PLANBAR 2017

New Features in PLANBAR 2017-1
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Dear Sir or Madam,

The new PLANBAR 2017 version has been completed. On the pages that follow, we will present the most important new features we have implemented since PLANBAR 2016.

When developing PLANBAR 2017, we were guided by your ideas, of which we put a great number into practice.

This time, development focused on the interaction between PLANBAR and TIM. For example, you can transfer projects and their master data created in TIM to PLANBAR. You can also define invoicing parameters of a precast element in TIM and assign these parameters to the precast elements in the CAD system.

There is a new tool you can use to create fixtures and openings based on smart PLANBAR symbols.

IFC import of components to PLANBAR also transfers the attributes of precast elements.

We reworked status admin so that it is always available. In addition, you can lock automatic updates of reinforcement.

Using wall element design, you can design multilayer architectural walls and 3D objects.

We adapted PLANBAR for use in the USA. You can now use imperial units throughout the program.

We wish you every success! Have fun exploring PLANBAR 2017.

Precast Software Engineering GmbH
Salzburg, November 2016
Precast Elements

New features across modules

Additional attributes for precast elements

You can use all PLANBAR attributes as additional attributes for all element types (slab, wall and structural precast elements, iParts). You can even define the number of digits for these attributes.

Just as in Configurations - General - Program Sequence - Export file name, you can open the PLANBAR Formula editor for each design type in the Additional attributes dialog box when configuring the Entry of the Proposed value of an additional attribute. You can select the attribute you want to use in the formula editor.

The dialog box of the configuration displays the selected attribute as a number (for example, @1077@).
After you have defined additional attributes, all dialog boxes for designing and modifying element types (slab, wall and structural precast elements, iParts) display the selected attributes. You can see the formula as usual; the value itself is not displayed.

Note: When analyzing the data, PLANBAR does not check whether the attribute is actually in use.
Several steel grades for precast elements

You can use different steel grades to reinforce a precast element, for example, within a reinforcement type. For this, we reworked the program.

If you have questions on creating reinforcement with several steel grades in PLANBAR, please contact our support team.

Note: The new features do not affect catalogs, configurations and entries in the program unless you define a Steel grade for placements in the reinforcement type catalogs.

Assigning steel grades

Be sure to note the following rules:

- Each entry in Catalogs - General - Diameter catalog must be defined as a reinforcing bar in the cross-section catalogs (Tools - Defaults - Cross-Section Catalogs - Bar cross-section catalog).

- Each cross-section catalog code (second data entry box to the right of Name of a Bar cross-section catalog) must be defined as a Cross-section catalog code in Catalogs - General - Steel grade catalog.

- Each entry in Catalogs - General - Mesh catalog must be defined as a stock mesh type or variation mesh type in the cross-section catalogs (Tools - Defaults - Cross-Section Catalogs - Mesh cross-section catalog).

- Each Steel grade used in a Mesh cross-section catalog must be available in Catalogs - General - Steel grade catalog. Make sure the Name is the same. Watch out for small and capital letters!

Note: When creating basic reinforcement, the program proposes the settings for steel grade in the configurations of a precast element type as usual (Steel grades tab with the Design in acc. with steel grade, Steel grade for mesh, Steel grade for bars and Steel grade for tensioning cables entries).
Entries in reinforcement type catalogs

You can enter the Steel grade in the Reinforcement type catalog (except Brick slab, Concrete brick slab, Suspended brick slab and Wall panel).

Note: You cannot use several steel grades with the wall types and slab types mentioned above. Similarly, this is not possible with BubbleDeck and Cobiax slab.
Note: If you create walls using Wall Element Design and set the Calculation of reinforcement parameter to Required reinforcement percentage or Reinforcement type, the as-value output by lists or the element plan table is always exactly the value that is entered in the catalog. If you use several steel grades, do not forget to manually adjust the value in the catalog. If you choose Locked, lists and the element plan table output the resulting reinforcement.

**Dialog boxes and palettes for locking basic reinforcement**

You can enter the Steel grade in the dialog boxes for locking basic reinforcement.

Like the reinforcement type catalogs, the dialog boxes for locking basic reinforcement offer the Steel grade box to the right of the box for entering the Diameter.
Layout catalog and element plan table

The layout catalog offers the Include steel grade check box for including steel grades. This applies to Basic reinforcement, details, Basic mesh reinforcement, details, Secondary bars, Secondary meshes, Bent-up meshes and Stirrup cages.

When you select this check box, the element plan table includes the steel grade for the reinforcement in question.

Using the General basic reinforcement check box, you can choose to include the steel grade for design and the steel grades for Bars summarized and Meshes summarized.

New attribute in the precast elements category

To analyze steel grades of bars and meshes in reports, legends and so on, you can use the new Steel grade of meshes, bars in precast element attribute (@1468, text) in the Precast elements category.

Changes in design lists

If basic reinforcement of a precast element includes different steel grades for bars or meshes, design lists output *var* instead of the steel grade.

<table>
<thead>
<tr>
<th>Design list: reinforcement in panels (part 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>53</td>
</tr>
</tbody>
</table>
Locking elements

You can lock automatic updates of reinforcement for precast elements of the Slab type and for walls created with Wall Element Design. For this, we reworked the Status Admin tool.

Note: The program issues an error message for walls created with Design and structural precast elements, iParts, as you cannot lock reinforcement updates for these precast elements!

General changes in locking elements

First of all, Status Admin is now always available so that you can change the locking of precast elements at any time.

Note: As usual, you can only assign a status to an element if there are entries in Catalogs - General - Status Admin. Otherwise, status selection is not available in the Status and Locking Admin dialog box.

Be sure to note the following rules:

- The Automatic updates of reinforcement locked and Geometric changes locked statuses are independent of one another and do not build on one another. However, you can combine these two statuses.
- When you choose the All changes locked status, the program always sets the two statuses mentioned above.
- Alternatively, the program sets the All changes locked status if both Automatic updates of reinforcement locked and Geometric changes locked are set.
- By deactivating either Automatic updates of reinforcement locked or Geometric changes locked, you automatically deactivate the All changes locked status.

To clearly see which precast elements are locked, you can define a color for each status in Configurations - General - Program Sequence - Identifiers - Element locking tab. The program will highlight the mark number using the color defined.
You can no longer use the Status Admin Context toolbar to temporarily display the locking status.

Note: By default, no colors are defined. The new Identifiers group includes the dialog boxes for defining colors and the old Notes and Marking tabs, which used to be in Configurations - General - Program Sequence - Automatism. In addition, we renamed the Notes tab; its new name is Element states.

You can turn this highlight color on and off by selecting Error notes in mark numbers on/off in plan display.
Locking reinforcement updates

Like the familiar Geometric changes locked and All changes locked statuses, the new Automatic updates of reinforcement locked status must be set manually in Status Admin.

If this status is set, the program issues an error message when the dimensions of the relevant precast element change. The program cancels the operation as soon as you confirm this error message.

For example, this is the case when you

- Change the support widths of the element.
- Change the design (for example, the position of the fitted panel changes).
- Change the panel thickness.
- Model using the Interaction with precast element = Negative (cut out) / shortening setting, which changes the total length or width of the element.
• Model using the Interaction with precast element = Positive (merge) / lengthening setting, which changes the total length or width of the element or the element height.

• Apply the Stretch Entities tool to the placing region.

• ...

If the program cannot update the reinforcement of an element due to locking, you will see a message indicating that you have to do this manually.

For example, this is the case when you

• Change the geometry of the precast element (except the dimensions, see above); enter or change recesses (for example, move or enlarge recesses).

• Create or change fixtures affecting reinforcement ('Intersect bars' option selected in Catalogs - General - Fixture catalog - Reinforcement tab).

• Change parameters of wall elements in the Properties palette, which causes the program to recalculate basic reinforcement.

• Model using the Interaction with precast element = Negative (cut out) / shortening or Positive (merge) / lengthening setting without changing the overall dimensions of the precast element (for example, it is possible to model a small recess).

• ...

If support conditions affecting reinforcement change (for example, the bar overlap or bending shape), the program also issues a warning.

However, you can still change the reinforcement as you need. For example, this applies to

- Basic reinforcement, which you can still create, modify or delete manually.
  Note: You first need to activate the basic reinforcement of an element using Activate, passivate basic reinforcement in view or plan in Modify, label reinforcement.

- Secondary reinforcement, which you can create, modify or delete.

- Working in Mesh Welding System Editor (for attached reinforcement).

- Converting loose reinforcement to MWS reinforcement using Reinforcement in MWS Grid (for attached reinforcement).

**Labeling, line spacing**

You can freely define line spacing, which used to be preset to a factor of 1.2. Open Configurations - Wall Programs or Slab Programs and select Entry - Labeling and the Text attributes tab.

To define line spacing, you can use the new $Z= \ldots$ line spacing (factor) attribute. You can enter any value between 1.0 and 10.0. If you do not define $Z$, the program uses the default value of 1.2 as usual.

Line spacing defined for Attributes of mark number line controls the distance between the mark number and the first text line of the text below the mark number.

Line spacing defined for Attributes of text lines below mark no. controls the distance between the lines of text below the mark number.
Diameter catalog, weight

PLANBAR recalculates the as-value and weight of a diameter whenever the diameter changes and you click the Calculator button.

Adapting catalogs and configurations for use in the USA

We adapted the Catalogs and Configurations for use in the USA.

The unit of length used in the Catalogs and Configurations is based on the unit set on the status bar. As soon as you change the unit on the status bar, the program automatically adapts the units set in the Catalogs and Configurations.

The program uses the unit set in the metric system as usual or a predefined American unit to display the other units that are available for diameter, [mm, in], as-value [cm², sq.in.], weight [kg/m, lb/ft], specific weight [kN/m³, lb/ft³].

All units that change with the setting on the status bar include the unit of the number in the data entry box.

Please note that some special settings in the Catalogs still use the old rules! For example, this applies to the entries on the Welding 1 to Welding 5 tabs in Catalogs - General - Diameter catalog or to the settings in the Reinforcement type catalogs of the different slab types and wall types.

As far as the Configurations are concerned, we have adapted the configurations for attached reinforcement, prestressed hollow core element, concrete wall (new) and sandwich wall (new) so far.
BIM Booster

MEP wizard

MEP stands for mechanical, electrical and plumbing. PLANBAR generally creates MEP elements as smart symbols or imports these elements as smart symbols from other systems, for example, using the IFC interface.

With the new MEP Wizard tool in the BIM Booster module, you can create fixtures and openings based on smart PLANBAR symbols. To create openings, you use negatively shaped fixtures. It is not necessary that you use imported smart symbols. You can also use smart symbols that were created in PLANBAR.

With the new MEP Wizard tool, you can create

- Fixtures
- Negatively shaped fixtures (referred to as fixtures) based on smart symbols in
  - Precast elements (precast slab, precast wall, structural precast element)
  - Architectural components (architectural slab, architectural wall) (referred to as components).

To create the fixture, the program uses the geometry and attributes of the selected smart symbol and component and the parameters you define in a dialog box.

Similar to manual entry of fixtures, the program assigns the fixtures to the precast element or cuts them out of the precast element, thus creating openings. The program then updates the component accordingly.

Using MEP Wizard, you can change and delete fixtures created with MEP Wizard at any time.

You can even create, change or delete a number of fixtures in one go.
Creating fixtures or openings using MEP wizard

After having selected MEP Wizard, you can create fixtures or openings. This involves the following steps:

- Select the components and smart symbols for which you want to create fixtures.
  - If you select only smart symbols, PLANBAR automatically includes the components that intersect the smart symbols.
  - Conversely, if you select only components, PLANBAR automatically includes the smart symbols that intersect the components.

This way, you can work in a component-specific or smart symbol-specific way.

- MEP Wizard checks the selected smart symbols and components for collisions, displaying the collisions found in a dialog box.

Each line in this dialog box stands for exactly one collision between a smart symbol and a component.

The selected elements are highlighted in the selection color in the drawing. If you click some elements in the dialog box, these elements are highlighted in the selection preview color in the drawing.

The attributes of the smart symbols and components are highlighted in different colors. Component attributes are gray; smart symbol attributes are green.

The two columns for fixtures (Fixt. parameters) and openings (Opn. Parameters) are not highlighted in color. You can find a button for setting parameters and a check box in each line of these two columns. PLANBAR automatically selects this check box as soon as you define settings in the associated dialog box.

You cannot select the entries for Fixt. parameters and Opn. parameters at the same time. If you try to do this, PLANBAR displays a warning.
You can customize the columns and lines of the dialog box to suit your needs and requirements.

- Right-click the header to open a dialog box for selecting the **groups** and **attributes** to be displayed.
  
  Select the columns (attributes) you want to display and choose the attribute(s) by which you want to group the lines (groups).

  C stands for collision number, E for architectural element or precast element and S for smart symbol.

- You can show or hide the elements of a group by clicking **Close/open group**. By clicking **Select all elements in group**, you can select all elements belonging to the group.

- You can show or hide columns by selecting the corresponding attribute.

- Right-click a column in the header to sort the attributes in ascending or descending order.

- Click the **filter** icon to hide values from a column. If the filter of a column is active, the filter icon changes to **filter**.

- Using the **Search** icon, you can find the selected elements. Click this icon to zoom in on the corresponding element(s).
- Click **Run** to apply the settings defined.
- Click **Cancel** to close the dialog box without changing anything. In this case, the settings you defined will be lost.

Tip: You can place the viewport with the dialog box outside the program window on a second monitor, for example.

To create fixtures or negatively shaped fixtures using **MEP wizard**

1. Configure the columns and the position of the **MEP Wizard** dialog box to suit your needs. Hide the columns you do not need and sort, group and filter the attributes.

Note: In this example, grouping is by **Smart symbol name** and the following attributes are visible: **element type**, **element mark number** and **smart symbol material**.

Once you have defined settings, the program remembers these settings, displaying them the next time you open this dialog box.
2 Select collisions (lines) for which you want to create fixtures or negatively shaped fixtures for modeling openings.

3 The program marks the selected elements.

4 Define parameters for each collision for which you want to create fixtures or openings.

Note: For each collision, you can define either parameters for fixtures or parameters for openings. You cannot define both.
When it comes to fixtures, you can select the fixture straight from the library (office, project, private, article catalog or manufacturer catalog).

As an alternative, you can create a fixture from the smart symbol itself. In this case, select the reference to the required fixture in the fixture catalog.
When it comes to openings, you can select a shaped fixture in the library (office, project, private, article catalog or manufacturer catalog) or configure the program to create a shaped fixture based on the parameters you define. In this case, select the reference to the required fixture in the fixture catalog.
5 When you have defined everything you need, click the Run button so that MEP Wizard can start creating the fixtures or shaped fixtures.

**Note:** If the program cannot create fixtures or shaped fixtures for openings, you will see an appropriate message.

If you do not want to create anything, close MEP Wizard by clicking Cancel.

Changing or deleting fixtures or openings using MEP wizard

Using MEP Wizard, you can change or delete fixtures or openings later. This involves the following steps:

- Select the MEP Wizard tool. After this, select the components and smart symbols for which you want to change or delete fixtures.

Make sure all smart symbols from which MEP Wizard has already created fixtures are actively loaded. The program takes the data from these smart symbols when changing or deleting fixtures.
• **MEP Wizard** checks the selected smart symbols and components for collisions, displaying the collisions found in a dialog box.

Here, too, each line in the dialog box stands for exactly one collision between a smart symbol and a component.

The situation is now similar to that of creating new fixtures. The only difference is that the dialog box displays the settings you defined beforehand. You can find check marks in the parameter columns of the collisions for which you have already defined settings for fixtures or openings.

![Image of MEP Wizard dialog box]

- Change the settings as you need in the **MEP Wizard** dialog box. You can delete a fixture or opening by removing the check mark from the relevant line in the parameter column.

  Note: If the program cannot delete fixtures or shaped fixtures for openings, you will see an appropriate message.

While changing the settings, you can also configure the program to create new fixtures or openings. To do this, select a collision for which you have not yet made any settings and define the settings as you need.
• When the entries and changes are complete, click the Run button so that MEP Wizard can start changing, deleting or creating the fixtures or shaped fixtures.

If you do not want to change anything, close MEP Wizard by clicking Cancel. In this case, the settings you defined will be lost.

Attribute mapping for precast elements

Being an object-oriented planning system, PLANBAR allows you to assign object attributes to components. Using the Object Manager module, you can manage object attributes, which can be analyzed by a large number of tools.

You can create object attributes in a number of places, for example, using the tools in object manager or when importing components to PLANBAR via the IFC interface.

Note: If you want to use attribute mapping for particular precast element types (precast slab, precast wall, structural precast elements), you require a license for the BIM Booster module.

Using attribute mapping for precast elements (precast slabs, precast walls, structural precast elements), you can retrieve particular attribute values from the object attributes of components, transferring those values to the dialog boxes for creating precast elements.

Note: Attribute mapping is only available for walls created with Wall Element Design; attribute mapping does not work with walls created with Design!
Configuration files of attribute mapping

To activate attribute mapping, create a CSV file named `PrecastAttributeMap.csv` in the `...\std` folder of PLANBAR.

Use the following structure for this file:

```csv
#attribute mapping for precast elements;;;;
#AttributeNumber;Datentyp;ObjectType;ObjectField;ContentMap
;;;
#valid for all precast elements;;;;
@PrecastGeneral;@@
<---------------------------------------------------------------------------
;;;
#specific for precast slabs;;;;
@PrecastSlab;@@
<---------------------------------------------------------------------------
;;;
#specific for precast walls;;;;
@PrecastWall;@@
<---------------------------------------------------------------------------
;;;
#specific for precast structural elements;;;;
@PrecastStructuralElement;@@
<---------------------------------------------------------------------------
```

Headers

```
<table>
<thead>
<tr>
<th>Headers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribute mapping lines</td>
</tr>
<tr>
<td>for all precast elements</td>
</tr>
<tr>
<td>Attribute mapping lines</td>
</tr>
<tr>
<td>for precast slabs</td>
</tr>
<tr>
<td>Attribute mapping lines</td>
</tr>
<tr>
<td>for precast walls</td>
</tr>
<tr>
<td>Attribute mapping lines</td>
</tr>
<tr>
<td>for structural precast</td>
</tr>
<tr>
<td>elements</td>
</tr>
</tbody>
</table>
```
When you open the definition file using Excel, you will see the following table:

<table>
<thead>
<tr>
<th>#attribute mapping for precast elements</th>
<th>Data type</th>
<th>ObjectType</th>
<th>ObjectField</th>
<th>ContentMap</th>
</tr>
</thead>
<tbody>
<tr>
<td>#valid for all precast elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@PrecastGeneral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#specific for precast slabs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@PrecastSlab</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#specific for precast walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@PrecastWall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#specific for precast structural elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@PrecastStructuralElement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Here is some basic information on the syntax of the definition file:

- Comments = lines starting with the # character (for example, #AttributeNumber)
- Beginning of an attribute group = lines starting with the @ character (for example, @PrecastGeneral)
- Other lines = lines for attribute mapping

The definition file consists of the following lines:

- Headers serving as comments
- Attribute mapping lines applying to all precast elements
- Attribute mapping lines applying to precast slabs
- Attribute mapping lines applying to precast walls
- Attribute mapping lines applying to structural precast elements

The definition file consists of the following columns:

- AttributeNumber: Number of object attribute
- **Data type:**
  - Default attribute: empty
  - User-defined attribute: 0 = value, 1 = text

- **ObjectType:** Object type to which the attribute is to be transferred
  - Default attribute: empty
  - User-defined attribute:
    - PrecastElement: Attribute refers to the entire precast element
    - PrecastLayer\#n: Attribute refers to a particular layer of the precast element (\#n)

- **ObjectField:** Dialog box of the precast element to which the attribute is to be transferred

- **ContentMap:** You can specify the name of a definition file for mapping attribute values (that is, the contents of attributes). This is optional. You can find more details further down.

You can also replace attribute values taken from the component with other values so that the program transfers these values to the corresponding dialog box.

To configure this, you need to specify a CSV file for mapping attribute values in the ContentMap column of the PrecastAttributeMap.csv definition file described above.

You can name CSV files for mapping attribute values as you like. However, you need to make sure that the files are in the `...\std` folder of PLANBAR.

A definition file for mapping attribute values might look like this:

```
C25 / 30;C25/30
C25-30;C25/30
C25 - 30;C25/30
C25 \ 30;C25/30
C30 / 37;C30/37
C30-37;C30/37
C30 - 37;C30/37
C30 \ 37;C30/37
```
In this example, the program converts the C25 / 30, C25-30, C25 – 30 and C25 \ 30 attribute values to the C25/30 attribute value.

When you open the definition file using Excel, you will see the following table:

<table>
<thead>
<tr>
<th>C25 / 30</th>
<th>C25/30</th>
</tr>
</thead>
<tbody>
<tr>
<td>C25-30</td>
<td>C25/30</td>
</tr>
<tr>
<td>C25 – 30</td>
<td>C25/30</td>
</tr>
<tr>
<td>C25 \ 30</td>
<td>C25/30</td>
</tr>
<tr>
<td>C30 / 37</td>
<td>C30/37</td>
</tr>
<tr>
<td>C30–37</td>
<td>C30/37</td>
</tr>
<tr>
<td>C30 – 37</td>
<td>C30/37</td>
</tr>
<tr>
<td>C30 \ 37</td>
<td>C30/37</td>
</tr>
</tbody>
</table>

The definition file consists of the following columns:
- Column 1: Attribute value of object attribute
- Column 2: New attribute value to be transferred to the corresponding dialog box

The definition file consists of the following lines:
- Pairs of values for mapping attribute values

If you require further information on attribute mapping, please contact our support team in Salzburg.

How to map attributes

Once you have configured attribute mapping and checked that you have the license for the corresponding precast element type, you can use attribute mapping for precast elements (precast slabs, precast walls, structural precast elements). In other words, when creating a precast element, you can retrieve the attribute values from the object attributes configured for the component you are designing, transferring those values to the dialog box for creating the precast element in question.
Attribute mapping involves the following steps:

- Select the component you want to design as usual. You can use attribute mapping for the following component types:
  - Precast slab: You can transfer attribute values from object attributes of an architectural slab. Make sure **Link with architectural slab** is selected in the Properties dialog box.
  - Precast wall: You can transfer attribute values from object attributes of an architectural wall or user-defined architectural element.
  - Structural precast elements: You can transfer attribute values from object attributes of the corresponding architectural elements or 3D objects.

If you select several objects (architectural element, 3D object) to create a single precast element, you will see the dialog box for mapping attributes a number of times. It is up to you to choose the objects from which you want to take attributes.

- While designing, you will see an additional dialog box - **Match attributes**.
  
Using this dialog box, you can
  - See which attribute values of the component will be transferred to the dialog box for creating the precast element.
  - Select the attribute values you want to transfer by clicking the corresponding icons in the **Mapping** column.
  - Stop the program from transferring any attribute value by clicking **Cancel** or **X** or pressing the **ESC** key.
- Transfer attribute values by clicking OK.

This dialog box has the following structure:

The lines of this dialog box are divided into a number of groups. This number varies depending on the current situation. Each group has a group header indicating which of the attributes defined in the PrecastAttributeMap.csv configuration file can be transferred.

The group headers have the following meanings:

- **Mapping not possible! Component does not include this attribute!**: The attribute defined in the PrecastAttributeMap.csv configuration file is not assigned to the component. Therefore, this attribute value cannot be transferred.

- **Mapping not possible! Attribute not implemented for precast element type!**: The attribute defined in the PrecastAttributeMap.csv configuration file is not implemented for the precast element type you want to create. Therefore, this attribute value cannot be transferred.

- **Mapping not possible! Cannot find entry in catalog!**: Although the attribute defined in the PrecastAttributeMap.csv configuration file is assigned to the component, this attribute value cannot be transferred, as the program cannot find a matching entry in the corresponding catalog.
Note: Attributes referring to catalogs must have matching entries in the corresponding catalog. If you use or create definition files for mapping attribute values as described in the previous section, make sure that each attribute value has a matching entry in the corresponding catalog. Attribute values without matching entries cannot be transferred!

- **Mapping not possible! You cannot use attributes of architectural layers!**: Attribute values assigned to architectural layers cannot be transferred. If an architectural wall consists of several layers, you can transfer only attribute values of attributes assigned to the wall as a whole.

- **Use attribute of component for precast element?**: The attribute defined in the PrecastAttributeMap.csv configuration file is assigned to the component and can be transferred.
The columns have the following meanings:

- In general, gray columns refer to the component of which you want to transfer attribute values. This is indicated by an A in the column headers. Green columns refer to the dialog boxes for creating precast elements to which you want to transfer the attribute values. This is indicated by a P in the column headers.

- **A ID** column = Allright_Bauteil_ID of component
- **A attribute name** column = name of object attribute of component
- **A value** column = attribute value of object attribute of component
- **P name** column = element type of the precast element you want to create
- **F attribute name** column = shows the name of the dialog box to which you want to transfer the attribute value for creating the precast element
- **P value** column = shows the initial value in the dialog box for creating the precast element before an attribute value is transferred

- **Mapping** column:
  - The attribute values will be transferred to the corresponding dialog box for creating the precast element as soon as you click OK to confirm the Match attributes dialog box.
  - The attribute values will not be transferred to the corresponding dialog box for creating the precast element.
  - The attribute values cannot be transferred to a dialog box for creating the precast element.

The program maps the attributes in the following sequence: The program transfers attribute values marked with to the corresponding dialog box(es) for creating the precast element(s) in the sequence in which these attribute values are defined in the PrecastAttributeMap.csv configuration file. If you do not want to open the configuration file, just look at the Use attribute of component for precast element? group. The sequence in which the attribute values are listed in this group matches the sequence of the attribute values defined in the configuration file.
Note: The sequence is particularly important if you want to transfer several attribute values to one and the same dialog box. In this case, the program transfers the last value you selected for transfer to the corresponding dialog box.

Consequently, all concrete layers (visible, invisible and in-situ concrete) of the double wall would get a concrete grade of C25/30. As the program transfers two more attribute values, the visible and invisible layers get a concrete grade of C30/37.

- Create the precast element(s): Create the precast elements as usual.

Saving a detailed drawing file as a symbol

We improved saving of detailed precast elements to the symbol catalog so that you can easily use these detailed precast elements as new detailed precast elements later.

When saving a detailed precast element to the symbol catalog, the program removes the references to model drawing files.

- In the case of iParts, the detailed precast element will additionally be converted to a normal precast element. After having retrieved the iPart from the symbol catalog, you can use it as a normal precast element. Using the Assign Detailed Drawing File tool, you can also use the iPart as a detailed precast element for another model precast element.
• In the case of slab elements (half floor and concrete slab) and wall elements (concrete wall and sandwich wall), the program cannot convert detailed precast elements to normal precast elements due to the special data structure of detailed precast elements. Consequently, when retrieving a slab element or wall element from the symbol catalog, you can use it only as a detailed precast element for other model precast elements. After having placed the symbol, you can open the Assign Detailed Drawing File tool to use such a precast element as a detailed precast element for another model precast element. The Model = ? text in the ToolTip of a precast element indicates that the detailed drawing file is not linked with a model drawing file. The precast slab or precast wall in question was assigned as a detailed precast element to a model some time ago. But now this precast element is no longer linked with a model and you can use it as a detailed precast element for a model precast element. After you have assigned it to a model precast element, the ToolTip displays the reference to the model drawing file.

Rearranging a detailed drawing file

As you cannot rearrange a detailed precast element in a detailed drawing file, you will see the You cannot rearrange detailed precast elements. message if you try to do this.

Reports of model drawing file with data of detailed drawing file

When creating reports of loaded model drawing files, you can include the data of detailed drawing files. This new feature is supported by precast element reports only. However, the reports output all components of the precast element, including reinforcement and fixtures. If some models do not have detailed drawing files, the reports take the data from the models as usual.
Element plan

Layout catalog

Size of dimension line as a whole

You can define the Zoom factor for dimension text in the Dim. line parameters group on the Dim. lines tab of a View or section in Catalogs - General - Layout catalog.

The default value is 130%.

Dimensioning reinforcing bars of structural precast elements, iParts

You can choose to dimension Bar stock in the Dim. lines group on the Dimensioning tab of a View or Section of structural precast elements, iParts in Catalogs - General - Layout catalog.

This dimensions the reinforcing bars created in the Engineering modules.

Dimensioning placements

You can select the additional Dimension placement method for dimensioning Bar stock (structural precast elements, iParts) and Sec. bars (slabs and walls).

This dimensions the start point and end point of the placement.

Mark numbers of basic mesh reinforcement

Unlike secondary meshes, basic reinforcing meshes did not get automatic mark numbers in element plans in earlier versions.

Therefore, you can select the new Basic mesh reinforcement option in the Mark number of reinforcement group on the Text tab of a View in Catalogs - General - Layout catalog. By default, this new option is off.

To make things clearer, we renamed the old Label option Secondary reinforcement.

In addition, we divided the Basic reinforcement, details group on the Table I tab for the element plan table in Catalogs - General - Layout catalog into two groups: Basic bar reinforcement, details and Basic mesh reinforcement, details.
We did not change the entries in the Basic bar reinforcement, details group.

Except for List’s sort mode, the options in the new Basic mesh reinforcement, details group are the same as the options available for bar reinforcement.

The program still outputs meshes in the same area as bars. If you want to change this, you must change the number for basic mesh reinforcement using the Sequence in table option.

**Special dimensioning for reinforcing bars, secondary bars and fixtures**

You can find the new Special dimensioning of bar stock (structural precast elements, iParts) and Special dimensioning of secondary bars settings (slab and wall) in the Other settings of a front view, back view or section with the Viewing direction 1 or 6.

In addition, we slightly changed the setting for Special dimensioning of fixtures in the Other settings.

Instead of selecting a check box, you can now use a selection dialog box to define the label. The following settings are available: No, By index (this is equivalent to selecting the former check box) and By name.

If you select the setting for Special dimensioning of bar stock or Special dimensioning of secondary bars or By name for Special dimensioning of fixtures, you can also select the Include name of dimension line and Include additional text of dimension line settings.

If you have selected at least one of these two options, you can define whether special dimensioning is to be horizontal, vertical or horiz+verti.. If you select No, the program will not create the corresponding dimension lines.

**Include name of dimension line**

If one of the three labeling options mentioned above is selected, you can see the Pattern line. Using the PLANBAR Formula editor, you can define a name for the dimension line.

The program uses this name to group the reinforcement (secondary bars, stirrup cages, bars from the engineering modules) or fixtures on the dimension line.

Here, grouping means that all reinforcing elements or fixtures with the same name will be on the same dimension line.
Therefore, this setting overrides the dimension line indexes, which you cannot use in combination with special dimensioning.

Note: The dialog box displays the selected attributes as numbers (for example, @1473@).

Include additional text of dimension line

Here, too, if one of the three options (horizontal, vertical or horiz+verti.) is selected, you can use the PLANBAR Formula editor to define additional text for the reinforcement element or fixture in the Pattern line.

- If there is enough space between the dimension line points, the program will write the additional text directly to the dimension line.

- Otherwise, the program will draw a leader pointing to this text.

Note: For Bar stock (structural precast elements, iParts) and Secondary bars (slabs and walls), you should use the Include additional text of dimension line setting only together with the Dimension placement setting, as this is the easiest way to place additional text.

The program always writes additional text between a polyline (which is dimensioned). If a bar or fixture has several polylines per axis, the program will write additional text only to the first polyline. The other polylines will not be labeled. Otherwise, additional text would appear a number of times for each component.

New attributes for dimensioning reinforcement

You can find two new attributes for use with the new element plan settings for dimensioning reinforcing bars and secondary bars.

To analyze bars or fixtures per dimension line, you can use the

- New Number of elements in dimension line of element plan attribute (@1473@, integer) and the

- New Number of bar spacing attribute (@1471@, integer).

You can find these new attributes in the Precast elements category.
New function for converting the units for use in the USA

To convert a metric unit to the currently set American unit (feet, inches) for dimensioning, you can use the new IMPPRE function with 2 parameters [IMPPRE(\text{Parameter 1}, \text{Parameter 2})].

The parameters of the function have the following meanings:

- \textbf{Parameter1} defines the attribute to be converted
- \textbf{Parameter2} defines the unit of the attribute currently set
  - \textbf{Parameter2} = not defined \Rightarrow attribute in mm
  - \textbf{Parameter2} = 1 \Rightarrow attribute in cm
  - \textbf{Parameter2} = 2 \Rightarrow attribute in m
  - \textbf{Parameter2} = 3 \Rightarrow attribute in km
  - \textbf{Parameter2} = any other value \Rightarrow attribute in mm

Dimension line parameters for additional text can be switched on and off independently

In the Properties of Dim. lines of a View or Section, we divided the setting of the Dimension group as additional text parameter and the Text attributes of dim. group group into the Text attributes of additional text group, the Write dimension group to dimension line parameter and the Text attributes of dim. group group.

Displaying the center of gravity of individual layers

We removed the Individual layers option for Displaying the center of gravity from Properties - Symbols - Center of gravity in drawing and Properties - Dimensioning - Dimensions for center of gravity. In earlier versions, you could select this option for slabs and structural precast elements, iParts, although only the Formwork for an Entire component can be displayed in Properties - Formwork/display - General at any one time.

New option for elevation dimensioning

You can find the new Top level option in the Elevation specs group on the Dimensioning tab in the properties of a View or Section.

Like the Basic edge, the Top level can be given elevation dimensioning that is independent of the Panel edge.
Section along curve for components of the stair type

The layout catalog provides the additional Section along curve option for structural precast elements, iParts of the Stair type.
You can only select this button if the current layout applies to a structural precast element, iPart of the Stair type.
After having placed the section along a curve, you can specify the parameters for the section in a dialog box.
Start by defining the Section line in the Section group. This section line can be on the Inside of the stair, directly on the Line of travel or on the Outside of the stair. You can set the viewing direction From outside or From inside.
The Section identifier group includes the parameters for the Name (any name) and the associated Text attributes.
Finally, you can choose to include the Step numbers. To do this, use the Label steps group. After having selected this option, you can define the Text attributes for the numbers of the steps.

Selecting the elements to be displayed

We changed the Selection with Mark Number on/off option in Element Plan and Transfer Element Plan so that Selection with Precast ID on/off is now possible, too.
To select this new option, use the Selection with: option on the new General tab in Configurations - General - Program Sequence - Element plan.
You can choose between Mark number and Precast ID.
Select Precast ID if you want to select elements using the precast ID.
Attached reinforcement

Note for lattice girders

If reinforcement in the direction of lattice girders (usually, longitudinal reinforcement) is not required due to lattice girders included in the design (for example, Include load capacity of girders in calculation is set on the Lattice girders tab), the program displays the following message: Load capacity of lattice girders does not require a reinforcement area in the longitudinal direction.

Diameter catalog, locked entries

All entries on the Welding 1 to Welding 5 tabs in the Diameter catalog in Catalogs - General are only available if the corresponding diameter can be used with attached reinforcement.
Precast slabs

Connecting joint parameters

All slab types provide parameters for defining the Connecting joint (Supports and Chamfers).

To access these parameters, click the Connecting joint... button when you design or modify a slab.
Therefore, we slightly reworked the dialog boxes of the other parameters.

- For some slab types (for example, half floor and concrete slab), we reduced the size of the Profiling... button, which is always visible, so that there is enough space for the new Connecting joint... button.

- For other slab types (for example, TT slab and BubbleDeck), we integrated the new button directly below the Design... button.

Click the Connecting joint... button to open the Supports dialog box, where you can find the support parameters for the relevant slab type.

Note: When you open this dialog box for the first time, all parameters have the value 0 and the check boxes are not selected. As soon as you define values and select check boxes, the program remembers the settings, proposing them the next time you open this dialog box.

Unlike exterior supports for panels, only parameters for Reinforcement and Chamfers of panel edges can be selected. You cannot define parameters for a Support (Width, is a >smooth edges<) or special components (Component 1, Component 2)!

You can set the panel distance (= joint width between elements) on the Design Placing Region Context toolbar (Joint setting) as usual.

When you design or modify a slab, the program assigns the settings to all connecting joints.

In the case of offset edges, the program identifies the entire edge length as the connecting joint. If the freestanding edge ends are to get distinct attributes, you must manually click these ends and define a support that is smaller than half the joint width when designing the slab.

Note: You cannot modify a panel edge using the Modify Parameters, Basic Reinforcement tool.

### Including the weight of lattice girders for concrete slabs

Using the additional Consider lattice girders setting in Configurations - Slab Programs - Concrete Slab - Entry - Weight calculation tab, you can configure the program to include lattice girders when Calculating weight using the Net volume of concrete (= Option 2).

The default value is 100 %.
Switching cutting edge/stop position

Updating the design no longer changes the manual setting of Switch cutting edge / stop position for slab elements in Modify Parameters, Basic Reinforcement.

The program retains the side of the cutting edge even if you change the design (for example, choose another design option, change the fixed points for element division, modify supports, apply Stretch Entities to the placing region and so on).

To assign the correct side to the precast elements in question, the program checks the centers of gravity of the precast elements. This is similar to the other parameter you can change using Modify Parameters, Basic Reinforcement.

The toolbar may display a message when you click Properties while modifying the placing region using Modify Design.

When you click OK to confirm this message, the program removes the manual setting of Switch cutting edge / stop position, using the default setting for calculating the cutting edges for this design.
Precast walls

Designing multilayer architectural walls and user-defined architectural elements

Using Wall Element Design, you can design multilayer architectural walls and 3D objects.

Designing multilayer architectural walls

When designing multilayer architectural walls, the program takes the thickness settings of the precast element layers from the thickness settings of the architectural layers.

For each precast element layer, you must specify the architectural layer in which you want to create the precast element layer. To do this, you can use the new Wall layer no. line when entering the layers.

This new line with the Calculate layer thickness check boxes controls how the program assigns the thickness settings to the precast element layers.

These new options are only available when you click a multilayer architectural wall.

• If exactly one precast element layer is assigned to an architectural layer, the precast element layer automatically assumes the layer thickness from the architectural layer.

In this case, the check boxes in the Calculate layer thickness line are selected automatically.

In the following example, an architectural wall consisting of three layers is designed using the sandwich wall design mode. Each precast element layer is assigned to a discrete architectural layer. ➔ Each precast element layer assumes the thickness of the relevant architectural layer (see Wall layer).
If one or more precast element layers are assigned to an architectural layer, the precast element layers share the thickness of the common architectural layer. In this case, you need to select the check box in the “Calculate layer thickness” line for one of these precast element layers. This defines the layer with the variable thickness. In other words, this layer fills the rest that is left by the thickness of the other precast element layer(s).

In the following example, an architectural wall consisting of two layers is designed using the double wall design mode. All three layers of the double wall are in the first architectural layer. The program automatically calculates the thickness for one of the three precast element layers (in this example, the layer of in-situ concrete), which fills the rest that is left by the two other precast element layers. The second architectural layer is not assigned to a precast element layer.
It is possible to define architectural layers without precast element layers. In doing so, make sure you use consecutive architectural layers for creating precast element layers (for example, precast element layers in layer 1 and layer 2 of three layers). Otherwise, the program will issue an error message (for example, precast element layers in layer 1 and layer 3 of three layers).
Designing user-defined architectural elements

You can create user-defined architectural elements in various ways in PLANBAR. For example, you can enter user-defined architectural elements using the User-Defined Archit. Element tool. You can also derive them from 3D objects using Convert Elements - Conversion Mode - 3D to U-D Elements or you can create them using Import IFC Data.

For designed user-defined architectural elements, the program provides the additional Orientation group on the Wall type, layers tab in the Design Type palette.

Unlike architectural walls, user-defined architectural elements do not have any defined structure. While designing, the program thus looks for the largest surface of the user-defined architectural element. Using the direction that is perpendicular to the largest surface, the program defines the Viewing direction, Reference point and Triangle indicating the visible side.
If you select the Viewing direction or Reference point, the program uses an arrow to display this combination for the designed wall. The tip of the arrow points to the Reference point; the direction of the arrow indicates the Viewing direction.

You can change the Viewing direction and Reference point at any time.

The Reference point marks the point where the first layer begins. Starting from the reference point, the program applies the thickness settings of the layers.

You can define the layer thickness in two ways:
• All thickness settings of the precast element layers are fixed. This means that you enter a fixed value for each thickness setting; there is no variable rest. If you want to use this option, clear all check boxes in the Calculate layer thickness line.

Any projecting parts of the user-defined architectural element belong to the first or last layer.
- One layer is variable.

Please note that you cannot set any layer to variable (Calculate layer thickness line), but you have to select the layer that is variable when you design single-layer architectural walls. For the other layers, the Calculate layer thickness check box is grayed out and not available.

<table>
<thead>
<tr>
<th>Layer</th>
<th>visible leaf</th>
<th>In-situ concrete</th>
<th>invisible leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate thickness</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Thickness</td>
<td>0.05</td>
<td>0.2</td>
<td>0.05</td>
</tr>
<tr>
<td>Material</td>
<td>C30/37</td>
<td>C30/37</td>
<td>C30/37</td>
</tr>
</tbody>
</table>

Projecting parts at the start of the user-defined architectural element belong to the first layer.

There is no rest at the end. Due to the variable layer thickness, the last layer always extends as far as the end of the wall.
Wall element design

Splay at top and bottom of wall

Using the new Splay at top and Splay at bottom check boxes on the Layer adjustments, concrete strips tab in the Design Type palette for walls created with Wall Element Design, you can choose to create a horizontal wall even if the top or bottom of the wall is inclined due to sloping planes. You can select the check box separately for the top and bottom of each layer.
Parameters for cast-in nuts

The program saves the settings for Parameters for cast-in nuts on the Cast-in nuts tab of Basic reinforcement,... for walls created with Wall Element Design separately for each design type. Consequently, you do not need to define the parameters again when you clear the Create cast-in nuts check box and then select it again.

Lifting bolts as loops

We adjusted the algorithm used for creating lifting bolts for walls of the Double wall type created with Wall Element Design. Taking the settings for layer thickness and concrete cover into account, the program always creates the lifting bolts evenly in the element (transverse element direction), regardless of whether you select Create as bars or Create as loops.
Structural precast elements, iParts

Architectural stair

You can convert an architectural stair (Input option = Architectural component) to a structural precast element, iPart of the Stair type (Match button selected).

If you close the Stair Geometry dialog box of an architectural stair, the program asks whether you want to save the changes. If you click

- Yes, the program also recreates the structural precast element and its label.
- Cancel, the architectural dialog box stays open until you click Yes or No.
- No, the program discards the changes. The stair stays as it is.

Bottom of stair

In earlier versions, you had to define the landing at the bottom to actually create a stair without a landing at the bottom. At the same time, you had to reduce the total Number of steps by one step. You can now create such a stair quickly and easily.

Note: You can even define such a stair using the Input option = Architectural component setting, as you can now set Rise, bottom step to 0.
Formwork

Modifying mark number

Using the new Modify Mark Number tool, you can manually control the mark number of a formwork element.

The following settings are available:

- You can choose Ascending or Identical for the Mode. The Mode setting is the same as for precast elements. The Identical setting combines identical formwork elements; the Ascending setting gives each formwork element its own mark number.

- Using Size, you can define whether small elements are to get small mark numbers [Ascending (small elements first)] or large elements are to get small mark numbers [Descending (large elements first)]. You can even switch off sorting by panel size (Off).

- If you select Ascending for the mode, you can change the type of the First number. You can choose between Enter number or Match from component.
  - The Enter number option is the same as for rearranging precast elements.
  - When you select Match from component, the program starts with the number you defined in the Create Formwork Areas dialog box when you created the formwork areas.

If you select Identical for the mode, you can also define the First number. However, you can only enter a number. Other options are not available.

- The Element type setting checks which elements are in the drawing file. Consequently, the toolbar offers only element types that are in the drawing file.
  There can be Automatic formwork elements, Manual formwork elements or both formwork elements. After you have selected an element type, the program rearranges only the formwork elements of this type.

- If you select Identical for the mode, you can use the Select basis and Change entire group settings, which are the same as for precast elements.
Data formats for production data

You can choose various data formats for creating production data. The following data formats and types are available:

- MSta_DGN (Microstation DGN) V8

Reports and legends

You can use new reports and legends for analyzing formwork elements created with the Formwork module.

- New reports ➔ Formwork - elements - A4.rdlc, Formwork - elements, with dimensions - A4.rdlc, Formwork - formwork elements.rdlc and Formwork - formwork elements, with dimensions.rdlc
- New legend ➔ 21 Formwork elements with graphics

In addition, we reworked all reports and legends.

Selecting formwork areas

The Allocate Formwork Area toolbar provides the New selection of formwork areas function.

When you select this function, you can select formwork areas separately or using the Brackets. Please note that you still cannot use a selection rectangle to select formwork areas with the New selection of formwork areas function.
Interaction between TIM and PLANBAR

Transferring project data from TIM to PLANBAR

Generally, an order in a precast factory is initially entered in an ERP system. In doing so, the person entering this order defines important master data.

So that you do not have to enter these data in the CAD system again, TIM provides a web service. Using this web service, you can create a project and its master data (project attributes) in the TIM database and then transfer this project and its data to the CAD system.

While creating a project, PLANBAR can automatically import the project attributes from TIM.

Using a web service, TIM writes an interface file in XML format to the root folder of the PLANBAR project path.

Note: You can find more information on the web services in the documentation for TIM.

As soon as you have created a New Project in PLANBAR using New Project, Open Project, PLANBAR scans the project path for an interface file in XML format having the same name as the new project.

Note: This feature is not available when you use ProjectPilot to create a project.

If PLANBAR finds a corresponding file, it imports the attributes defined in this file into the project, moving the file to the project folder.

PLANBAR scans the project path for an interface file in XML format whenever you close the dialog box for selecting a project. This means that PLANBAR also scans the project path when you switch between projects. In addition, PLANBAR checks the path of the current project when you start the program. This way, you can even change attributes later by means of the web service.

When importing a new file or a modified file, PLANBAR imports only the attributes that are defined in the XML file.

The name of the new project must be exactly the same as the name of the XML file. In addition, make sure the name includes only valid characters and is not too long. Otherwise, PLANBAR will not import the file.
Invoice items for precast elements

Generally, invoicing parameters of a precast element are defined in the ERP system.

This applies not only to the unit used for invoicing (for example, by piece, length, area, volume and so on) but also to the method used for calculating the quantity for invoicing (for example, options for calculating areas, reinforcement to be invoiced and so on).

In addition, precast elements for particular construction stages are often offered at a fixed price. Such precast elements can be assigned to an invoicing item defined by the ERP system. Based on this invoicing item, these precast elements can be identified and invoiced quickly and easily.

Using an interface, this information can be transferred from the ERP system to the CAD system. After transfer, you can assign this information to the precast elements in question.

Using a VPOS file, the ERP system (for example, TIM) exports the data to PLANBAR, which imports the data automatically.

You need to configure the name of the file (for example, you can use parts of the drawing file name or project name) in Configurations - General - Program Sequence - Export file name - Contract name (Export name for production data or ERP data).
Make sure each contract gets a unique name.

PLANBAR displays the contents of the VPOS file in a dialog box. You can then assign this information manually to the precast elements.

In earlier versions, this feature was only available for structural precast elements, iParts, where you could define the necessary parameters on the **Invoicing** tab. Now this feature is also available for precast slabs and walls created with **Wall Element Design**. In addition, we reworked the parameters and added new ones.

In the case of

- Structural precast elements, iParts, you can find the entries on the **Invoicing** tab as usual.
- Precast slabs, you can find the new **Invoicing**... dialog box in **Properties**.
- Walls created with **Wall Element Design**, you can find the entries on the new **Invoicing** tab in the **Design Type** palette

**Note:** This new feature is not available for walls created with **Design**!
Select an entry in the dialog box and define the invoicing parameters as you need. Please note that the entries you define for slabs and walls always apply to all elements of the placement in question.

Some data of the VPOS file are not included in the invoicing parameters; those data affect the default settings for designing and creating reinforcement. For example, this applies to the concrete grade, exposure class and steel grades.

You can define default settings for the entries in the dialog boxes in the \textit{Configurations} of the relevant slab type or wall type or structural precast elements, iParts. Use the new \textit{Invoicing} group with the \textit{Quantity calculation} tab.

In the case of

- Precast slabs and walls, you can define the Basis for invoicing (for example, Concrete area, Area including bar overlap, Greater concrete leaf, Greater height $\times$ mean width and so on).
- Structural precast elements, iParts, you can define the Invoice unit (for example, Piece, Length (per meter) and so on).
- All precast elements, you can define the method for calculating areas (for example, Panel outline (polygon), Circumscribed rectangle (LxW) and so on).

After this, define the recess area to be ignored (Ignore RECESS area) and the proposed values for Cutting waste for bars and stirrups, Cutting waste for lattice girders and Cutting waste for meshes and bent-up meshes.

Finally, you can enter a Product code for ERP systems and production.

In addition, you can find the new Note for elements without invoice items setting in \textit{Configurations - TIM - Data export - General - Options} tab. You can define this setting separately for Slab elements, Wall elements and Structural precast elements, iParts.

If you require further information, please contact our support team in Salzburg.
Data export of building structure

Using the settings, you cannot analyze the building structure in the attributes of the List Generator and NC Generator.

You can use the names of the default structural levels in the attributes (for example, story, sub-story, building). However, this requires some special settings.

- The List Generator provides variables mapping the entire structure. For each precast element, there is an array including the structural levels (name, structure type, index and index referring to the superordinate structural level). These structural levels can be analyzed by special lists.

- In NC Generator, you can use a special INI file to transfer names from the structural levels to the attributes of the Unitechnik interface or PXML interface.

If you require further information, please contact our support team in Salzburg.

Exporting layouts as PDF files

You can find the new Export layouts as PDF files setting in Configurations - TIM - Data export - General - Options tab.

After you have selected this option, the Export TIM Data tool exports the layouts and placing drawings belonging to the selected precast elements (and thus to the drawing files) as PDF files to the database.
Production planning

PXML 1.3 attributes for structural levels

Using PXML 1.3, you can transfer attributes of the PLANBAR building structure in the Order section of the PXML file.

This applies to the following attributes:

- **Structure**: associated with the name of the Structure structural level (provided it is used) to which the drawing file is assigned.
- **Building**: associated with the name of the Building structural level (provided it is used) to which the drawing file is assigned.
- **Story**: associated with the name of the Story structural level (provided it is used; otherwise, the Story project attribute is used as usual) to which the drawing file is assigned.
- **SubStory**: associated with the name of the Sub-story structural level (provided it is used) to which the drawing file is assigned.
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