errors and discrepancies between the design and the production documentation.

Another benefit is the ability to quickly re-generate time, cost, and quantity information after any amendments to the model. Simply run a new report once the model is updated, and the required data can then be used to adjust the production or delivery schedule, amend the quoted price, or determine the impact on resource planning.

#### **Integrated collaboration with other disciplines.**

Because Planbar is a fully BIM-compliant solution, the necessary structures and interfaces for collaboration with other project partners is embedded in the software. Planbar's IFC interface allows you to export all precast elements, including all attributes as well as fixtures, reinforcement, and formwork. The object structure of the precast elements corresponds to the IFC4 precast standard. Similarly, data received from external sources can be imported into Planbar without losing information – models from architects, structural engineers, or MEP specialists can be imported into Planbar and the data within them accessed easily. Both ALLPLAN and the Nemetschek Group are supporters of the openBIM concept, with interoperability being a key feature of all of our solutions.

In addition, ALLPLAN offers two cloud-based tools for supporting remote workers and teams: Bimplus and Allplan Share. Bimplus is one of the leading BIM collaboration solutions and facilitates collaboration across all disciplines. It provides project team members with fast, simultaneous, location-independent access to the design status and assigned tasks. Meanwhile, Allplan Share is based on Bimplus and works in parallel with it. Any changes made in the model in Planbar are automatically synchronized with the model in the cloud via Allplan Share for always up-to-date information. Allplan Share also provides additional functionality, such as a Model Viewer, Issue Management tool, Task Board, audit control, and more.

With Bimplus and Allplan Share, different designers can create different precast elements in the same building, yet still maintain an overview of the entire project in seconds – and in real time. Teamwork is

optimized, time delays are minimized, and errors are reduced. To ensure data is secure, access is clearly regulated according to assigned user rights. With these tools, even remotely located teams can collaborate easily to design projects faster, more cost-effectively, and to a high quality standard.

#### **OVERCOMING CHALLENGES: DESIGN WORKFLOW SUMMARY**

**Meeting higher demand for precast components.** A digital 3D solution such as Planbar helps ensure that efficient workflows are in place at an early stage of the project, even from the initial bid. It helps reduce the waste activities within the planning and design stages, ensuring that productivity stays high.

**Handling increasingly complex projects.** Whether it is a record-breaking tower or an intricate, cutting-edge building design, the enhanced visualization and automation tools that Planbar offers can help improve coordination amongst the team. Quickly obtain accurate quantities for any scale of project, collaborate easily using richly detailed 3D models, and share information with team members in real time. Furthermore, products themselves get increasingly complex, if we consider for example walls with multiple layers like sandwich walls. Planbar enables significant time savings and makes designing walls with multiple layers simple and straightforward.

**Managing projects effectively.** Having all project information in one central place helps make the project easier to manage and control. Track progress, assign tasks, and manage issues more easily and transparently with the improved coordination and communication that Planbar and tools such as Bimplus and Allplan Share enable.

**Fulfilling BIM requirements.** With a BIM-compliant solution such as Planbar, fulfilling BIM requirements is no longer a barrier to project delivery, particularly as staff become more familiar with the software through daily use. Project information can be exchanged with external partners using the open IFC standards, for improved collaboration and coordina-



tion. Alternatively, share information by assigning access rights in Bimplus and Allplan Share.

**Providing accurate production data.** 3D modeling solutions such as Planbar can generate production data for precast manufacturing machines in a range of different formats, which would be difficult to achieve using 2D methods. Parasolid® software from Siemens PLM Software enables Planbar to provide completely new options in the field of 3D modelling; greater freedom when creating volume and surface models while increasing precision and performance. In addition to the advanced functionality, you also benefit from increased and accelerated display quality in the animation window and much faster calculations in Boolean operations and other 3D modelling processes.

**Attracting and retaining skilled staff.** The graphical assistants and intuitive tools help non-CAD users contribute to the project's progress, freeing up technical staff to work on other activities. By streamlining the workload and spreading it more evenly amongst existing staff members, there is also the potential to increase output without necessarily requiring more employees.

#### **WORK PREPARATION AND PRODUCTION STAGE WORKFLOWS**

Planbar provides a complete process chain right through to work preparation, production, and on-site installation. This is supported by our Tim solution, as well as the mobile application, mTim. The production stage can benefit from 3D models and digital workflows just as much as the planning stage.


**Accurate production information.** Using Planbar's interface, all precast elements, including all attributes as well as fixtures, can be exported swiftly and easily. The object structure of the precast elements corresponds to the IFC4precast standard. The industry wide universal database contains 3D model information, including complete geometries as well as defined unique IDs for the description of precast parts. IFC4precast enables a clear struc-

ture and an exact assignment of the fixtures and reinforcement. Even multiple layers of an element – each with its own reinforcement and fixtures – can be depicted, and the data can be read in its entirety by all common 3D viewers. By taking the data directly from the model, the risk of errors in the production information is considerably minimized.

**Seamless production data transfer.** Our Work Preparation and BIM Management tool, Tim, links different IT systems to ensure optimized data interchange, even across several locations. As an integration platform, Tim transparently exchanges information between ERP, CAD, and production systems. For example, project master data can be sent from the ERP system to Tim, which will make this data available to Planbar where it can be easily maintained in one central place. Material requirements for the ERP can be generated promptly and automatically from the model in Planbar, in order to prevent material-related production issues.

**Robust construction scheduling and sequencing.** With Tim, production and delivery dates can be taken from the ERP system and the process simulated in the assembler. Fixed deadlines can be allocated, and Tim will create a perfectly coordinated construction schedule. If required, phasing and deadline information can then be transferred to the ERP or other systems. Using the 3D simulation tools, the order and chronological sequencing of the project can be checked virtually. With this information, any issues can be identified early so that corrective action can be taken before delays are caused in the factory or on site. In addition, evaluating and communicating potential issues to project partners is easier with factual information to hand.

**Enhanced delivery planning and visualization.** The Delivery-Manager module allows element stacking in 3D, for optimized transport racks. Plan the racks directly from the 3D model or from the list of elements, and Tim will automatically check if the arrangement is possible. Any issues can be resolved virtually, saving valuable time.



"Other exciting topics for the future are certainly innovation and sustainability; for example, hybrid construction, wood-concrete composite elements, fair-faced concrete, and an increasing awareness of the need to conserve resources in the construction industry."

Fabian Scheller, Product Owner for the Precast business unit, ALLPLAN

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**Optimized production planning.** The Production-Manager is the perfect tool for optimized production planning, enabling informed decisions to be made for stationary production. Production can be planned using the 3D model, stack information, and the process planning information from the assembler. Any conflicts are automatically highlighted, so that adjustments can be made before production begins. For a detailed assessment of the production options, you can show installation parts and reinforcement on the pallet. From there, it is easy to generate all the necessary data, plans, and lists for production.

**Better process management and control.** With Tim, the integrated status management visualizes the respective current status for each element. This way, work preparation, production, sales, project management, and project progress can be monitored and informed decisions made throughout the entire process. The 3D building model can also be explored using Tim, even without any CAD knowledge. This allows management or other staff to retrieve information about every precast part. Elements can be marked as produced, stacked, or invoiced, so you always know where each part is – all from one central platform. Even installation or formwork plans can be accessed via Tim, sent for approval, and the element status changed if necessary. The system is highly customizable, so that it can be configured to precisely map your own work process for precast projects.

**Improved invoicing data.** Billing and accounts settlement is easier and streamlined with Tim. Tim

has an interface to the ERP system and automates data exchange with several specialized software tools. This approach helps to save time and to avoid errors. For instance, Tim automatically makes invoicing data available to the ERP system. Combined with the integrated status management, it is easy to keep track of which elements have been billed and the project's financial progress. This way pre-cast manufacturers get their money sooner.

**Optimal data generation.** Whether it is UNI, PXML, ADS, BVBS, or IFC data, Tim comfortably generates information according to your individual and unique requirements. The process can be either automated or integrated into a more complex work process. Standard reports and lists for information such as measurements, fixtures, cutting, stacking, ADS, and individual panel setups can all be easily and swiftly created with this tool, making reporting accurate and automated.

The Tim Quality-Manager also helps ensure error-free data and avoid dangerous or expensive mistakes. Rule sets can be defined for some or all precast elements that will then undertake various tests and checks. For example, the tests can be run when importing data, which will ensure that the data is only imported if it meets the specified quality requirements. Similarly, it can be checked before it is sent to production or commercial systems and stopped if it contains errors. However, the Quality-Manager also provides complete flexibility and traceability by allowing exceptions to be made and documenting the process.

**Mobile information management.** Our mobile app, mTim, offers the ideal information platform for accessing and updating project data within Tim from any location. This makes site meetings easier, as complex issues can be discussed on the basis of the 3D model. Delivered elements can be located easily within the 3D model using mTim just by scanning the element's barcode, helping to avoid assembly errors. Once installed on site, it is easy to change an element's status to "assembled" from within mTim, ensuring that invoicing data is always up to date.

#### **OVERCOMING CHALLENGES: WORK PREPARATION AND PRODUCTION WORKFLOW SUMMARY**

**Meeting higher demand for precast components.** More efficient workflows and better quality management during the entire work preparation and production process can help increase productivity, even without investing in additional resources.

**Handling increasingly complex projects.** Planbar, Tim and mTim provide a complete overview of the project and let users view, find, and generate the information they need, all whilst providing enhanced visualization and coordination.

**Managing projects effectively.** With digital solutions such as Planbar and Tim, every aspect of the production, delivery, construction, and billing can be managed and tracked from one central location.

**Fulfilling BIM requirements.** Coordinating and sharing information with partners such as structural engineers, architects, and contractors is much easier with a BIM-compliant solution that takes interoperability with other disciplines seriously. Planbar and Tim use the IFC4 precast industry standard to ensure that all precast data can be shared easily amongst the project team for more effective collaboration.

**Providing accurate production data.** The ability to transfer production information directly from the 3D model to various systems via Tim ensures that production data is perfect every time. With the abil-

ity to seamlessly transfer data between different IT systems and even locations, production can be thoroughly planned with the right data, so wasted time, money, and materials can be avoided.

**Attracting and retaining skilled staff.** With the efficiency gains that Planbar and Tim enable, it is easier for production staff to do their job well. Tools such as the Quality-Manager ensure that quality stays high and mistakes are avoided, even for less experienced or knowledgeable staff. Employees are happier and can achieve more with the time they have available, potentially increasing output with the same number of staff.

#### **CHOOSING THE BEST SOLUTION FOR YOUR NEEDS – NOW AND IN THE FUTURE**

The examples above show how a 3D solution like Planbar and Tim can help improve existing workflows across different phases of a precast project. Planbar is one of the world's leading BIM solutions for industrialized construction and takes your precast design and detailing to a new level of efficiency and precision. Tim provides precast plants with clear work preparation in 3D, direct access to all relevant project information, and sophisticated quality assurance. Yet choosing a specialist precast software package is not necessarily just about the features it provides, but also about finding a partner you can work with in the long-term who will support your business.

At ALLPLAN, we support our customers from the very beginning. Our Customer Excellence Services are tailored to your business – our experts focus on your processes, helping you achieve maximum efficiency and productivity with our software. Whether you need training, program-specific configurations, assistance with upgrading, or more general support, our knowledgeable team is available to help.

ALLPLAN's openBIM solutions for the successful design and implementation of precast projects can help you with your project needs not just today, but also in the future. We recognize that to achieve sus-

tainable success in the precast industry, it is vital to have a process chain that seamlessly coordinates all the steps in the process – from the initial planning and design to the production and installation on site. Our "Design to Build" tagline is more than just a motto – it is a philosophy that drives our software development. Going forward, Allplan, Planbar, and Tim will continue to become more closely integrated in order to provide an increasingly tailored solution for your projects.

As part of the wider Nemetschek Group, this development will continue even further in the future. Since its foundation, the Nemetschek Group has been an advocate of uniform industry standards and open data interfaces as a basic prerequisite for fair competition and harmonious cooperation between all disciplines. Not only are they a member of industry associations and institutions such as buildingSMART and Bundesverband Bausoftware (BVBS), they are also strong supporters of sus-

tainable construction approaches and investors in emerging technologies that can help optimize the construction process. This focus on sustainability, efficiency, and interoperability means that the subsidiaries of the Nemetschek Group will continue to lead the way in terms of the latest architecture, engineering, construction, and operation (AEC/O) industry solutions. With its complete portfolio, the Nemetschek Group has created a symbiosis of consistent BIM tools and specialist software for construction processes that is unique in the AEC market. In addition, the strong synergies and easy integration between the different brands provides opportunities for customers to work more closely with other partners who use Nemetschek Group solutions, or even offer additional services in the future with less effort.

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## ABOUT ALLPLAN

ALLPLAN is a global provider of BIM design software for the AEC industry. True to our "Design to Build" claim, we cover the entire process from the first concept to final detailed design for the construction site and for prefabrication. Allplan users create deliverables of the highest quality and level of detail thanks to lean workflows. ALLPLAN offers powerful integrated cloud tech-

nology to support interdisciplinary collaboration on building and civil engineering projects. Around the world over 500 dedicated employees continue to write the ALLPLAN success story. Headquartered in Munich, Germany, ALLPLAN is part of the Nemetschek Group which is a pioneer for digital transformation in the construction sector.

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