



AUCOTEC
Create Synergy – Connect Processes

Engineering Base

New Features in Version 2020

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1 Common Update Notes

1.1 Migration of Data from Previous Versions

To migrate data from previous Engineering Base versions, you must update the database with the database manager.

How to update a database:

1. Open the **Database Manager** via the Windows **Start menu**.
2. Select the tab **SQL Server Instance** and click **Update databases**.

The dialog now shows a list of the databases which have not been updated yet. Mark the databases to be updated and start the update.



You can access databases of previous Engineering Base versions with **Engineering Base** only if they have been updated. Databases not matching the installed Engineering Base version are not displayed in the **Open Database** selection dialog.

2 Extensions To Product Families

2.1 Plant Engineering

2.1.1 Data Model

2.1.1.1 New Pin Type "Mechanical"

For Plant Engineering, the pin type "Mechanical" has been added. This new pin type is available at devices. You can use it to create mechanical networks on process flow diagrams, P&I diagrams and system control diagrams.

Mechanical pin types have the following system attributes:

- Part Of
- Pin designation
- Comment
- Type
- Pin Position
- Frozen by P&ID

On editing mechanical networks, the following applies:

- Mechanical pins can only be connected to mechanical pins.
- Potentials and flow streams are not passed on through mechanical pins.
- You can create automatic pins of the type "Mechanical".

2.1.1.2 New Shape Type "System Control Diagram (SCD)"

To edit diagrams of the smart diagram types "System Control Diagram (SCD)" and "Logic Diagram", you can now create master shapes of the type **System Control Diagram (SCD)**.

You can store master shapes of this type on the following stencils:

- Units
- Chemical Substance
- Functions
- Devices
- Cables
- Flow Streams
- Pipelines

The following functionalities are available on using shapes of this type:

- Scaling of shapes
- Creation of automatic pins



For pins of units and devices, you can also use the new pin type "Mechanical".

2.1.2 New Assistants

2.1.2.1 AML-Interface

You need one of the licenses listed below:	EB Process Engineering EB Detail Engineering EB Plant Engineering
Contained in the following business solutions:	Plant Engineering - FEED & Process Plant Engineering - Detail

Using the **AML Interface** Assistant, an export and import functionality for data in the AML (Automation Markup Language) format is now available:

- Using the export function, you can output data of system control diagrams (SCD) in the AML format.
- Using the import function, you can update the Engineering Base data of system control diagrams with the contents of AML files.

You can start the assistant from the following objects:

- the Documents system folder
- one of its subfolders
- drawings
- system control diagrams

Before starting export and import actions, the relevant data must be defined in the configuration dialog:

AML Library

This file must be specified for the export. It contains the AML types that are to be used for the export. It is complemented with Engineering Base data and saved as an export file in the Engineering Base database.

- ⊕  Equipment
- ⊕  Functions
- ⊖  Documents
 - ⊖  08.08.2019 15:57:26
 - ⊕  SCD-KM#3
 - ⊕  13.06.2019 14:52:10
 - ⊖  SCD
 - ⊕  SCD-KM#3

Attribute Mapping

Mapping of Engineering Base attributes to AML Attributes

Use status attributes

Activate this option if status attributes are to be saved at objects during the export or the import. In the configuration dialog, you can select the status attributes.

Use attribute's status

Activate this option if an attribute status is to be set at objects during the export or the import. In the configuration dialog, you can select the attribute status.

2.2 Power Distribution

2.2.1 Extensions of the "Equipment Diagram Assistant"

You need one of the licenses listed below:	EB Plant Engineering EB PTD Plant EB PTD Detail EB EVU / PTD EB Power
Contained in the following business solutions:	Power

Using the Equipment Diagram Assistant, you can create interrelated representations of devices, i.e. equipment diagrams. The assistant can be started from the following objects in the Equipment tree:

- Unit
- Device

Using the master shapes **DEVxxx** which have been designed for that purpose, it creates the equipment diagrams for the equipment starting from the selected object. For complex devices, the representation on the equipment diagram can alternatively be done via typical of an assigned typical project.

The graphic representations contain:

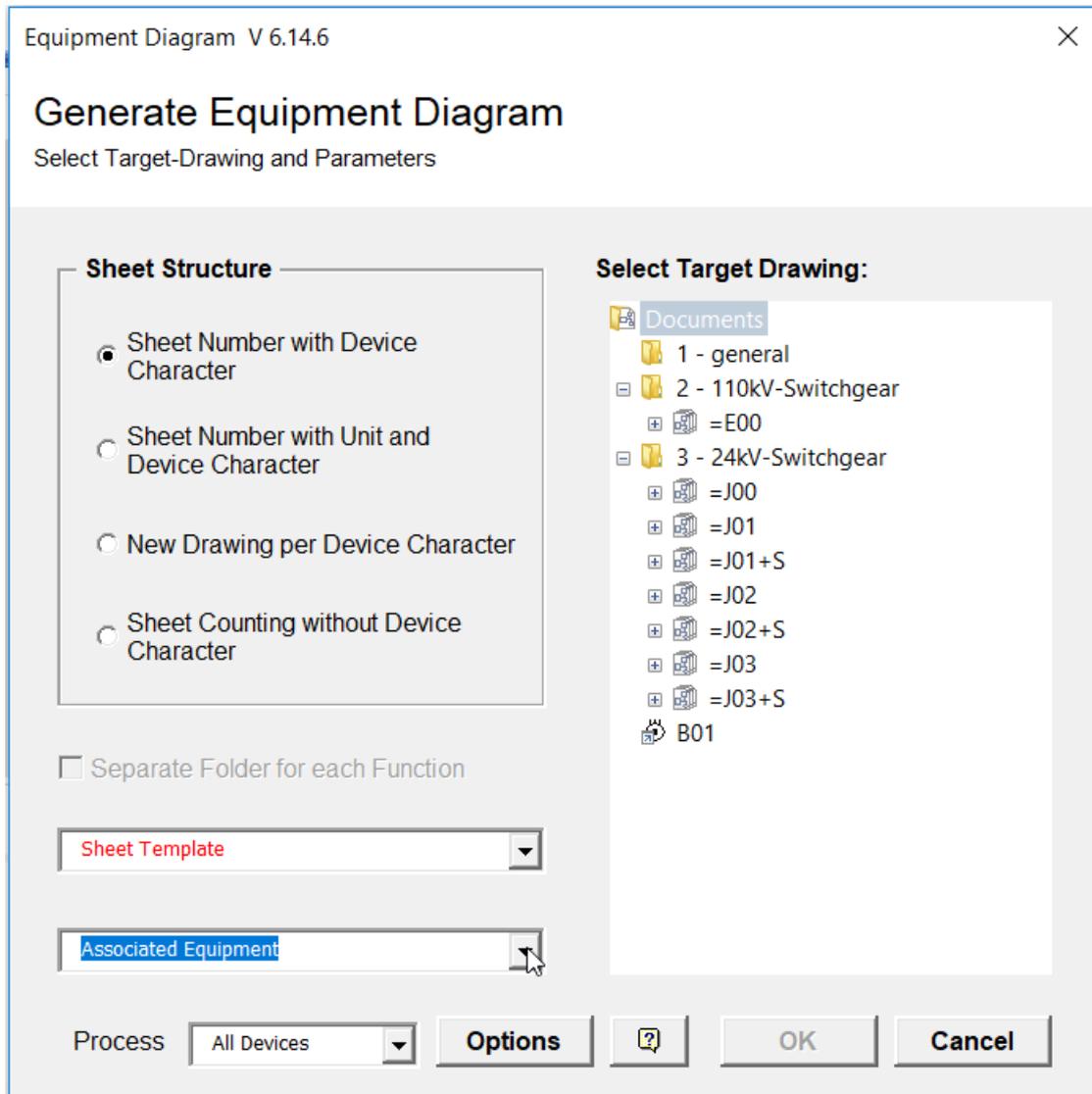
- the technical data of the equipment and any possible components.
- the complete representation of the equipment with all related symbols and cross-references.

The equipment diagram combines similar components. Sorting within these blocks is done

- by the unit
- by the item designation
- by the material number.

Current Improvements:

1. In the start dialog of the assistant, you can now select a piece of equipment and / or a unit from a selection list; these items are then assigned to the result sheets.



2. The option **RDS/PP KKS** has been removed. Because of that, differing prefixes are no longer needed for equipment list master shapes. The fields **Prefix Graphic Shape for KKS** and **Prefix Cross Ref Shape for KKS** have been removed from the **Options** dialog. The names of master shapes for equipment lists now invariably start with **DEV**.

2.2.2 Enhancements of Peer to Peer Cross-References for Equipment

You can now select the option **Peer-to-peer cross-references for equipment are created only within the same drawing or folder** in the project properties under **Visio Settings/Cross-References**.

If you select this option, the Boolean attribute **Peer references only within this level** is created at all subfolders and at all drawings within the **Documents** folder on the system attributes tab. Subfolders are objects of the following types:

- Folder
- Document Level

By means of the attribute, you can set the level from which the cross-references are to be created:

- If the attribute is checked at one or more folders or at one or more drawings, the peer-to-peer cross-references are created for all pieces of equipment located on sheets of these folders or these drawings.
- If the attribute is neither selected at any folder nor at any drawing, the cross-references are only created, as before, between those pieces of equipment located on sheets of a drawing or a folder located below the Documents folder.

3 Redesign and Extension of Assistants

3.1 Extensions in the “Terminal Block Designer”

<p>You need one of the licenses listed below:</p>	<ul style="list-style-type: none"> EB Detail Engineering EB Plant Engineering EB PTD Plant EB PTD Detail EB PTD Project EB Plant Engineering (Campus) EB Data Editor EB Electrical Pro EB Instrumentation Detail EB Instrumentation Pro
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3.1.1 Bridge Symbols for the Representation of Fixed Jumpers

In the Terminal Block Designer, you can now also represent fixed jumpers with bridge symbols.

1. To do so, expand the terminal data table by adding the columns **B1 Symbol Left, ..., B8 Symbol Left** and **B1 Symbol Right, ..., B8 Symbol Right**.
2. Click the row of a symbol column of the fixed jumper (B1 Symbol - Bn Symbol) which contains the end point (terminal with the highest terminal number) in the respective column B1 - Bn.
3. On the shortcut menu, click **Select symbol**, then assign a bridge symbol to the fixed jumper via the **Select terminal accessory** dialog.

The bridge symbols are then displayed in the respective symbol column B1 Symbol - Bn Symbol.

3.2 Extensions to Terminal Block Diagrams

3.2.1 Extensions to the Multi Terminal Block Diagram

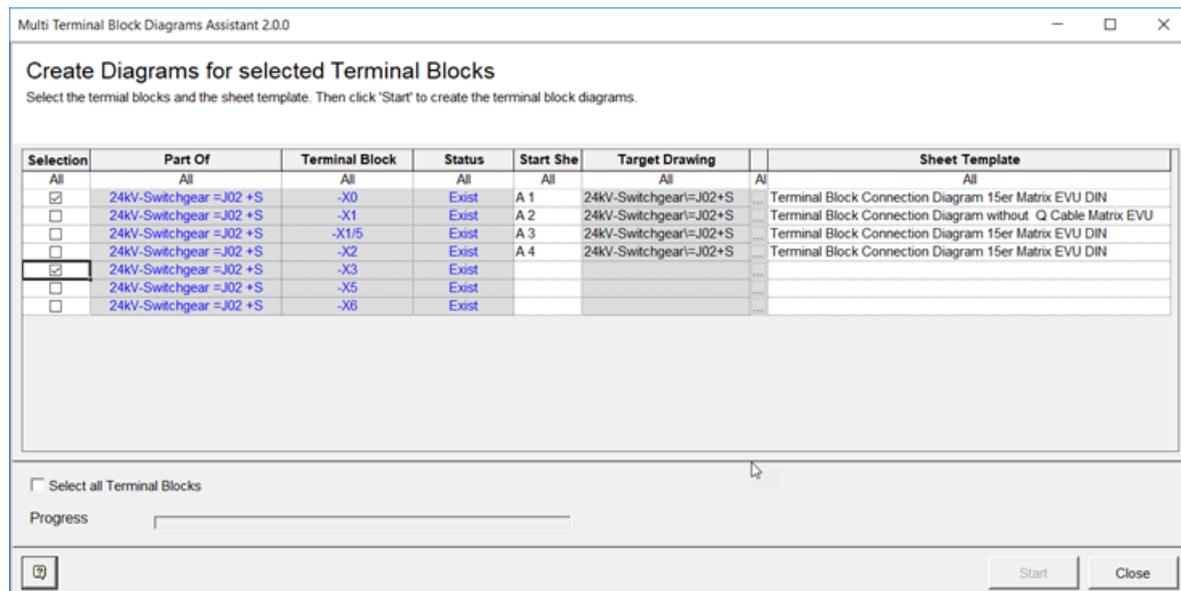
You need one of the licenses listed below:	No license required
Contained in the following business solutions:	Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards System Engineering Harness Design Plant Engineering - Detail

In the **Multi Terminal Block Diagram Assistant** dialog, you can now sort and filter the data of the selected terminal blocks in all columns of the table. The terminal block diagrams are output according to the sorting you have specified.

As of this version, the entire designation of the terminal block is displayed split across two columns:

Part Of: Shows the superordinate structure of the terminal block. Only those objects are shown where the attributes **Designation** or **Name** are filled.

Terminal Block: Name of the terminal block



Example for the creation of terminal block diagrams with predefined values

By default, there is no filter defined; the cells in the second row therefore contain the value "All".

Click the second row of the column for which you want to define a filter or that is to be sorted. A selection list of all potential filters and sortings is displayed via the arrow key.

The following sorting and filter options are available:

All: This is the default. No filters and sortings have been selected.

Sort Ascending or **Descending:** Select the required sorting for the data in this column.

Custom: In the displayed **Custom autofilter** dialog, you can define two filters connected by **And** or **Or**.

Filtering by a comprised column value: Via the selection list, you can filter by a column value.

3.3 Enhancements of the “Attribute View Configuration” Assistant

<p>You need one of the licenses listed below:</p>	<p>EB Basic Engineering EB Process Engineering EB Detail Engineering EB Plant Engineering EB PTD Plant EB PTD Detail EB PTD Project EB Plant Engineering (Campus) EB Plant Operation EB Data Editor User Management</p>
<p>Contained in the following business solutions:</p>	<p>Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards Instrumentation Basic Engineering System Engineering Harness Design Automotive Harness Design Fluid Minerals Processing Plant Engineering - FEED & Process Plant Engineering - Detail</p>

3.3.1 Configuration of Visibility and Write Protection

With the **Attribute View Configuration** assistant, you can now not only define which attributes of the Engineering Base object types (TID) are to be displayed for a user group (visibility). You can also define which attributes can be changed by the user group (write protection).

If a user is a member of two user groups with differing view configurations, the following rules apply:

- If an attribute is selected to be visible in a configuration, the attribute is always visible for the user.
- If an attribute is selected to be read-only in a configuration, the attribute is always write-protected for the user.

3.3.2 Attribute View Configuration Settings in Worksheets

The settings of the Attribute View Configuration are now also effective in worksheets. Because of that, worksheets only display the attributes which may be edited by a user group and its members.

If the Attribute View Configuration settings are not to be effective in worksheets, you can deactivate the settings via the database key **DisableAttributeViewForWS = 1** under **Database Properties/Custom Settings**.

3.4 Enhancements of the "Update of Customizing" Assistant

You need one of the licenses listed below:	No license required
Contained in the following business solutions:	Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards Instrumentation Basic Engineering System Engineering Harness Design Automotive Harness Design Fluid Minerals Processing Plant Engineering - FEED & Process Plant Engineering - Detail

Using the Update of Customizing assistant, you can distribute the customizing of databases to sites which are not mutually connected, or you can adjust them. The export and import functionality of the assistant also supports you in transferring stencils.

As of this version, you can create subfolders for your stencils in the stencils folder **Circuit components**. These folder structures are taken into account by the export and import functions, and the stencils are transferred to the respective subfolders.

3.5 Enhancements of the "Smart PDF" Assistant

You need one of the licenses listed below:	EB Basic Engineering EB Process Engineering EB Detail Engineering EB Plant Engineering EB PTD Plant EB PTD Detail EB PTD Project EB EVU / PTD EB Plant Operation EB Data Editor EB Electrical Pro EB Instrumentation Detail EB Instrumentation Pro EB Fluid
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	SmartPDF
Contained in the following business solutions:	Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards Instrumentation Basic Engineering System Engineering Harness Design Automotive Harness Design Fluid Minerals Processing Plant Engineering - FEED & Process Plant Engineering - Detail

3.5.1 PDF Export with Hyperlinks

On creating PDF files using the **Smart PDF** assistant, you can now add hyperlinks. That way, you can link from an object on the PDF diagram to, for instance, the homepage of a manufacturer.

For that purpose, save the required hyperlinks at your objects and enable the functionality in the Smart PDF options. Specifically, the following actions must be taken:

You have the following options to transfer a hyperlink:

- The entire hyperlink is saved at an object. The attribute that is filled with this hyperlink must be entered into the **Formula** field of the **Hyperlink in Smart PDF** attribute. Hyperlinks to be transferred must be saved in this attribute at all objects.
- Only a variable part of the hyperlink is saved at an object (e.g. in the "Manufacturer" attribute AID = 10060). In the **Formula** field of the **Hyperlink in Smart PDF** attribute, the hyperlink must then be formed via a formula. The variable part of the hyperlink must be saved in this attribute at all objects.

For instance, the following formula has to be entered if the homepage of a manufacturer is to be linked: "www.";A10060;".com";.

You can activate the hyperlink functionality of the **Smart PDF** assistant in the **Advanced** dialog on the **Add hyperlinks** tab. On that tab, you can also select the device types for which the hyperlinks stored at the objects are to be transferred to the PDF file.

After the creation of the PDF files, the hyperlinks are displayed as tooltips at the objects on the sheets, and they can be opened via a double click.

3.5.2 Addition of External PDF Documents

You can add external PDF documents stored under drawings to the output of project data to a PDF file.

For that purpose, activate the option **Attach PDF files inserted to Documents folder** in the **Assistant to convert projects to Portable Document Format (PDF)** dialog. The PDF files contained in the Documents folder are then displayed in the selection under **Advanced/Select sheets**, and they can be attached to the PDF file in line with their position in the Documents folder.

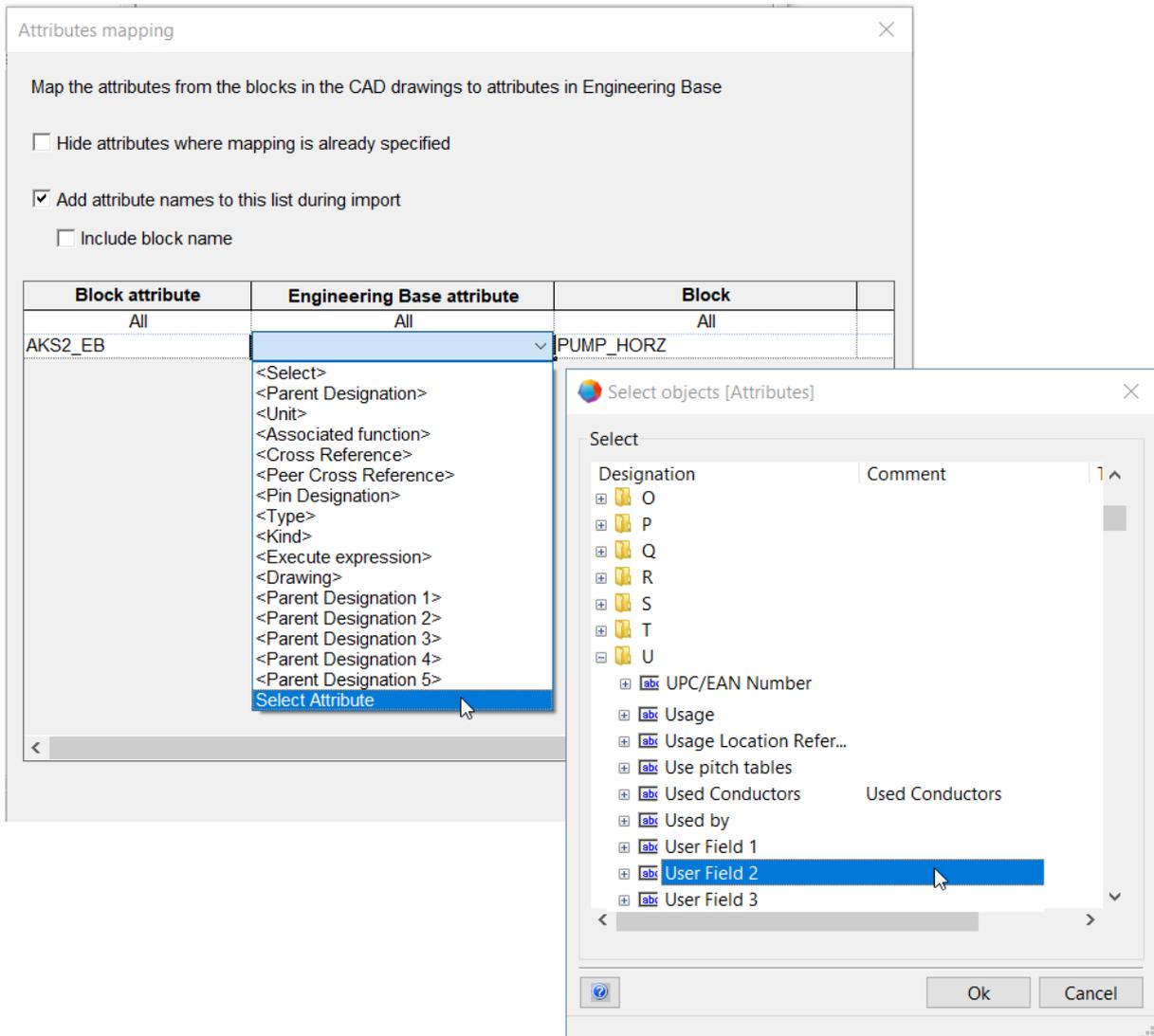
3.6 Advanced CAD Import with Modified Attribute Mapping

You need one of the licenses listed below:	No license required
Contained in the following business solutions:	Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards Instrumentation Basic Engineering System Engineering Harness Design Automotive Harness Design Fluid Minerals Processing Plant Engineering - FEED & Process Plant Engineering - Detail

Using the **Advanced CAD Import** assistant, you can import drawings into Engineering Base and, during that import, assign objects (blocks) and attributes of the imported drawings to Engineering Base objects and attributes.

In the current version, the attribute mapping is more convenient:

Open the **Attribute Mapping** dialog by clicking the **Attribute ...** button in the **Options** dialog on the **Blocks and Attributes** tab. In the dialog, select the entry **Select Attribute** in the selection list of the **Engineering Base attribute** column to open the **Select objects [Attributes]** dialog. It offers the content of the **Attributes** system folder, i.e. all attributes including the subfolder structure, for the attribute selection.



 The selected attribute is then displayed in the **Engineering Base attribute** column in the form "Name (AID)", e.g. "User Field 2 (10946)".

3.7 Enhancements of the “Import and Update Items” Assistant

You need one of the licenses listed below:	No license required
Contained in the following business solutions:	Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards Instrumentation Basic Engineering System Engineering Harness Design Automotive Harness Design Fluid Minerals Processing Plant Engineering - FEED & Process Plant Engineering - Detail

The assistant imports and updates EB items with data from Excel tables (*.xls, *.xlsx), Access databases (*.mdb) and ODBC data sources.

You can now also start the import from objects of the types **Location** and **Processes**.

On importing data, the following objects are now also created or updated:

- Location
- Location, in case it is associated with an object under Equipment
- State of a flow stream, in case it is defined in the **Equipment** folder
- State of a device with the respective characteristic points and characteristics
- Process, without association

On starting the assistant, only those mapping configurations are displayed that match the start object.

4 New Assistants

4.1 Export of Multi-Page DWG

You need one of the licenses listed below:	No license required
Contained in the following business solutions:	Electrical / Instrumentation Detail Engineering International Standards Power Electrical USA Standards Instrumentation Basic Engineering System Engineering Harness Design Automotive Harness Design Fluid Minerals Processing Plant Engineering - FEED & Process Plant Engineering - Detail

The **Export Multi-Page DWG** assistant outputs the content of several Engineering Base sheets to one DWG file.

For the export, you can freely select sheets, drawings, folders and reports within the **Documents** system folder.

5 Extensions for Worksheets

5.1 Innovations in the “Advanced Data Tracking”

With the Advanced Data Tracking, Engineering Base offers the option to create worksheets with a data tracking identifier. By comparing worksheets, you can identify which attributes have been changed.

5.1.1 Enhancements of Start Objects

You can now also start the Advanced Data Tracking from the following objects:

- System folder **Tasks**
- System folder **Locations**
- Objects contained in these folders.



The Advanced Data Tracking cannot be started from execution tasks.

In the Engineering Base Explorer, an association with the respective start object is displayed under the data tracking object. Because of that, there also exists an association with the data tracking object under the start object. Using the **Navigate** function, you can navigate from the data tracking object to the start object and vice versa via these associations.

5.1.2 Storage of Revised Parts Lists

The Advanced Data Tracking supports the creation of parts lists by means of worksheets. In this respect, the worksheets saved in Engineering Base can contain different object types, and they can also be compared subsequently to parts list data of other systems, for instance PLM data.

To support the storage of these revised parts lists, the Advanced Data Tracking has been enhanced as follows:

Using the **Define Dialog** function at data tracking objects, you can add attributes and modify the attribute contents in the **Modify** dialog.

The following types are now available for data tracking objects, which allows you to specify different dialog field configurations via **Define Dialog**:

- Customized List Type
- Unspecified List Type

6 Extension of the Revision Functionality

6.1 Revision Information in Form Sheets

You can now define whether the revision information table on the form sheet is filled from top to bottom or from bottom to top.

You can make this setting in the project properties under **Visio Settings/Settings** via the option **Fill revision table from bottom to top**.

By default, the sheets are filled from top to bottom.



In both cases, the revision information of the latest revision is displayed on top.

6.2 Enhancements of the Document Revision of Drawings

You can now start the document revision of drawing from new objects. Moreover, you can start the document revision from a multiple selection of objects in the Engineering Base tree or on worksheets.

- For drawing-related document revisions, the document revision index is created per drawing, and for sheet-related document revisions, it is created per sheet. You can now also start the creation of drawing-related document revisions from drawings. To be able to create document revisions for a drawing, select the option **Enable Revision Management** in the properties dialog of the drawing in the Revision category. After that, a **Revisions** folder, in which the data of any subsequent revisions is stored, is created below the drawing.
- In the Engineering Base tree and on worksheets, you can now also create document revisions for a multiple selection of drawings and folders. This selection may contain drawings and folders.
The following preconditions must be met:
 - The revision management must be enabled for all selected drawings and folders.
 - For all selected drawings and folders, the same settings must be made in the revision settings under Document Version Index.

6.3 Deletion of the Last Document Revision

You can now delete document revision states. However, you can only delete the latest revision state. The deletion cannot be undone. Moreover, the option **Delete last Document Revision** must be enabled for your user initials in the project properties under **General/Access Control**.

For document revisions where you have enabled the structuring of the folders by the revision and version indexes, you can delete the latest revision PDF file of a sheet or an entire version containing the latest revision PDF files.

The following conditions apply:

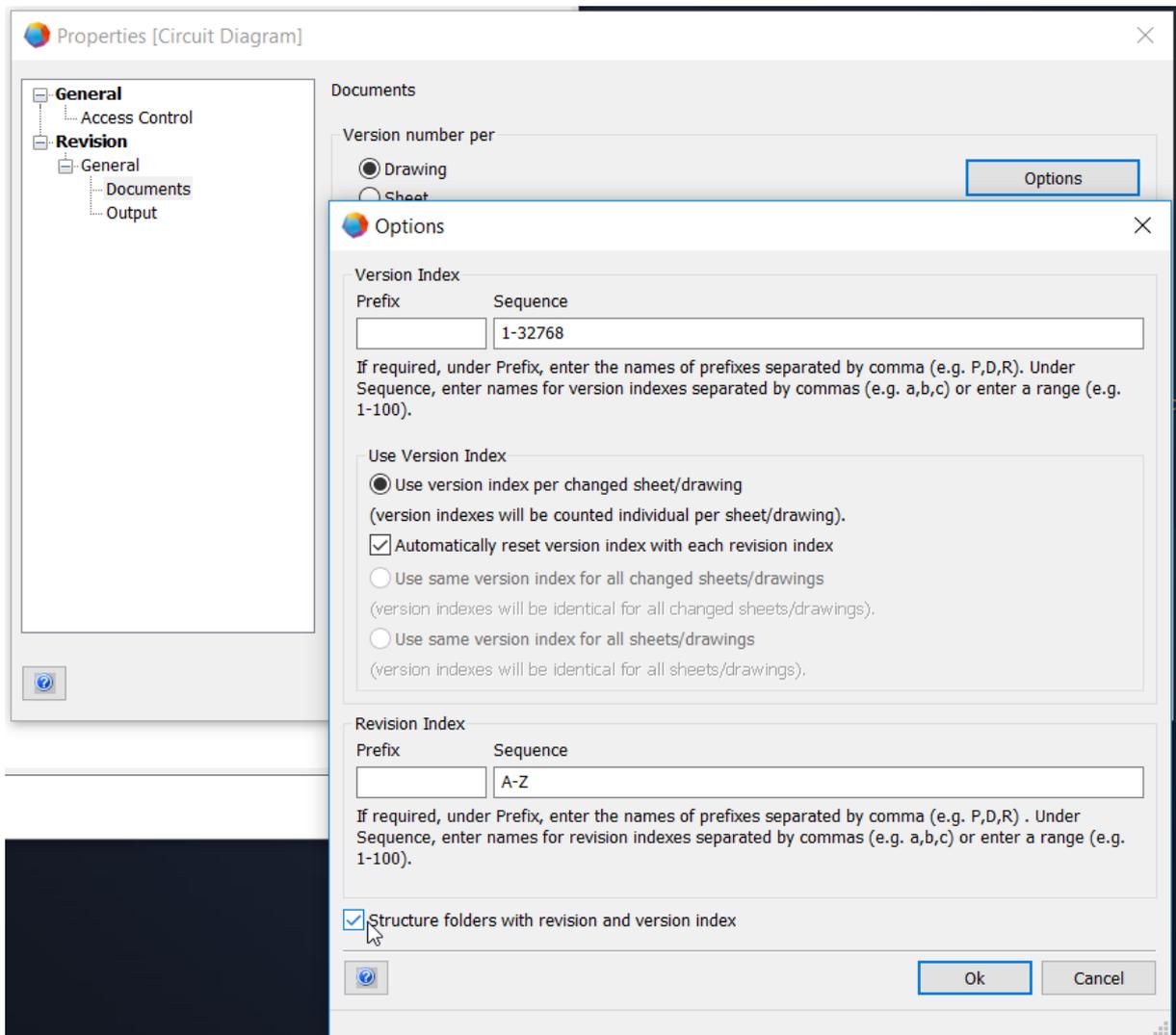
- If the last revision PDF under a version is deleted, this version is automatically deleted.
- If the last version under a revision is deleted, the revision is also deleted.
- All entries in the revision attributes of sheets are undone in line with the revision state.

For a document revision where the folders are not structured by the revision and version indexes, you can only delete all revisions by deactivating the Revision Management.

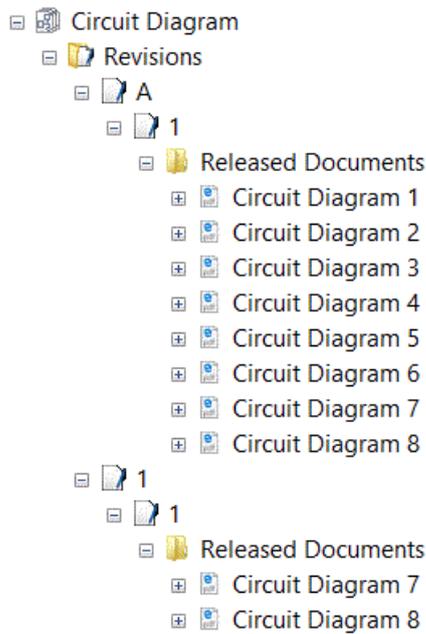
6.4 Enhancements of the Revision and Version Indexes of the Document Revision

In the current version, the following enhancements are additionally available for the document revision:

- On the **Revisions** folder, you can open the **Revision Documents** worksheet which displays the revision data in the following columns:
 - Name** – contains the sheet designation
 - Comment** – contains the name of the PDF file
 - Creation Date** - of the PDF file
 - Modification Date** - of the PDF file
 - File size** - of the PDF file
 - Revision index (automatic)**
 - Version index (automatic)**
- Before a new revision is completed, the Revision for Documents dialog displays the sheets covered in the revision in a table. In addition to the revision and version indexes, the attribute contents of **Part Of** and **Name** of the sheets are also displayed. In column **Release**, you can select for each sheet whether the revision and version indexes are to be incremented and whether the sheets are to be saved as PDF files:
 - **New Version (without PDF)**: The version index is incremented and entered at the sheet. No PDF file is created for this sheet. This setting is automatically displayed for unchanged sheets.
 - **New Revision (with Version and PDF)**: The revision index and the version index are incremented and the sheet is saved as a PDF file under the revision. This setting is automatically displayed for changed sheets.
 - **New Version (with PDF)**: The version index is incremented and the sheet is saved as a PDF file under the revision.
- In the **Options** dialog, you can now control the creation of revision and version states by means of two new options:



- Structure folders with revision and version index**
 Select this option if you want to use the revision and version indexes in the revisions folder to structure the data. In that case, revision objects designated with a revision and version index are created in the **Revisions** folder above the **Released Documents** folder.
- Automatically reset version index with each revision index**
 If the revision index changes, the version index is restarted at the start value and incremented.



- You can also change the revision index before the creation of a new revision even if revision data is already available for your sheets. After changing the revision index, the creation of the version states restarts with the version start value. In the aforementioned example, the revision index was changed from "A-Z" to "1-100".
- So far, on creating a new revision, you could only compare sheets to the states of the previous version. Now, you can select any existing version for a comparison by means of a selection dialog.

7 Releases

7.1 Termination of the Support for SQL Server 2008 (R2)

As Microsoft terminated the extended support for SQL Server 2008 (R2) on 09.07.2019, AUCOTEC has also terminated its support for this version of SQL Server. As of Engineering Base Version 2020, SQL Server 2008 (R2) can therefore no longer be used. Please use the versions SQL Server 2014, SQL Server 2016 or SQL Server 2017.

7.2 Release of Engineering Base for Windows Server 2019

Engineering Base can now also be operated under Windows Server 2019.

7.3 Release for Visio 2019

As of Engineering Base Version 2020, Visio 2019 is supported.

8 Miscellaneous

8.1 Subfolders of the “Documents” System Folder Support Associations with Aspects

In line with IEC 81346, you can now associate folders below the **Documents** folder with aspects (Equipment, Functions or Locations). The name of the associated aspect is then automatically adopted as folder name.

To do so, activate the option **Use aspects (IEC 81346) for drawing name** in the project properties in category **Designation Standards**.

Drawings continue to remain without any associations with aspects. In line with IEC 61355, they are to be used for the document type.

In detail the following functionality is available:

You can associate aspects in the **Modify** dialog of the folders at the **Associated Aspect** attribute. The equipment, functions and locations available in the project are offered for selection in a selection dialog.

On selecting aspects, you can associate one of the following item types:

- a location
- a function
- a unit
- a device
- a pipeline
- a pipeline segment

If the name of associated aspects changes, the folder name is automatically updated.

On removing the associated aspect in the **Modify** dialog of a folder, the folder name is empty. The same applies if the object of an associated aspect is deleted in the project.

If you copy folders within a project, existing associations with aspects are maintained. This is not the case for copies across projects.

8.2 Enhancements on Deleting Pipelines

If you delete pipelines in the Engineering Base Explorer or in the graphics, a message dialog informs you about any objects aggregated under the pipeline.

For that purpose, activate the option **Before deleting items that have a representation on diagrams** in the settings of your projects. After the start of the deletion action, a message dialog displays the aggregations existing under the pipeline, and you can then decide to carry out or to cancel the deletion action.

8.3 Modified Display of Conflicts

In the **Piping** and **Rule-based design**, you can specify rules that are to be considered on editing P&I diagrams and logic diagrams. If the specified rules are not met, these conflicts are marked on the sheet with a warning triangle. In the conflict list, every conflict is specified in further detail.

To improve the clarity on the sheets, only conflicts of the severity level **Error** are from now on marked with warning triangles.

8.4 Copying Stencils

You can copy stencils within a stencils folder using drag and drop. To do so, press the **CTRL** key and drag the stencil onto the superordinate folder while keeping the left mouse key pressed. A copy of the stencil is created including all contained master shapes. It is named **Copy of...**

If a stencil has the property **Read-Only**, it is copied and the write protection is automatically removed at the copy.



System stencils (e.g. frames, text blocks, ...) and stencils in the symbol design cannot be copied.

8.5 Extensions to Attributes with Units

8.5.1 System of Units with Rack Units and Division Units

In the Engineering Base systems of units, rack units and division units as used on describing electronic housings are now also available:

Designation		Description
U	Unit	1U equals 44.45 mm resp. 1 3/4 inches
DU	Division Unit	1DU equals 18.00 mm
HE	Höheneinheit	1HE equals 44.45 mm resp. 1 3/4 inches
TE	Teilungseinheit	1TE equals 18.00 mm

The new units are contained in the unit groups **Length** and **Length Small**. There are no decimal places available for their values; e.g. 1HE, 2HE, etc.

8.5.2 Handling of Trailing Zeros

In the dialog of the **Unit View Definition** assistant, you can determine both for unit groups and for individual units of a unit group whether trailing zeros are to be displayed or not.

On the **System Definition** and **Unit Definition** tabs, you can enable the option **Suppress Trailing Zeros** for groups or individual units. For instance, if it is activated, 88.8 and 88 are displayed instead of 88.80 and 88.00.