Client

Enersea

Project

Support files

Document

PDM manual

Project number	15000
Document number	15000-GEN-MAN-010772-01
Client document number	-
Revision	08
Status	RELEASED (UNVERIFIED)
Date	12-12-24

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Revision history

04	-
05	Export to C: section included
06	-
07	-
08	-
Rev.	**Description**

04	-	29-01-2024	KK	N/A	N/A	
05	FOR INFORMATION	31-03-2024	KK	N/A	N/A	
06	-	07-04-2024	KK	N/A	N/A	
07	-	07-04-2024	KK	N/A	N/A	
08	-	12-12-24	KK	N/A	N/A	
Rev.	**Description**	**Date**	**Prepared**	**Checked**	**Approved**	**Client**

Document status: RELEASED (UNVERIFIED)

All data in the table above is generated automatically by Enersea's Product Data Management (PDM) system, in accordance with our ISO9001 certificate.

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1.   What is PDM?

PDM stands for Product Data Management system. Since our main products are documents, PDM can be considered a document management system in Enersea's case.

As a document management system, PDM provides and manages:

- Document meta data

- Document workflow management

1.1.   Document meta data

Meta data can be defined as data about data. In this case meta data comprises information about documents other than the content of the document itself. Things like creation date, document originator, creation date, client name, document number etc.

Traditionally, in a windows environment, the only metadata available of any file were its name and location.

For example, the following figure shows, that memo 21005-20-MEM-01001-01-02 is concerned with the structural integrity check of a cage with added rollers, which is part of project 20015 and belongs to the structural discipline.
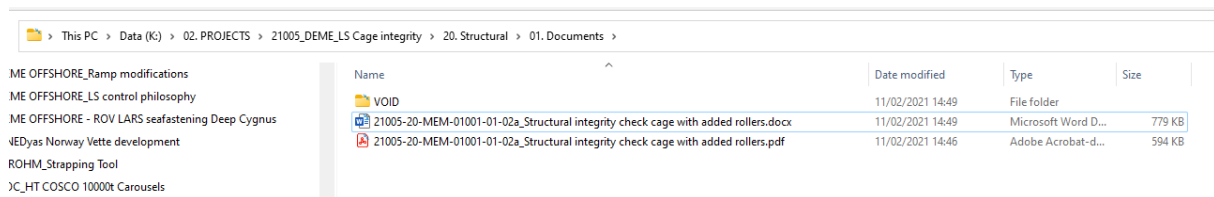

Figure 1 Conventional meta data (windows environment).

With PDM, much broader possibilities exist to access metadata of a file. Since these metadata is directly connected to the document (not its location in folders), the file can be approached in various ways, as will be explained in the following sections.

The use of PDM does not explicitly require folders to organise data, since all metadata is connected to the documents themselves. Folders can still be used to organize data, but data organization is no longer limited to just a folder structure. Searching for a document no longer involves clicking through endless strings of folder structures but can be done through various, more sophisticated, and therefore quicker search tools.

1.1.1   Data cards

The Enersea PDM system uses documents and folders (like a standard windows environment). The meta data of these documents and folders are contained in their data cards, as shown below.

Figure 2 document data card.

Figure 3 folder data card.

An elaboration of each of the information on the data cards is provided elsewhere in this manual.

1.1.2 Document code

As per Enersea's quality system, each document is assigned a unique document code (as one of the meta data of that document). A typical document code is given below:

24001-EQP-RFQ-010034-02

This document code comprises of the following components:

Table 1-1 Document code

Component	Name	Description	Possible values (refer to section @@)
24	Year	The last two digits of the current year.	
001	Project number	A 3-digit sequence number, starting from 001 for the first project of a certain year.	
EQP	Discipline	3-letter abbreviation of the discipline the document belongs to.	GEN, CON, STR, MEC, EQP, PRE, PRO, PIP, SUB, EIC, HSE, EXE, QAC
RFQ	Document type	Type of document	CAL, DWG, MEM, RPT, 3DM, BFD, BID, BOD, CAE, CAL, CAN, CON, CRS, DOC, DDR, DTS, DWG, FEA, ISO, ITT, MAN, MDR, MEM, MOM, MOV, MP3, MSG, MTO, NCR, LST, LTR, PFD, PHI, PIC, PID, PLN, PO, PRE, PRG, PRO, PRQ, QA, REG, REQ, RFQ, RPT, SFT, SOW, SPC, STA, TBE, TNO, TRN, TQU, VIR, ZIP
01	System number	Free-selectable 2-digit code. Default value 01.	
0034	Sequence	Free-selectable 4 digit code. Pre-selected by PDM, can be altered manually.	
02	Index number	Free-selectable 2-digit code. Default value 01. Historically this index is used as the sheet number of a drawing.	

All of the free-selectable fields are prompted by the system upon creation of a document but can be manually altered, <u>providing the total document number is unique</u>.

1.2. Document workflow

The Enersea quality system describes a workflow each document has to go through from its creation to its final delivery to the client.

This general workflow is shown in the following figure. The workflow comprises of various STATES (red boxes) and TRANSITIONS (arrows).
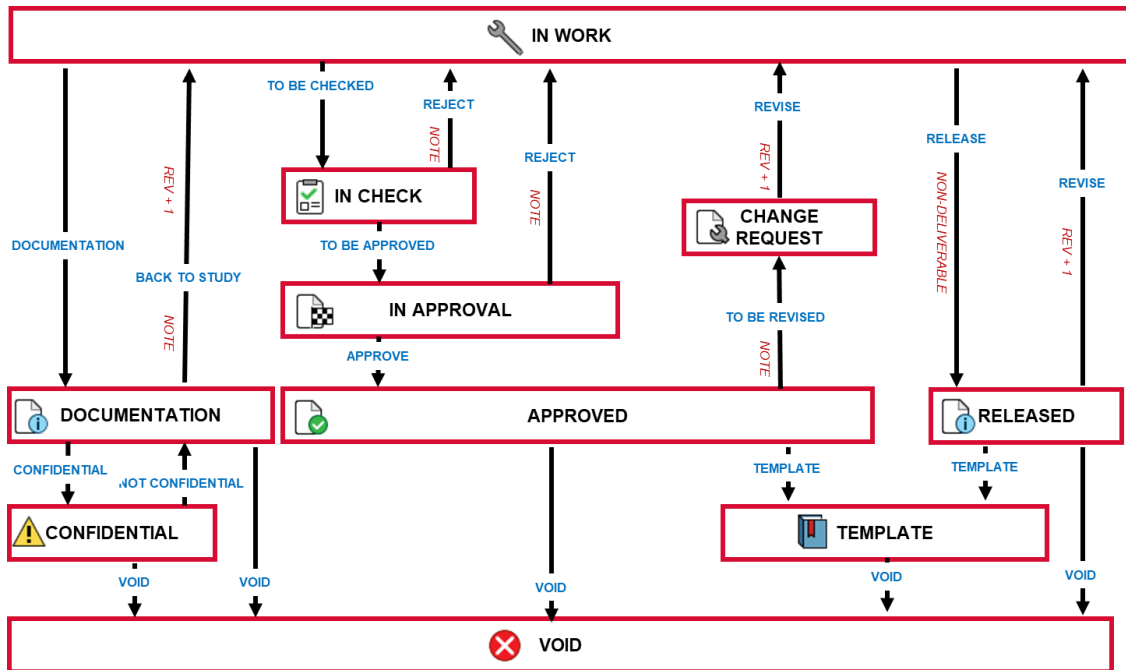

Figure 4 Workflow

1.2.1 States

- Each state as defined in the workflow represents a status of a document.

- All documents start in the IN WORK status.

- Read/write rights vary for various states and authorizations.

1.2.2 Transition

- Transitions allow documents to change from one state to another.

- Transitions are subject to user authorizations.

- Some transitions are conditional, require written justification or document revision (indicated in red in figure above).

An elaboration of the various states and transitions is provided elsewhere in this manual.

2. Interfacing with PDM

2.1. Physical structure

Traditionally, Enersea has worked with a Windows system, using network drives to store data. The available meta data in such a system is limited to not much more than folder name, document name and creation data. All users are able to access all information directly from the source.

PDM uses a different structure:

- All documents are stored in the VAULT; a network server containing all master data.

- The information in the VAULT can only be accessed by the PDM database, not directly by users.

- If a user requests to view a document, PDM makes a local read-only copy of the master document on the user's local disc.

- If a user requests to edit a document (by **checking-out** the document), PDM makes a local copy of the master document on the user's local disc and blocks the master document for write access. Once the user has finished the modifications to the local document (by **checking-in** the document), PDM creates a new version of master document and unblocks the master document.

- All document meta data and links between documents are stored in the PDM database.

It should be noted that all these actions are executed in the background, while the user interface mimics the standard windows environment.

When browsing in the PDM system, users have the impression they are looking at the master documents, while they are actually merely looking at records in the PDM database.

This structure is schematically shown in the following figure.
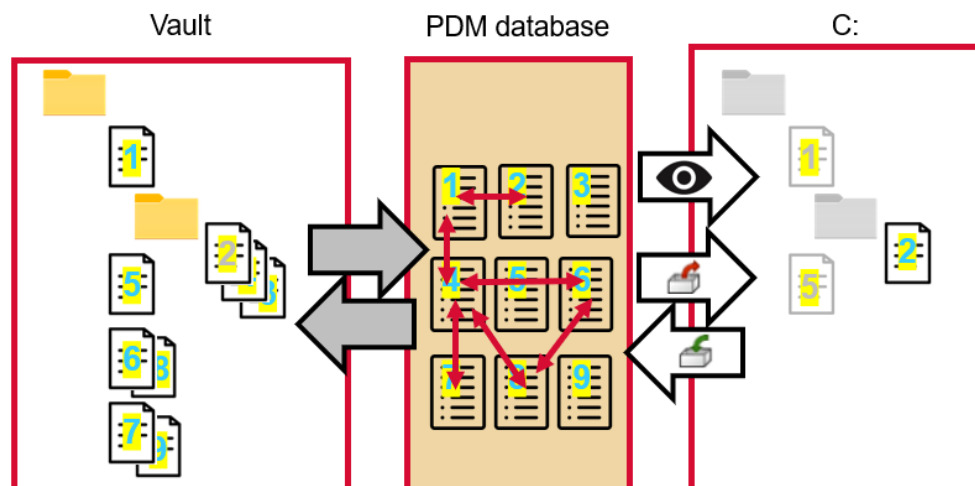

Figure 5 PDM physical structure. This user can view documents 1 and 5, and has editing rights on document 2.

2.2. User interfaces

2.2.1 Windows explorer

PDM uses the standard windows explorer interface to access the database. As can be seen from the following figure, EnerseaPDM can be found on the local C: drive. The PDM system shows the folders that are available in the VAULT.
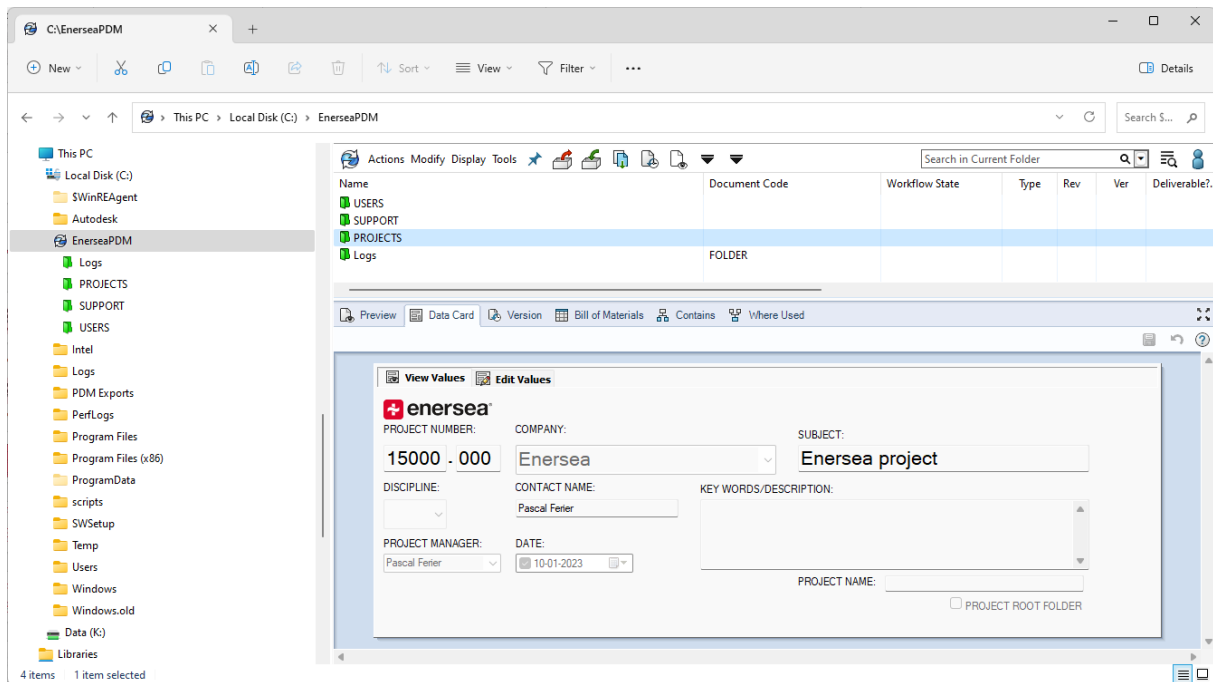

Figure 6 EnerseaPDM user interface. PDM can be found on the local C: drive.

- As can be seen from the figure, the data card for the selected folder (or document) is shown in the preview area.

- By default, PDM folders are coloured green, where standard windows folders are yellow. When working off-line, the PDM folders will be coloured blue.

- It should be noted that the figure above does <u>not</u> show the actual folders in the VAULT, but the database record corresponding to the master document.

- Logging into the PDM system will be done automatically, based on the user's Windows credentials.

- Various PDM actions can be accessed through the quick access toolbar.

2.2.2 Search tool

Apart from the windows explorer interface, PDM has a powerful search interface. Because these searches are performed on the PDM SQL database, not the master data, it is significantly faster than the standard search functionality available in windows. The figure below shows how to access the PDM search functionality.
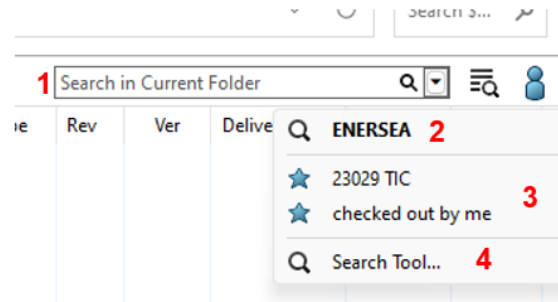
Figure 7 PDM search interfaces.

1. Standard windows search functionality does not include any metadata. Not practical, best avoid using.
2. Access to the Enersea search card, allowing search in all metadata from the current folder and deeper.
3. Access to saved searches (saved from the search tool interface (4)).
4. Access to the Enersea search card, searching in the entire PDM database. Selecting this option will open a separate user interface, shown in the following figure. It is advised to pin the search tool to the windows task bar for easy access.
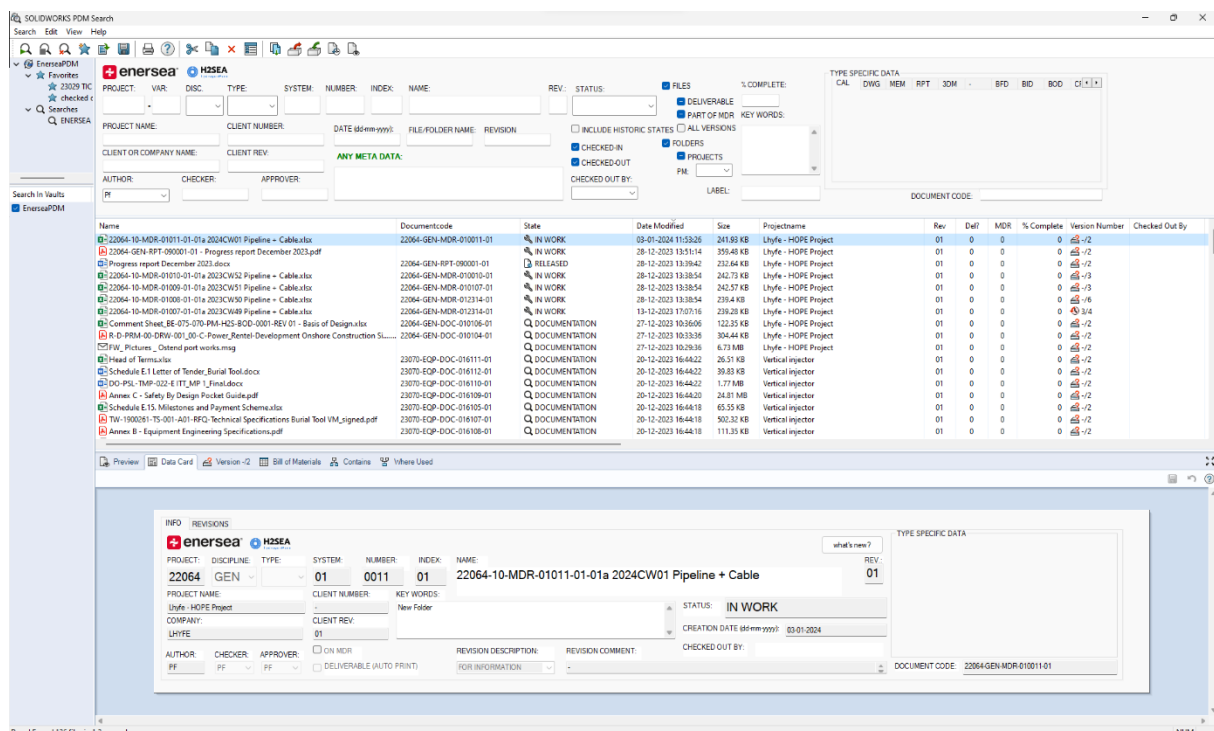
Figure 8 PDM search tool.

Further explanation of the search tool can be found in section @@.

2.3. Checking in/out

Checking in and checking out are essential when using PDM. Documents can be checked in or out by clicking one of the following buttons:
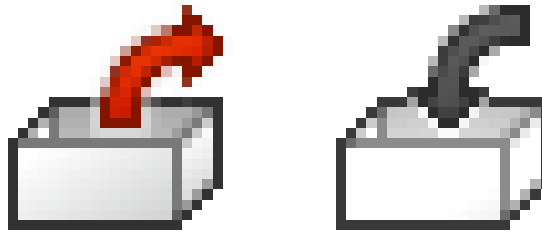
Figure 9 checking in /checking out.

The buttons can be found in the PDM ribbon, or under the right-click shortcut menu. The icons indicate what happens to the documents in the VAUL (represented by the box in the icons). Checking out a document (red arrow). Means a local copy is made and the document in the vault is locked. Checking in a document (black arrow) means the locally available document is copied back into the vault.

The following table describes the action that can be made on documents that are either checked-in or checked out.

Table 2-1 checked-in and check-out actions

Action	CHECKED OUT	CHECKED IN
Documents can be opened	YES	YES
Documents can be edited	YES	NO
Meta data can be changed	YES	NO
Workflow state can be changed	NO	YES
Documents can be revised	NO	YES
Documents can be linked to other documents	YES	NO
Documents can be renamed	YES	YES
Documents can be revised	NO	YES
Automatic PDF generation possible	NO	YES

It should be noted that:

- Only documents that are checked out can be modified, documents that are not checked out can only be viewed.

- Opening a document without checking it out, will open the locally available version of the document.

- Checking-out a document will automatically copy the latest version from the vault to the local C: drive.

- Checking in a document will automatically create a new version of the document. Document revisions can only be made when a document is checked-in (since it is triggered by a workflow state change).

- Folders cannot be checked-in or -out. Using the check-in or check-out button on a selected folder will check-in or -out all documents within that folder (and its subfolders).

- Checking-out a document is done 'silently'. i.e. no additional dialog window is opened. Checking in a document does trigger a dialog window, as shown in the figure below. This dialog provides potentially relevant information about the document and allows the user to tick certain options. In case multiple documents are selected for check-in, or a document has children linked to it, all documents will be shown in the dialog. Checking-out a parent document does not check out its children.
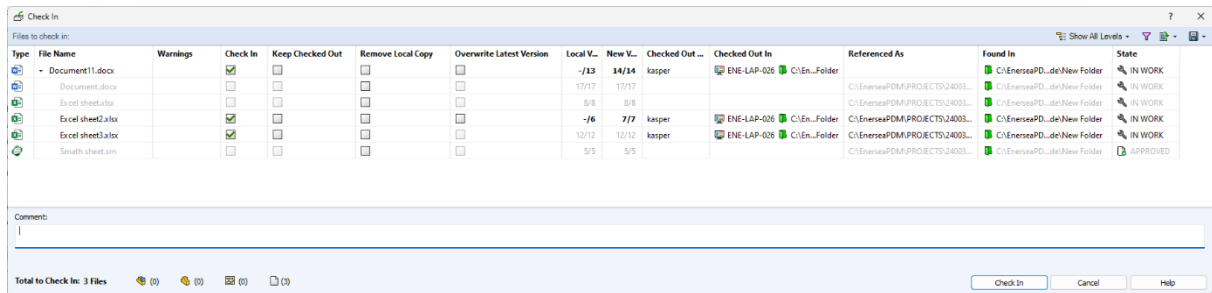
Figure 10 Check-in dialog.

2.4. User groups

All PDM users belong to one or more user groups. These groups provide the user with certain permissions. The following groups are defined in the system:

2.4.1 ENGINEERS

By default, all PDM users are part of this group.

2.4.2 CHECKERS

Users that are authorized to check documents are part of this group. A distinction per discipline is not made. In theory, a process engineer is allowed to check structural documents. It is the role of the APPROVER to verify a document has been checked by a skilled checker.

2.4.3 APPROVERS

Users that are authorized to approve documents are part of this group. Their main role in PDM is to verify the checking process has been properly executed documents have been checked by skilled checkers. In practice, all Enersea project managers are part of the APPROVERS group.

2.4.4 GENERAL BUSINESS

Certain folders in the PDM system contain confidential business information. These folders can only be accessed by members of the GENERAL BUSINESS group.

2.4.5 EXTERNALS

Externals can only view documents in certain folders and workflow states.

2.4.6 ADMINISTRATORS

God-mode.

2.5. Versions / Revisions/ History

PDM distinguishes between versions and revisions of documents. Although a document can have many versions and revisions, only one document is shown in the PDM user interface. Access to previous versions and revisions is done via the History dialog, as shown in the figure below.

The history dialog can be opened from the PDM quick access toolbar or via the right-click shortcut menu on a selected document.

Figure 11 Document history dialog (typical). Versions are shown in the version column, revisions are lines in the table marked with a tick box( ).

As can be seen from the figure:

- this document (Document11) has 13 versions and 4 revisions. For each state change the document is checked in (automatically by the system), this may create a new version of the file.

- Only when transferred from RELEASED or APPROVED back to CHANGE REQUEST or IN WORK, not only the version, but also the revision is updated.

- The history list contains some workflow states that are not shown in the workflow in figure @@. These states are used by PDM to execute some automatic changes in the background.

- Some lines in the history table indicate that the previous version of the document is overwritten by this history line. This only happens for specific state changes that have not affected the content of the document.

- Both versions and revisions are numbered incrementally from 01.

2.5.1 Versions

Versions are non-official copies of a document. Every time a document is checked-in or changes workflow statues, a new version is created.

2.5.2 Revisions

Revisions are official copies of a document. Any changes required to an approved document can only be made once a new revision of the document has been created.

2.6. Work offline

As explained in section @@, PDM works with local copies of files, while ensuring the integrity of the master data in the VAULT. Access to the PDM database (and indirectly to the VAULT) can only be created when the user is connected to the Enersea network, either via LAN (in the office) or VPN (elsewhere).

However, if a user is not connected (e.g. in a plane), the user can still have access to the local copies of any PDM document.:

- Documents that are checked-out can be edited while offline. Once back online, these documents can be checked in.

- Documents that are not checked-out but do have a local copy (because they have been viewed or checked-out earlier) can only be opened read only.

- New document can be created in local PDM folders. These documents can be checked-in to PDM once the user is back online.

Since the PDM database is not accessible when working offline. The PDM interface looks different, since data cards or meta data cannot be accessed.

When working offline:

- PDM folders are blue (instead of green when working online).

- Windows explorer does not show metadata columns or data cards. Only the standard Windows columns are available, as shown in the following figure.

- The Search tool is not available.
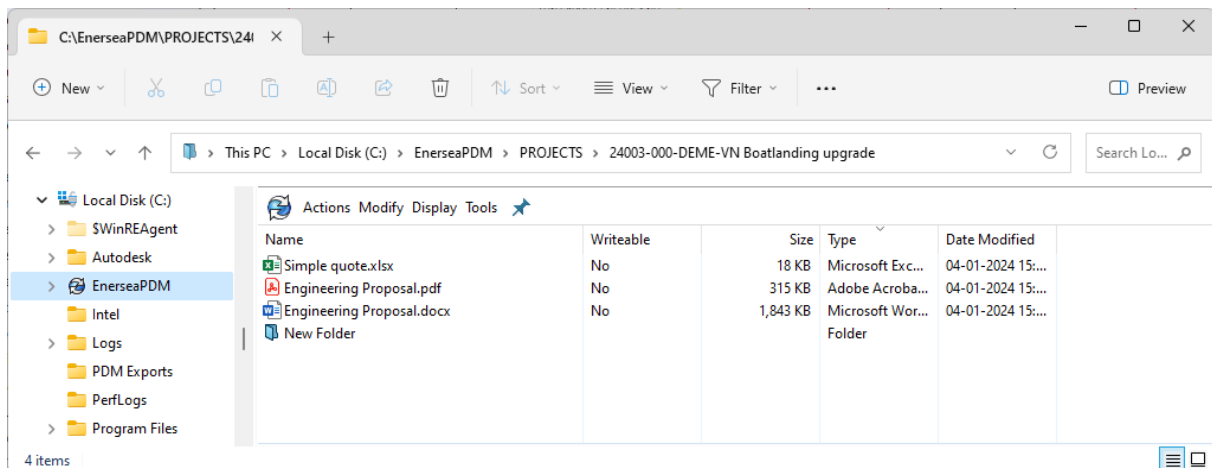
Figure 12 PDM interface when working offline. Folders are shown in blue, metadata and data cards are not available.

When opening windows explorer while not connected to the Enersea network, the PDM login dialog opens, as shown in the figure below.
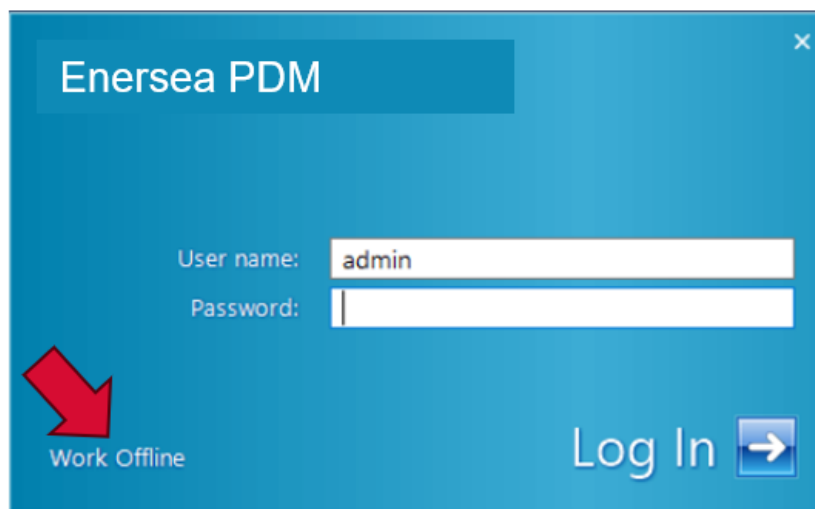
Figure 13 PDM login dialog.

To work offline, select the work offline option in the bottom left corner of the dialog, do not close the dialog (using the cross in the top-right corner), since this will result in numerous error messages while working with windows explorer.

2.7. Setting up your PC to work with PDM

Will be included shortly!

3. PDM components

This section describes the various components of the PDM system.

3.1. Data cards

This section describes the various data cards that are available in PDM.

3.1.1 Folder card

Figure 14 Folder card. Each field show the variable name that is displayed in that field. Refer to section @@ for a description of each variable.

- Each folder in PDM uses the folder card to display its metadata.

- Folder meta data can be modified using the Edit Values tab in windows explorer.

- DOCTITLE is not related to the folder's name. DOCTITLE will be copied to the keywords of all documents that are created in the folder.

- The PROJECT ROOT FOLDER tick box is unticked by default for normal folders. This box can be used in the search tool to find certain projects.

3.1.2 Document card

Figure 15 Document card, |NFO tab. Each field show the variable name that is displayed in that field. Refer to section @@ for a description of each variable.

Figure 16 Document card, REVISIONS tab. Each field show the variable name that is displayed in that field. Refer to section @@ for a description of each variable.

- Each document in PDM uses the documents card to display its metadata.

- The documents card has two tabs. The INFO tab shows the general meta data of the document, while the REVISION tab shows the revision history of the document.

- CONFIDENTIAL is only visible on documents that have the CONFIDENTIAL work flow state.

- The TYPE SPECIFIC DATA section on the INFO tab contains meta data that are specific to the value of the document TYPE variable.

- The CHECKER and APPROVER fields on the INFO tab show the preferred checker and approver for the document. This means these users will be notified (via email) if the document requires checking or approving. Other members of the CHECKERS or APPROVERS group are not notified but can change the workflow state of the document. In case this happens, the R1_CHECKER or R1_APPROVER on the REVISIONS tab as well as the CHECKER or APPROVER on the INFO tab will be updated to show the actual checker or approver.

- The progress field is only visible if the ON MDR box is ticked.

- The DOCUMENT CODE field is compiled from the values for PROJECTNUMBER, DISICPLINE, TYPE, SYSTEM, DOCUMENTNUMBER and INDEX. Its value is only updated if one of these components are modified.

- In general, a document cannot be checked-in if DOCUMENT CODE does not have a unique value.

- The values for REVISION DESCRIPTION and REVISION COMMENT on the INFO tab are copied to the DESCRIPTION and COMMENT fields on the REVISIONS tab.

- The fields on the REVISIONS tab are being filled as the document moves through the work flow. The table is filled from the bottom up, i.e. the latest revision is shown on the bottom line of the table. Only the last 5 revisions are shown. Older revisions can still be accessed through the document's history dialog.

3.1.3   Template card

Figure 17 Typical template card (3DM card). Each field show the variable name that is displayed in that field. Refer to section @@ for a description of each variable.

- When creating a new document in PDM, a template dialog is shown allowing the user to enter specific metadata for that document.

- Different document types have different template cards. All template cards are based on the documents card.

- The template card is only used during initial document creation. Once created, all documents will be using the Document card.

3.1.4   Search card

Figure 18 Enersea search card. Each field show the variable name that is displayed in that field. Refer to section @@ for a description of each variable.

- The search card is used in the various search interfaces. Reference is made to section @@ for a further explanation on how to use the search card.

3.2.   Configurations

Some file types, like AutoCad or Solidworks files, allow for several sub-documents to be used within a single file. PDM uses configurations to allow the use of different meta data values for each of these sub-documents. Reference is made to the figure below for a typical example of the use of configurations.

It should be noted that some metadata can be varied between configurations (like CLIENT NUMBER and INDEX), others update all configurations if one is modified (like PROJECT NUMBER and DOCUMENT NUMBER.
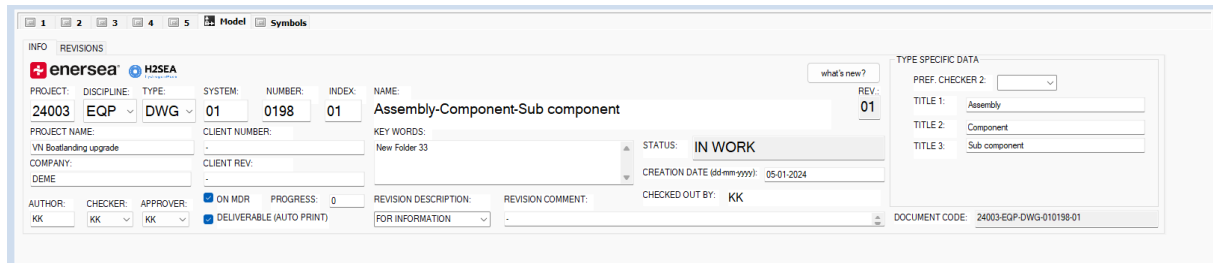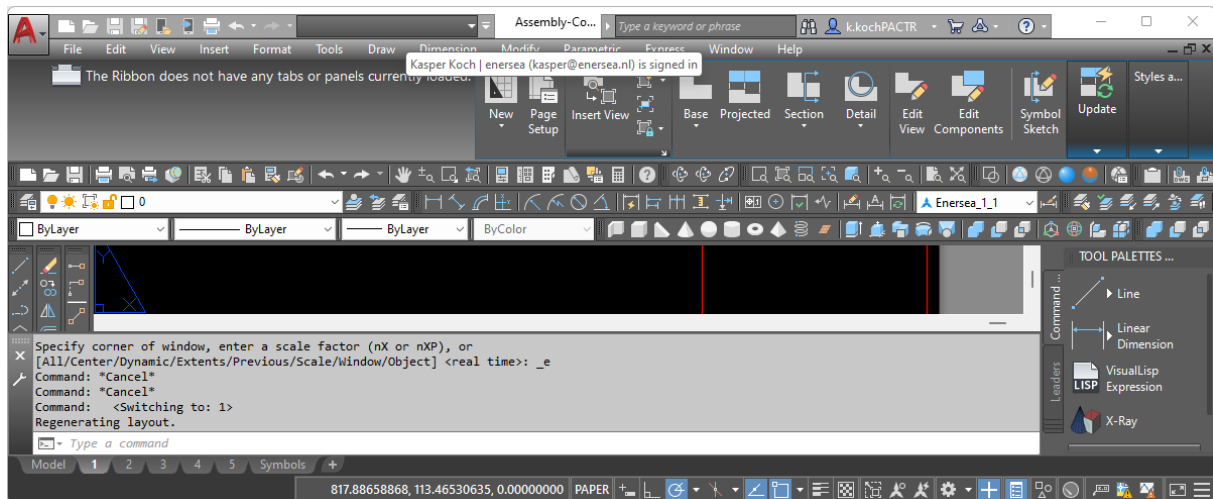
Figure 19 PDM configurations. Each tab in the AutoCad file (top) has a corresponding tab on its document card (bottom).

3.3. Workflow

This section provides a description of each workflow state and transition.

3.3.1 States

Table 3-1 Workflow states

Workflow state	Description
ANOTHER ONE	Automatic state used to revise transmittals
APPROVED	Final state of an official document that has gone through the entire check and approval cycle in accordance with the Enersea quality system. Files in this state are read-only for all users. Any modifications to the document require revision.
CHANGE REQUEST	In case an APPROVED or TEMPLATE document needs to be modified, an APPROVER can change its state to CHANGE REQUEST. The AUTHOR of the document receives a notification and can move the document back to the IN-WORK state. The revision of the document will be increased.
CHECKPRINT	Pdf copies of files that are being checked will be in this workflow state. The DOCUMENT CODE of these check prints is equal to that of the parent document it is referring to. In case the check print has been created automatically by PDM, a link exists between the parent document and the check print. In case of manual creation, this link could be made manually. Refer to section @@ for further details.
CONFIDENTIAL	This state is used for documentation files that are confidential. Only members of the APPROVERS and GENERAL BUSINESS groups can see and access documents in this state.
DOCUMENTATION	Reference files that are not created or modified by Enersea, are moved to this state. Files in this state are read-only. Files that traditionally were contained in the ''client info'' or ''vendor info'' folder will typically be in this state. Files with extensions .msg are automatically transferred to this state upon entry in PDM.
DOUBLE CHECK	Only documents that require a second checker (types: DWG, BFD, DAT, PFD, PID) are moved to this state after the initial check (discipline check) has been completed. Documents that do not require a second checker are automatically transferred from this state to the IN-APPROVAL state.
IN APPROVAL	Documents that have been approved by the checker(s) are transferred to this state, allowing an APPROVER to give final approval to the document.

Workflow state	Description
IN CHECK	Once a document is ready to be checked, it is transferred to this state. The checker is notified and can start checking the document. Checking can be done on the native file or (if available) the corresponding pdf CHECKPRINT.
IN WORK	The initial state of all documents that are entered into PDM.
INITIATE	A background workflow state. All documents should automatically be transferred to another state when first entered in PDM.
MANUAL CHECKPRINT	A background state used to manually create check prints. Documents are automatically transferred to the CHECKPRINT state.
MANUAL MASTERCOPY	A background state used to manually create master copies. Documents are automatically transferred to the MASTERCOPY state.
MASTERCOPY	Pdf copies of files that have been approved and are marked as deliverable will be in this workflow state. The DOCUMENT CODE of these master copies is equal to that of the parent document it is referring to. In case the master copy has been created automatically by PDM, a link exists between the parent document and the master copy. In case of manual creation, this link could be made manually. Refer to section @@ for further details.
PRE-APPROVED	A background state used during document approval. Documents are automatically transferred to the APPROVED state.
PRE-CHECKED	A background state used during document checking. Documents are automatically transferred to the IN-CHECK state.
PRE-RELEASED	A background state used during document release. Documents are automatically transferred to the RELEASED state.
PRINT	Obsolete state. Administrators can move documents from this state.
PRINT APPROVED	Obsolete state. Administrators can move documents from this state.
PRINT INWORK	Obsolete state. Administrators can move documents from this state.
PRINT RELEASED	Obsolete state. Administrators can move documents from this state.
PRINT STUDY	Obsolete state. Administrators can move documents from this state.
RELEASED	Final state of an unofficial document that has not gone through the check and approval cycle yet must be frozen. Files in this state are read-only for all users. Any modifications to the document require revision.
SOFTWARE	State for applications and programs. Documents can only be entered into this state by ADMINISTRATORS. .exe and .iso files are automatically transferred to this state upon initial entry into PDM.
STUDY	Obsolete state, apart for documents of type TRN. Administrators can move documents from this state.
TEMPLATE	Documents in this state can be used as a template for other documents. Documents can only be moved to this state from the APPROVED or RELEASED state and can only be moved by APPROVERS.
TRANSMITTAL	State reserved for documents of type TRN that ready for sending (or have been sent). Documents in this state are read-only.
TRANSMITTED FILES	State reserved for the .zip files that are created with transmittals.
VOID	DOCUMENTATION, APPROVED, TEMPLATE or RELEASED documents that are no longer to be used. These documents are not deleted to enable document tracking. Documents can only be moved to this state by APPROVERS.

It should be noted that not all states are visible to all users.

3.3.2   Transitions

Table 3-2 Workflow transitions

Workflow state	Description
APPROVE	After checking is complete, APPROVERS can change the status of a document to approved, completing the check procedure.
AUTO CHECK	Automatic transition used in automatic check print creation.
AUTO CHECKPRINT	Automatic transition used in manual check print creation
AUTO MASTER	Automatic transition used in automatic master copy creation.
AUTO MASTERCOPY	Automatic transition used in manual master copy creation
AUTO SOFTWARE	Automatic transition transferring .exe and .iso files to the SOFTWARE state.

Workflow state	Description
BACK TO CHECK	Transition from a downstream state in the check and approval procedure, back to the IN CHECK state.
BACK TO IN APPROVAL	Transition from the APPROVED state back to the IN-APPROVAL state.
BACK TO IN WORK	Transition from the RELEASED state back to the IN-WORK state without revision. Requires a justification to be provided.
CHECKPRINT	Automatic transition to change a pdf document from MASTER COPY to CHECKPRINT.
CONFIDENTIAL	Transition from the DOCUMENTATION state back to the CONFIDENTIAL state.
DEL	Automatic transition for documents that are marked as deliverable. Triggers the automatic check print or master copy generation (for office and AutoCad documents only).
DOCUMENTATION	Transition from the IN-WORK state back to the DOCUMENTATION state.
MANUAL CHECKPRINT	Transition used to make manual check prints. Refer to section @@.
MANUAL MASTERCOPY	Transition used to make manual master copies. Refer to section @@.
MASTERCOPY	Automatic transition to change a pdf document from CHECKPRINT to MASTER COPY.
NEXT TRANSMITTAL	Transition to revise a transmittal document.
NO DEL	Automatic transition for documents that are not marked as deliverable. Alternative to the DEL transition.
NOT CONFIDENTIAL	Transition from the CONFIDENTIAL state back to the DOCUMENTATION state.
REJECT	If a CHECKER or APPROVER does not agree with the content of a document, this transitions transfers the document back to the IN-WORK state, notifying the AUTHOR. A written explanation has to be provided by the user rejecting the document.
RELEASE (NOT CHECKED)	Transition used to freeze a non-deliverable document. Document does not require checking and approving, since it is a non-deliverable. Document types PRE and PRG can be released even if they are marked as deliverable. Any changes to the document after this transition require a revision.
REVISE	Transfers a document from the CHANGE REQUEST or RELEASED state back to IN-WORK. It increases the document's revision.
SOFTWARE	Transition from the IN-WORK state to the SOFTWARE state.
TEMPLATE	Transition from the APPROVER or RELEASED state to the TEMPLATE state.
TO BE APPROVED	Once a checker approves the document, it is moved to the next state in the check and approval sequence.
TRN EXPORT CLIENT NR	Releasing a transmittal. Exports the files being transferred using client numbers.
TRN EXPORT ENERSEA NR	Releasing a transmittal. Exports the files being transferred using Enersea numbers.
TRN ZIP	Automatic transition moving transmittal .zip files to the TRANSMITTED FILES state.
UPDATE	Automatic transition revising a transmittal and moving it back to the STUDY state.
VOID	Moving documents from the CONFIDENTIAL, DOCUMENTATION, APPROVED or RELEASED state to the VOID state.

It should be noted that not all transitions are available to all users.

3.4.   Variables

Table 3-3 Variables

Variable	Description
APPROVER	Designated APPROVER for a document. This user receives the notification when a document requires approval. It should be noted that any member of the APPROVERS group can make the transition, but the user shown as the APPROVER receives the notification.
AUTHOR=CHECKER	Boolean variable that verifies whether the author and checker of a document are not the same user.
BIDTYPE	Type specific variable used for documents of the BID type. Distinguishes between Lumpsum, reimbursable or capped bids.
CATEGORY	Not currently used.
CHECKER1	Designated CHECKER for a document. This user receives the notification when a document requires checking. It should be noted that any member of the CHECKERS group can make the transition, but the user shown as the CHECKER receives the notification.

Variable	Description
CHECKER2	Designated DOUBLE CHECKER for a document. This user receives the notification when a document requires a second check (only applies to a limited number of document types, such as DRW). It should be noted that any member of the CHECKERS group can make the transition, but the user shown as the CHECKER receives the notification.
CLIENTCONTACT	Name of contact person for a project. Used on folder card and as default value for several type-specific variables, such as the addressee of a memo.
CLIENTNAME	Name of the client, used in the company field of folders and documents. On the document card the default value from the containing folder is chosen but can be changed for each document individually.
CLIENTNUMBER	Used on document card to contain the client number of a document. Can be used in transmittals and exports to be included in filenames.
CLIENTREV	Used on document card to contain the client revision of a document. Can be used in transmittals and exports to be included in filenames.
COMPLETION	Contains the progress percentage of a document. Only visible on document card if the ON MDR box is ticked. Value is independent of document revisions. Can be used in MDR progress monitoring.
CREATEDATE	Creation date of a document. Not changed by document revisions.
DELIVERABLE	Boolean variable indicating if a document is a deliverable or not. Deliverable documents cannot be RELEASED, have to go through the check and approval cycle. An automatic check print and master copy is generated by PDM for Office and AutoCad documents that are marked as DELIVERABLE. Master copies are DELIVERABLE by default.
DESCRIPTION	Free multi-line text field. Useful to store (and search for) general data about a document or folder.
DISCIPLINE	Pull-down menu on document card allowing the selection of the discipline of a document. For single discipline projects, the default discipline for all documents in the project is selected on the project card. For multidiscipline projects, the discipline folders determine the default document type of documents contained in that folder. It should be noted that document disciplines can be selected freely, independent of the discipline of the folder containing the document.
DOCTITLE	Variable defining the subject of a folder. It is copied to the DESCRIPTION (key words) field of all documents that are created within the folder.
DOCUMENTCODE	A compilation of a documents PROJECTNUMBER, DISCIPLINE, TYPE, SYSTEM, DOCUMENTNUMBER and SHEET. Refer also to the variable UNIQUE. The document code update is only triggered by modification of one of its component variables.
DOCUMENTNUMBER	4-digit number that is part of the DOCUMENTCODE and can be freely chosen by the user. PDM provides a default (sequential) number during the initial check-in procedure.
ISPROJECT	Boolean variable identifying the top-level folder of a project. Useful when searching the database for folders.
MEMOCONTACT	Type specific variable, containing the list of addressees of a memo (comma separated). CLIENTCONTACT is used as default value.
ONMDR	Boolean variable indicating if a document is part of the MDR. This variable is used to update the MDR document of a project.
PROJECTMANAGER	Part of the folder card indicating the Enersea project manager for a project. Used as default value for the CHECKER and APPROVER of each document in a folder.
PROJECTNAME	Name of the project.
PROJECTNUMBER	5-digit number identifying the Enersea project number. First to digits indicate the current year, last 3 digits are a sequential number. When creating a project PDM generates the next available number. Can be changed manually. Project number of the containing folder is used as default value for each document.
Rx_APPROVER	Actual APPROVER of revision x.
Rx_AUTHOR	AUTHOR of revision x.
Rx_CHECK	Actual CHECKER of revision x.
Rx_DATE	Date when the check and approval process was started for revision x.
Rx_DESC	Revision description of revision x.
Rx_DOUBLECHECK	Actual DOUBLECHECKER of revision x.

Variable	Description
Rx_NR	Revision nr of revision x. (R1_NR being the current revision, R5_NR being the oldest revision still shown on reports and drawings).
Rx_STATE	Workflow state nr of revision x. (R1_STATE being the current revision, R2_STATE through R5_STATE being CHANGE REQUEST by definition).
Rx_TABLE	Revision comment of revision x.
RECIPIENTCODE	Variable containing the recipient of a transmittal
SHEET	Used to identify the INDEX of a document. Traditionally, this was used to indicate the sheet number in a set of drawings. Since sheets are currently part of a single document, the variable is now used as a free index field as part of the DOCUMENT CODE.
STAMP	Variable defining the route of a document through the workflow. Possible values for STAMP are: IN STUDY, IN WORK, MASTERCOPY, CHECKPRINT, APPROVED or RELEASED. Stamp is used to trigger various automatic workflow transitions. Cannot be manually modified.
SUBTITLE	Defining the top line of a drawing title.
SUBTITLE2	Defining the middle line of a drawing title.
SUBTITLE3	Defining the bottom line of a drawing title.
SYSTEM	Part of document code. Free text field. Default value 01. Most commonly used as a 2-digit number identifying a subsystem in a (piping) system (e.g. 01= firewater, 02=fresh water, etc.)
TYPE	3-letter code, defining a document's type. Not to be confused with its extension. A document of type DWG is not necessarily a .dwg file and vice versa. Refer to section @@ for possible values for TYPE.
UNIQUE	A compilation of a document's PROJECTNUMBER, DISCIPLINE, TYPE, SYSTEM, DOCUMENTNUMBER and SHEET. This variable must have a unique value for each document in PDM to allow for the document to be checked in. UNIQUE is not shown on the document card or in document. instead DOCUMENTCODE is used. DOCUMENTCODE is a copy of UNIQUE that does not require to have a unique value. This allows master copies and check prints to show the same DOCUMENTCODE as their parent document. UNIQUE is kept blank for check prints and master copies.
VARIATION	3-digit number defining the variation of a project. Default value 000. Can be changes manually.

3.5. Document types

The following table contains the available document types in PDM. Some documents are automatically assigned a document type based on their extension. Document types can be modified manually.

Table 3-4 Document types

Code	Name	Automatic assignment by file extension for	Type specific variables
3DM	3D model	.nwf,.nwd,.nwc,.igs,.stp,.idw,.iam..ipt,.ebm,.step	
BFD	Block Flow diagram		Checker 2, titles 1, 2 and 3
BID	Bid		Bid type:
BOD	Basis of design		
CAL	Calculation	.sm,.hsc,.ideacon	
CRS	Comment response sheet		
DAT	Datasheet		
DOC	Document		
DDR	Design decision register		
DWG	Drawing	.dwg,.sldprt,.sldasm,.slddrw	Checker 2, titles 1, 2 and 3
EST	Estimate		
FAT	Factory acceptance test		
FEA	Finite element analysis	.rf5	
ISO	Isometric		
ITP	Inspection & Test Plan		
ITT	Invitation to tender		
MAN	Manual		
MDR	Master Document Register		
MEM	Memo		Company Contact names

Code	Name	Automatic assignment by file extension for	Type specific variables
MOM	Minutes of meeting		
MOV	Movie		
MSG	Message	.msg	
MTO	Material Take-off		
NCR	Non conformity report		
LST	List		
PFD	Process flow diagram		Checker 2, titles 1, 2 and 3
PIC	Picture	jpg,heic,mbp,jpeg,pic,png,tif,gif	
PID	Process instrumentation diagram		Checker 2, titles 1, 2 and 3
PLN	Planning	.mpp	
PO	Purchase order		
PRE	Presentation	.ppt,.pptx,.pptm	
PRG	Progress report		
RFQ	Request for Quotation		
RPT	Report		
SFT	Software	.exe,.mis,.iso,.cex	
SOW	Scope of work		
SPC	Specification		
STA	Standard		
TRN	Transmittal		Recipient code
VIR	Virtual document		

3.6.   Labels

Labels can be assigned to any document in PDM. These labels can best be compared with sticky notes attached to physical documents.

- Labels can be attached via the quick access toolbar (Modify>label) or the right-click shortcut menu. Labels will appear as lines in the history dialog and can be used as search keys.

- Reference is made to the following figures for a typical example. 'My label' containing a comment is added to the document. The label name and comment are shown in the document's history tab. Both the label name and comment can be used as search keys in the search tool.

- Multiple labels can be added to a document.

- Labels can be deleted via the history dialog.
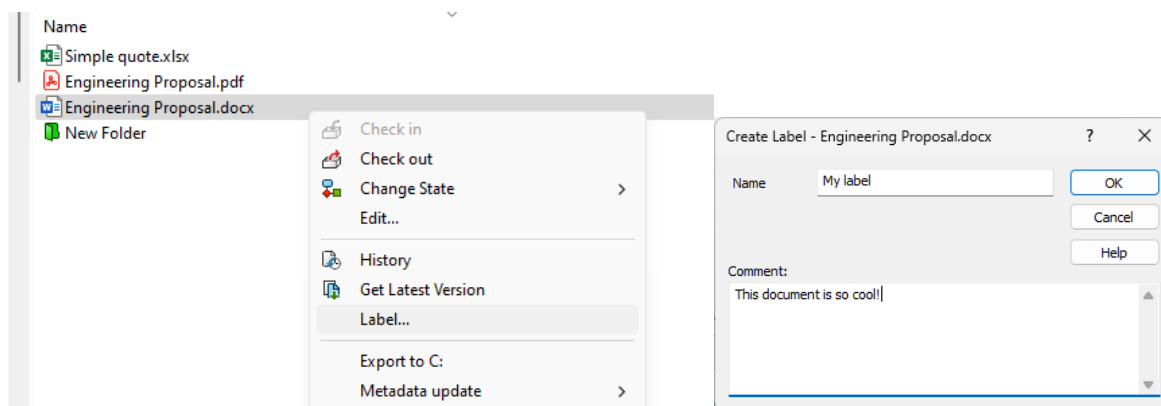
Figure 20 Adding a label Using labels.

Figure 21 Labels appear in history dialog.

Figure 22 Labels can be used as search keys.

4. Working with PDM

4.1. Creating new projects

- New projects can be created via the right-click shortcut menu (New>Project Management>).

- Multi-discipline or single discipline project can be created.

- The new project will always be created in the Projects folder in PDM, regardless of where the creation of the project was initiated.
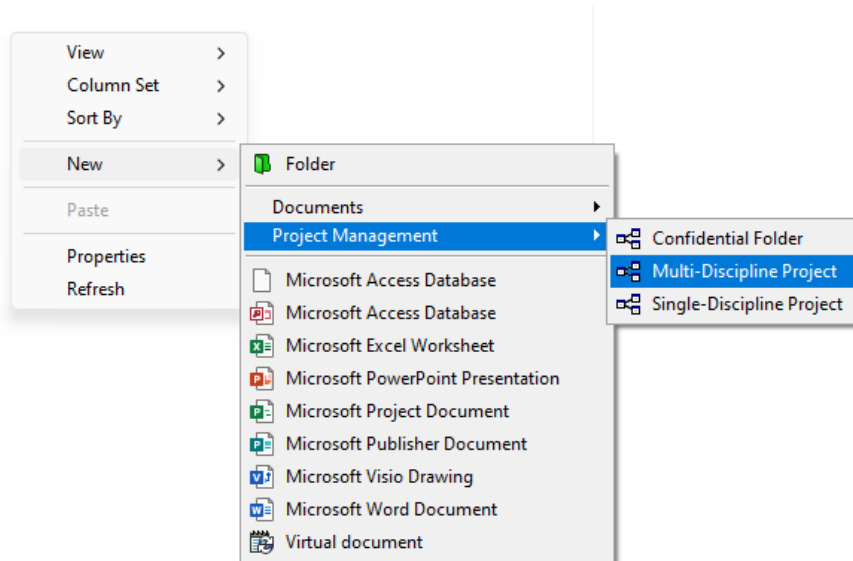
Figure 23 Creating a new project.

4.1.1   Creating a single discipline project

When creating a single discipline project, the following dialog windows is displayed.

Figure 24 Creating a single discipline project.

After completion of the dialog, a project folder will be created in the Projects folder. The name of this folder will be composed of the project number (including variation), the client name and project name. These meta data will be copied any new file being created within the project folder.

For single discipline project, the discipline is selected in the initial dialog window. This discipline will be used as the default value for all new documents being created within the project folder. Disciplines of individual documents can be modified manually.

4.1.2   Multi-discipline projects

A multi-disciplinary project is created in a similar way. For multi-disciplinary projects, the discipline does not have to be selected, since a folder structure will be created for each individual discipline, as can be seen in the following figure. Documents within each of the discipline folders will default be assigned with that discipline.
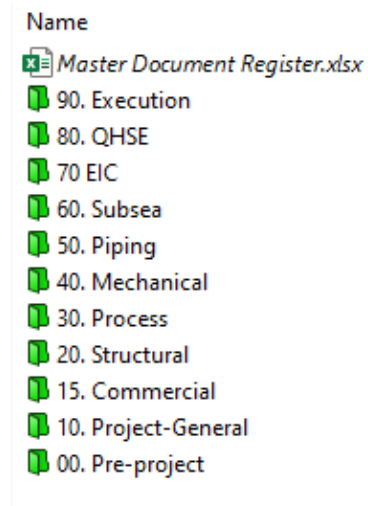
Figure 25 Multi-discipline project folder structure.

As can be seen from the figure, a Master Document Register document is automatically created in the project folder. Refer to section @@ for further details on the use of the MDR in PDM.

4.2.   Creating new folders

A new folder can be created by right-clicking (without having a file selected) New -> Folder or from the icon in the quick-access toolbar, refer to figure below.
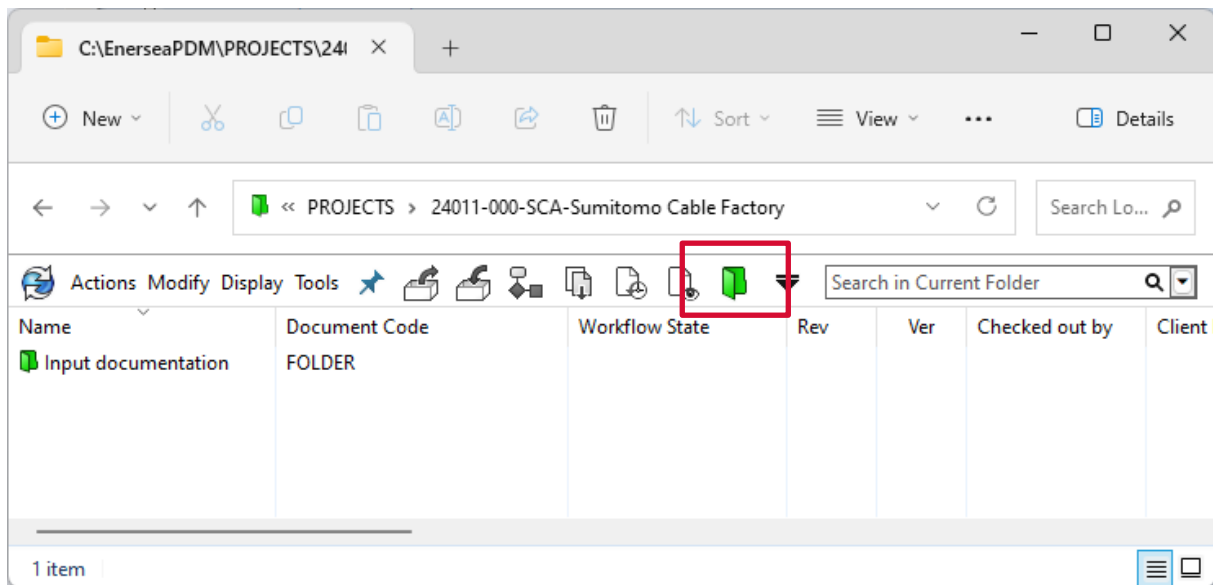
Figure 26 Creating a new folder from the quick-access toolbar.

Once created, the folder's meta data can be completed from the folder datacard (on the edit values tab), refer to figure below.

It should be noted that the meta data entered here are used as a basis for the metadata defaults of any document that is copied or created in the folder.

It should be noted that the folder subject may differ from the folder name. Both can be used as triggers to search the database.

Figure 27 Creating a new folder.

4.3.   Creating new documents

New documents can be created in several ways. These will be discussed in the following sections. Some general notes:

- Where possible, avoid using "save as" on a native document. It is better to copy-paste a document in windows explorer and then rename and modify the copy than using save-as.

  The native document editor in some cases 'locks' the document, making it impossible for PDM to assign metadata to the document, leaving several datacard variables undefined. For some variables this can be corrected by right-clicking the document and selecting "Add to vault" command.

- When adding documents PDM can automatically assign a TYPE to the document, as mentiond in Table 3-4.

4.3.1 Copy-paste from outside of vault

Any document can be copied from a location outside of the vault. Pasting it into a folder inside PDM, will create a document card (for recognized file extensions). The file will not be checked in allowing the user to complete the missing metadata.

4.3.2 Drag and drop from outside of vault

Alternatively, to copy-pasting documents, they can also be dragged and dropped into a PDM folder. This is specifically practical for e-mails or mail attachments.

4.3.3 Copy paste from inside vault

When copy-pasting a document from inside PDM, the system will copy all the metadata from the source file, apart from the DOCUMENTCODE, which must be unique. Therefore, the system will show the following dialog window.
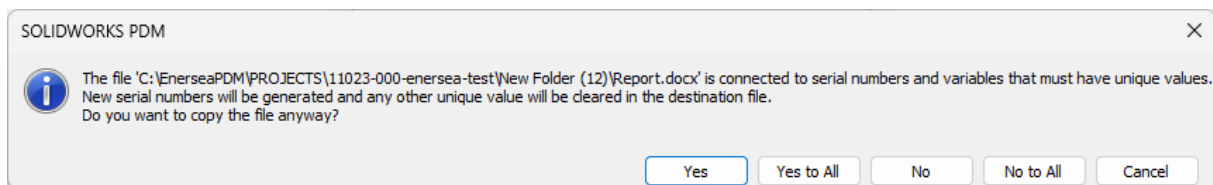
Figure 28 Pasting a document from within the vault dialog window

4.3.4 Use a template

Right-clicking in a folder with nothing selected opens the shortcut-menu shown in the figure below. Using this menu, a document can be created based on an approved template.
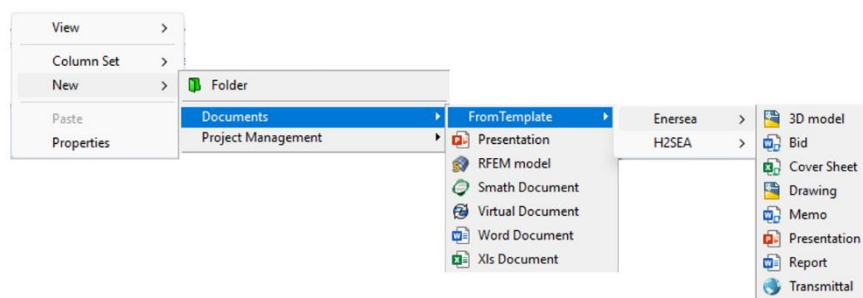
Figure 29 Selecting a template

4.4. Copying documents

Refer to section 4.3.3.

4.5. Linking documents

This section describes how to create a link between two documents. For instance, between a calculation report and the calculation model itself.

4.5.1 Parents and children

Documents can be linked to various other documents and documents do not have to be in the same folder.

4.5.2   Contains and Where Used

The links between documents can be found in the Contains and Where used tab of the document:

- ⬚ Contains shows the children of the document.

- ⬚ Where Used shows the parents of the document

Links are made between versions of documents. The pull down at the top left of the Contains and Where Used tab allows for version selection.
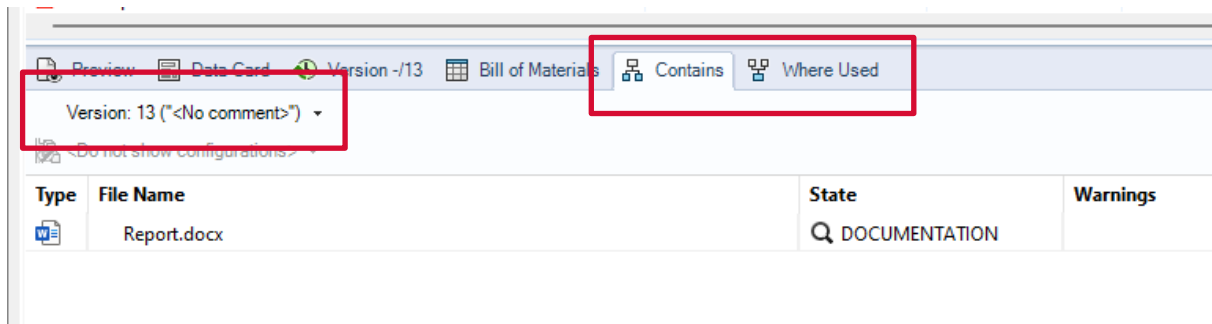
Figure 30 Linked document versions selection and Contains and Where Used tab selection.

The pull-down at the top right of the tabs allows for a full tree view or only the top- level connections to be shown.
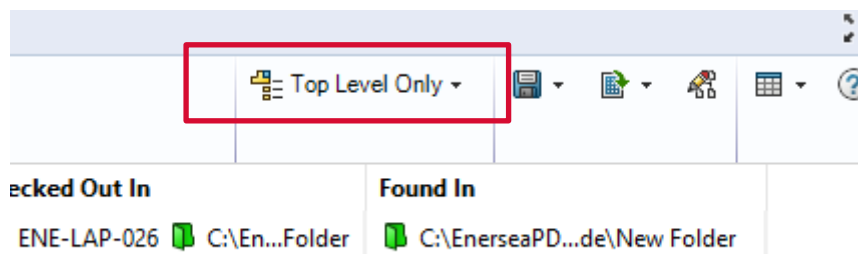
Figure 31 Linked documents view selection. Tree or top-level only

The parent document has to be checked-out in order to create the link between the documents. This link will only be visible once the parent has been checked in again.

4.5.3   Creating a link between documents

Links are created in the following manner:

1. Select the child document(s)
2. Copy the documents (Ctrl-c or right click -> Copy) (Figure 32)
3. Check-out the parent document (if it is not already checked out by you).
4. Right click on the parent document and select "Copy as Reference" (Figure 33 and Figure 34)
5. Check-in the parent document. The children will now be shown in the Contains tab. (Figure 35).

The Contains tab of the parent document now shows the link to the child documents (Figure 36)
The Where used tab of the child document now shows the linke to the parent document (Figure 37).
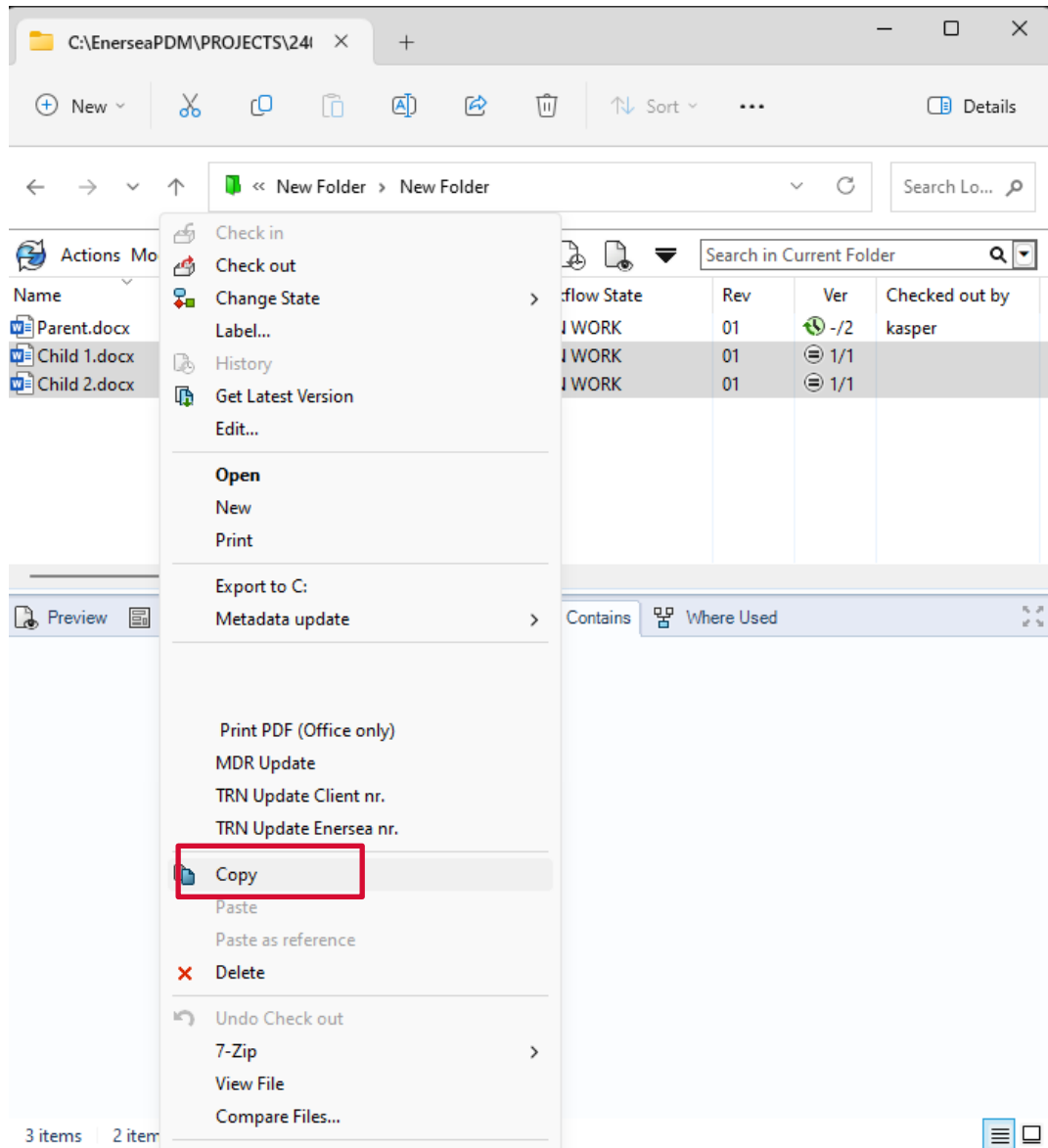
Figure 32 Copy child documents.
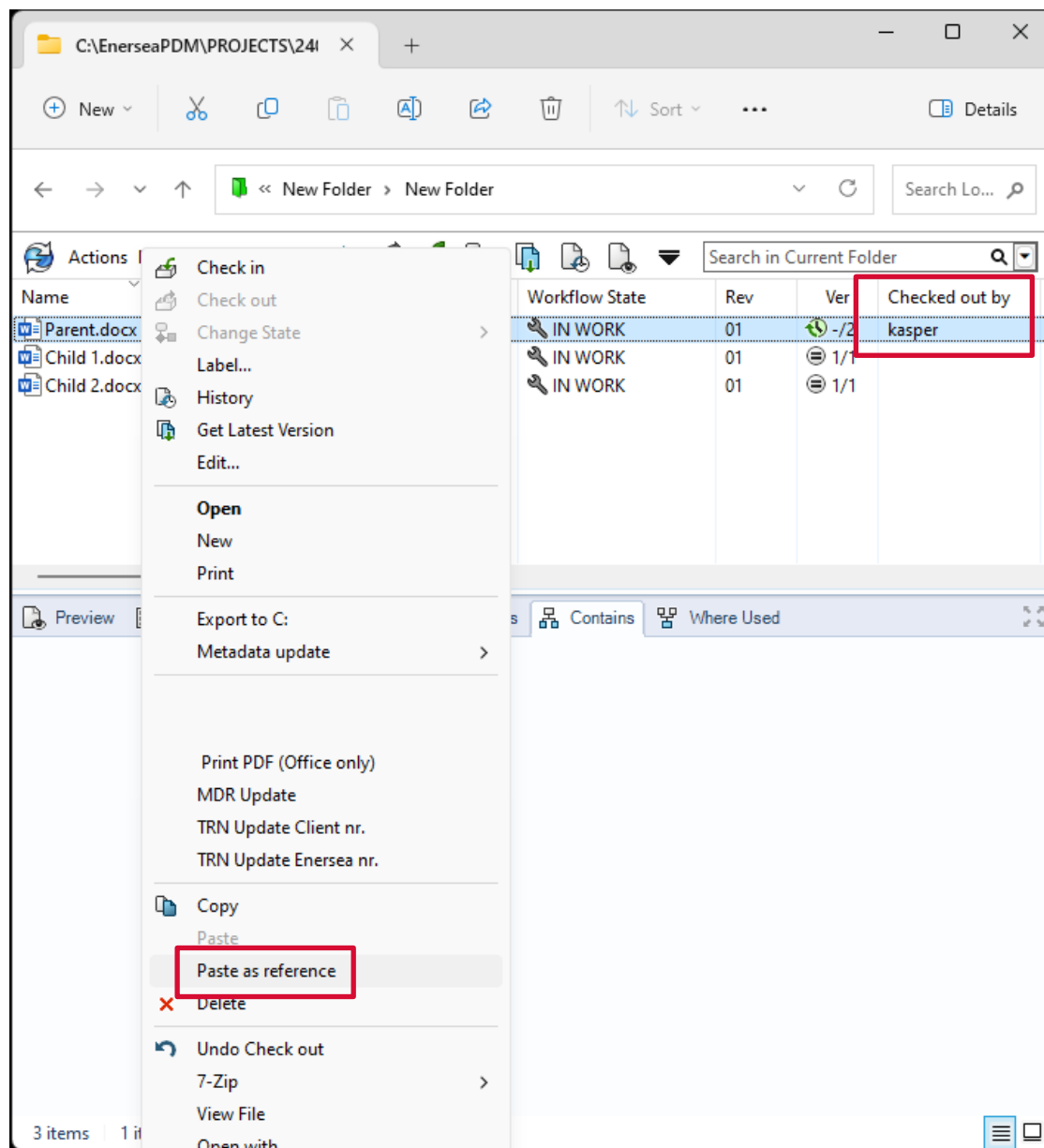
Figure 33 Paste as reference on Parent document (Parents has to be checked out).

Figure 34 Paste reference dialog.

Figure 35 Checking in the parent document.

Figure 36 Contains tab now shows the child documents linked to the parent.
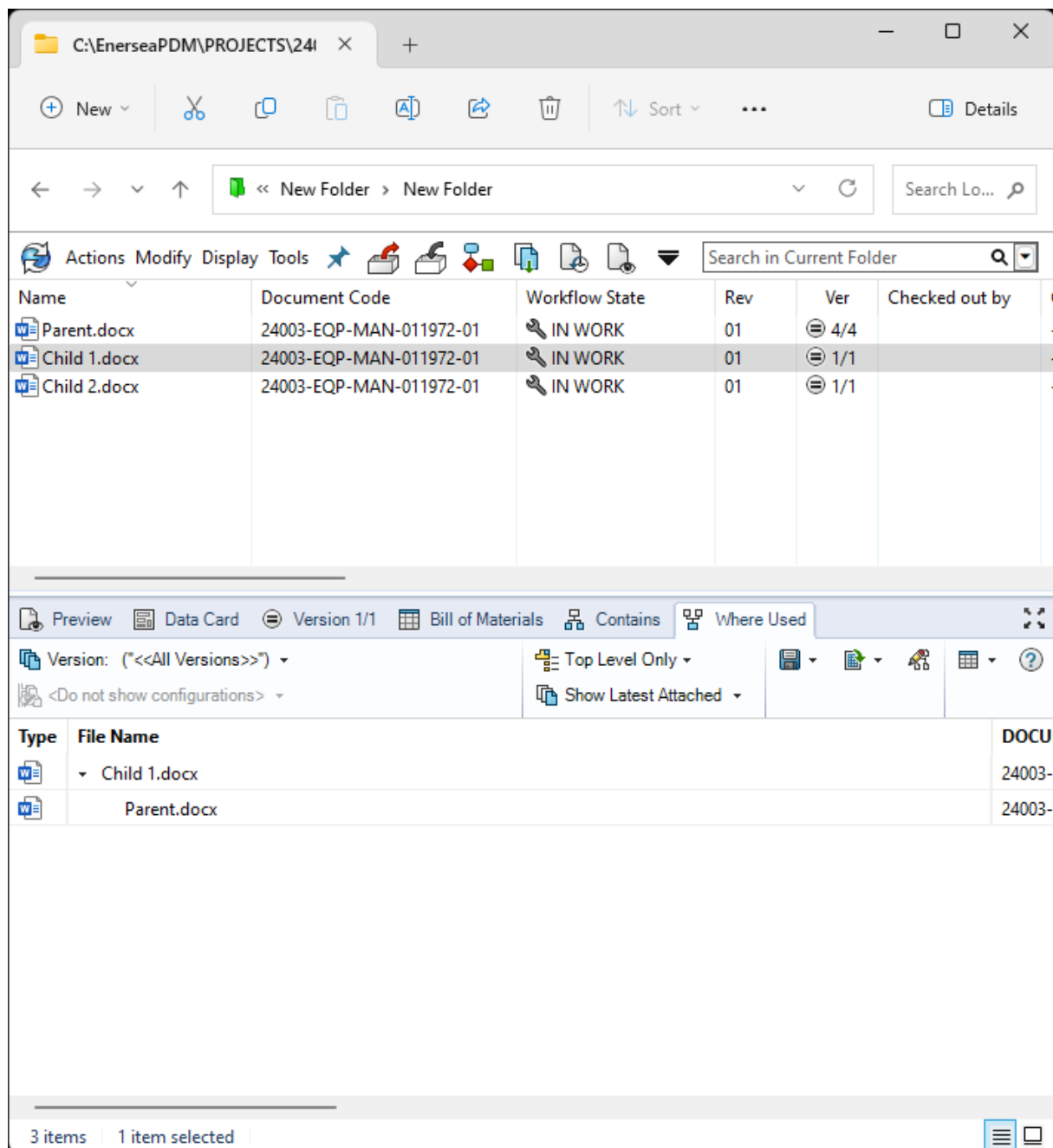
Figure 37 Where-used on the child shows the parent document.

4.5.4   Deleting links between documents

Links between documents can be deleted using the custom reference button on the top right of the Contains and Where Used tab.

Removing a link between documents is shown in the following figures, based on the examples from the previous section.
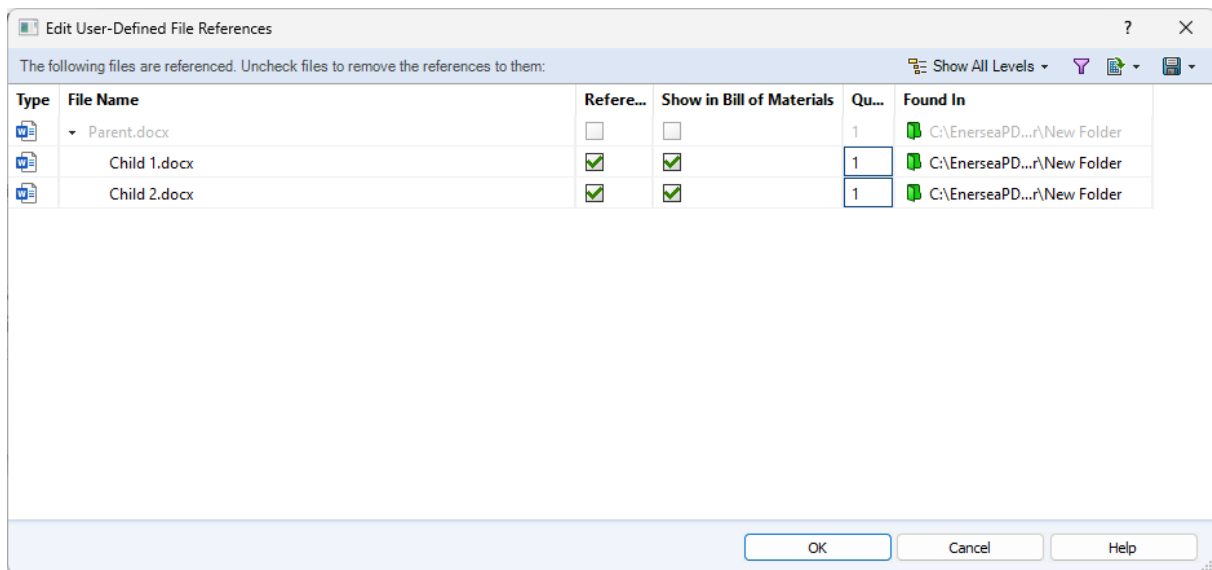
Figure 38 Custom References dialog shows two child documents are linked to the parent.
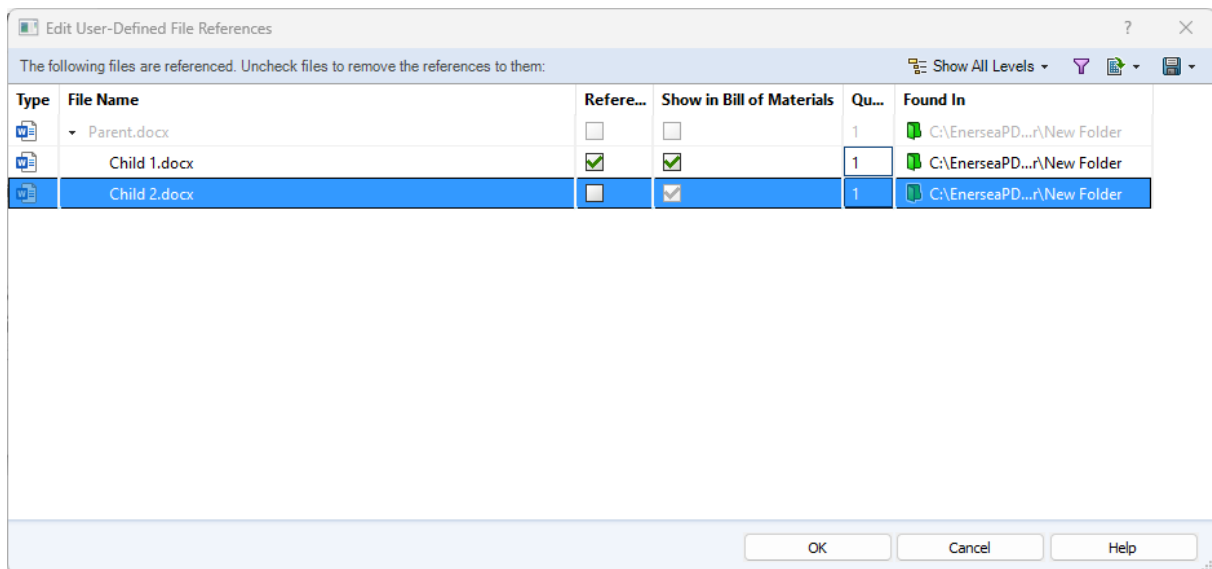
Figure 39 Unticking the Child 2 document will remove the link to the parent document.

Figure 40 After checking in the parent document, only Child 1 is still linked to the parent.

4.6.   Going through the workflow

Will be included shortly!

Figure 41 Typical Change state dialog.

4.7.   Searching the database

Will be included shortly!
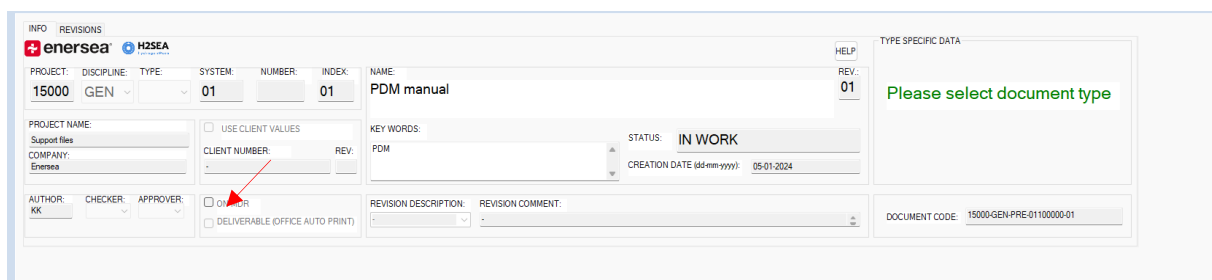
Widlcards (all cAPS) Voorbeelden favorites

4.8.   Creating pdf's

Will be included shortly!

4.9.   Creating Checkprints and Mastercopies

For any new document that is created that has the Deliverable box ticked (refer to figure below), an automatic dummy Checkprint and Mastercopy pdf are created.

Figure 42 Deliverable box triggers automatic creation of Checkprint and Master copy.

Please note:

- The Mastercopy pdf has the same name as the native file, while the Checkprint has "-(check)" added to the name.

- The content of the dummy pdf files is shown in the following figure. It contains an instruction on how to replace the dummy with the actual Checkprint or Mastercopy. This is also the subject of the next section of this manual.

This is a dummy CHECKPRINT or MASTERCOPY and should be replaced with the correct document,

This is how to do that:

1. Close this document.
2. Check out this document (do not open it).
3. Open the correct native document (you do not need to check it out).
4. "Save as" or "print" the native document to pdf.
5. Select this file as the target file.
6. Select 'yes' when asked to overwrite.
7. Close the native document.
8. Check-in this document providing a comment, preferably including a statement regarding the revision of the native file the checkprint or mastercopy belongs to.

This dummy document will now be overwritten with the native document's content.

Figure 43 Content of dummy Checkprint and Mastercopy document.

- In case Checkprints and Mastercopies are created automatically (i.e. for word, excel and powerpoint), the created dummy documents will be overwritten (by a new version).

- In case a document was initially not marked as a deliverable, but was modified to become a deliverable, or in case a non-deliverable document needs to be checked and approved, the dummy Checkprint and Mastercopy can also be created manually by right-clicking on the native document and selecting "Create Checkprint / Mastercopy", as shown in the following figure.
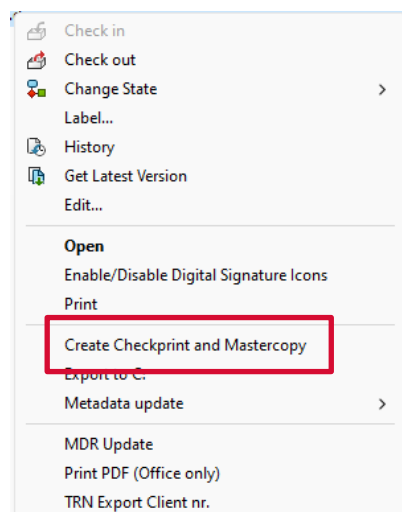
Figure 44 Manually creating Checkprint and Mastercopy

4.10.   Updating Checkprints and Mastercopies

For word, excel and powerpoint deliverables, the checkprints and mastercopies are updated automatically while a document is taken through the workflow: A checkprint is created when the native document is transferred to the IN CHECK state, while a Mastercopy is created when the document is transferred to the APPROVED or RELEASED state.

It should be noted that Checkprints and Mastercopies themselves are not taken through the workflow. They should be regarded as snapshots of the status of the native document. The native document is taken through the workflow.

Once created checkprints and mastercopies can be updated with the actual content by following the following procedure:

1. Check out the Checkprint or Mastercopy that should be updated.
2. Open the correct native document (you do not need to check it out).
3. "Save as" or "print" the native document to pdf.
4. Select the Checkprint or Mastercopy that was checked-out in step 1.
5. Select 'yes' when asked to overwrite.
6. Close the native document.
7. Check-in Checkprint or Mastercopy. Providing a comment, preferably including a statement regarding the revision of the native file the Checkprint or Mastercopy belongs to.

Once these steps are completed, a new version of the Checkprint or Mastercopy has been created.

An example of this procedure is shown in the following figures.

Figure 45 Document 24003-EQP-DWG-012679-01 is created as non-deliverable. Therefore, no dummy Checkprint and Mastercopy are created.

Figure 46 Checkprint and Mastercopy are created via right-click "Create Checkprint and Mastercopy".

Figure 47 Document 24003-EQP-DWG-012679-01 is ready to be checked. Therefore its status is changed to IN CHECK (via transition TO BE CHECKED).
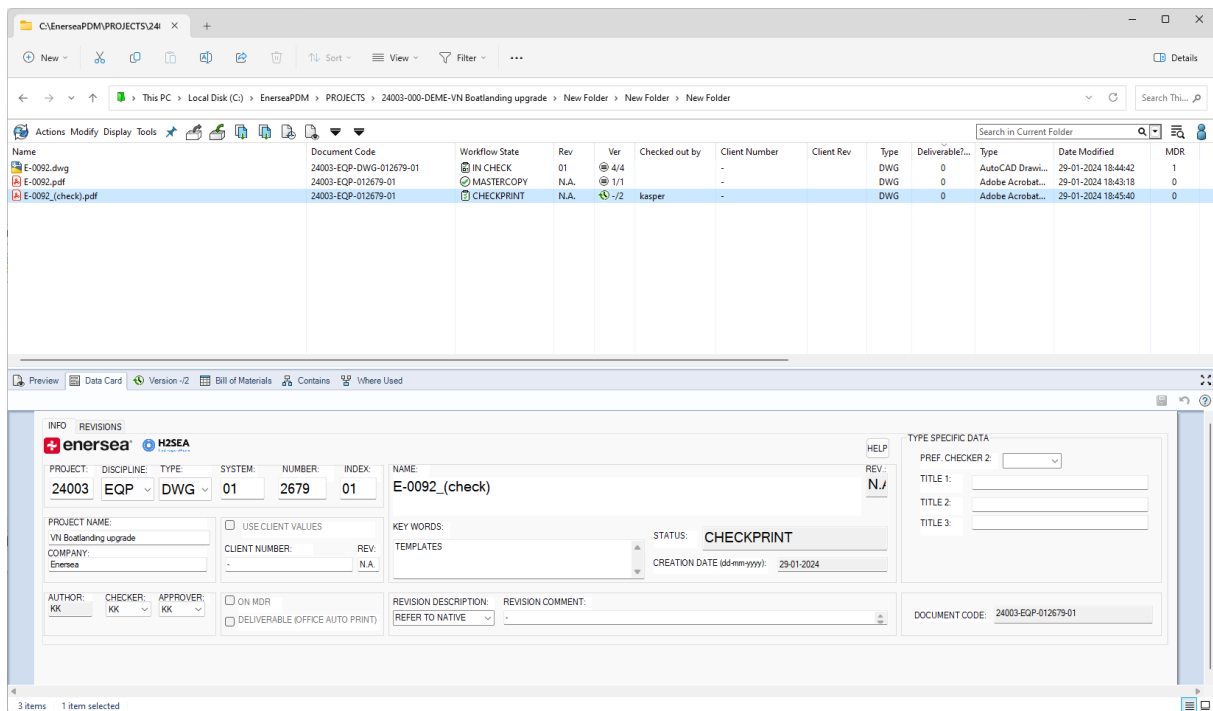
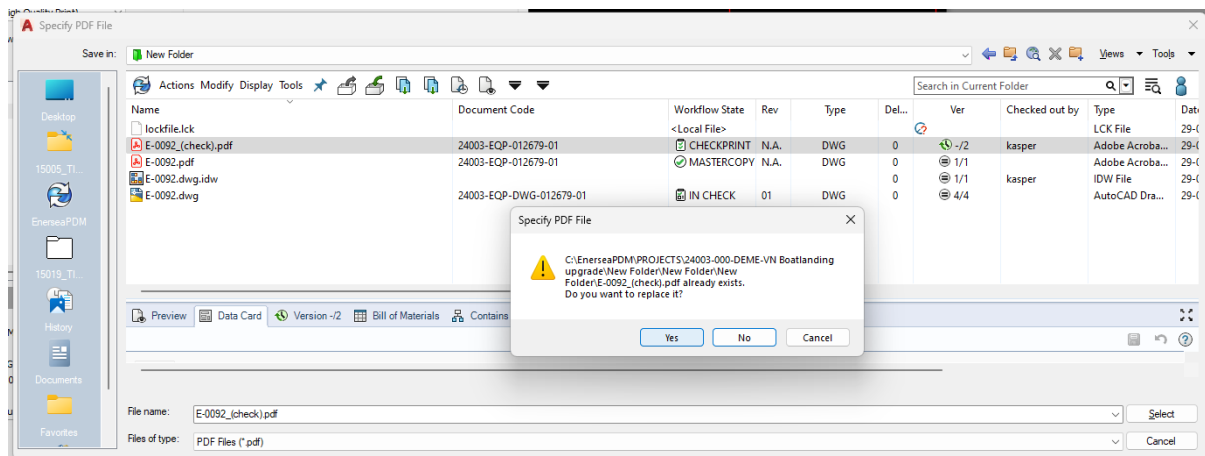**Figure 48 Document 24003-EQP-012679-01's Checkprint is checked-out, allowing it to be overwritten.**

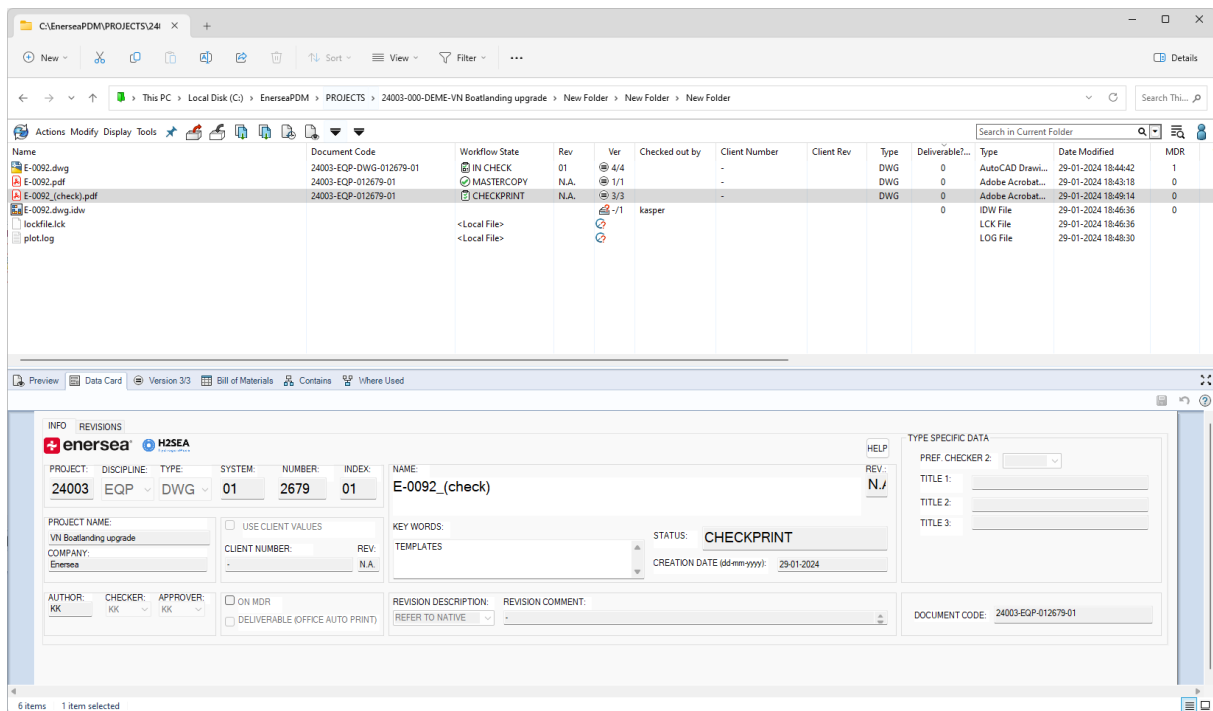**Figure 49 The Checkprint is overwritten with the published pdf from the native software (in this case Autocad).**

Figure 50 The Checkprint is checked-in, creating a new version.

Older versions can be retrieved via a document's history dialog. Refer to section @@ for further details.

4.11. Modifying meta data

Will be included shortly!

Sommige voegen toe, anderen vervangen.

4.12. Exporting documents

4.12.1 Export to C:PDM Exports

Documents can be exported from the database via the "Export to C:PDM Exports" command in the right-click menu. This command creates a copy of the selected document(s) in the C:\PDM exports folder.

- The name of this copy will start with its DOCUMENTCODE, followed by its REVISION, its filename and its WORKFLOW status.

- For files that are not in the state RELEASED, APPROVED or DOCUMENTATION, the version of the document will also be included in the copy's filename.

- In case the USE CLIENT data tick boxes are ticked, the DOCUMENTCODE and REVISION will be replaced by the Client number and revision. It should be noted that this is the local version of that document, which may differ from the version stored in the database.

4.12.2 Export Special

The "Export Special" command contains some self-explanatory prescribed exports and the "Custom.." command. This command allows the user to compile a custom formula to be used in exporting documents. This filename can be composed of a combination of fixed stings and/or any of the variables from the following table.

Table 4-1 Variables used for custom exports

Variable	Description
%CLIENTNUMBER%	The document's client number
%CLIENTREV%	The document's client revision
%COMPLETION%	The document's completion percentage
%DATE%	The document's revision date
%DISCIPLINE%	The document's discipline
%DOCUMENCODE%	The document's document code
%DWGSUBTITLE%	The document's subtitle (DWG only)
%DWGSUBTITLE2%	The document's subtitle2 (DWG only)
%DWGSUBTITLE3%	The document's subtitle3 (DWG only)
%NAME%	The document's filename without extension
%REVISION%	The document's revision number
%STATE%	The document's workflow state
%STAMP%	The document's stamp
%VERSION%	The document's version

The formula that results in the filename comprising of the document's document code, followed by the word Revision:, the document's revision and its filename would be:

%DOCUMENTCODE% Revision %REVISION% %NAME%

It should be noted that:

- Special symbols like @ or : should not be used in the formula.

- DWG documents should be exported in separate batches. The name of any variable used in a DWG export should be preceded by the letters DWG. The previous example formula for DWG files would then become:

    %DWGDOCUMENTCODE% Revision %DWGREVISION % %DWGNAME%

- Administrators can add additional variables to the table should they be required.

- If a custom export formula is frequently used, administrators can add it to the Special Export menu.

4.13. Accessing previous versions

Previous versions of documents can be retrieved through the history dialog. This dialog can be accessed via the right-click menu or the quick access toolbar using the button.

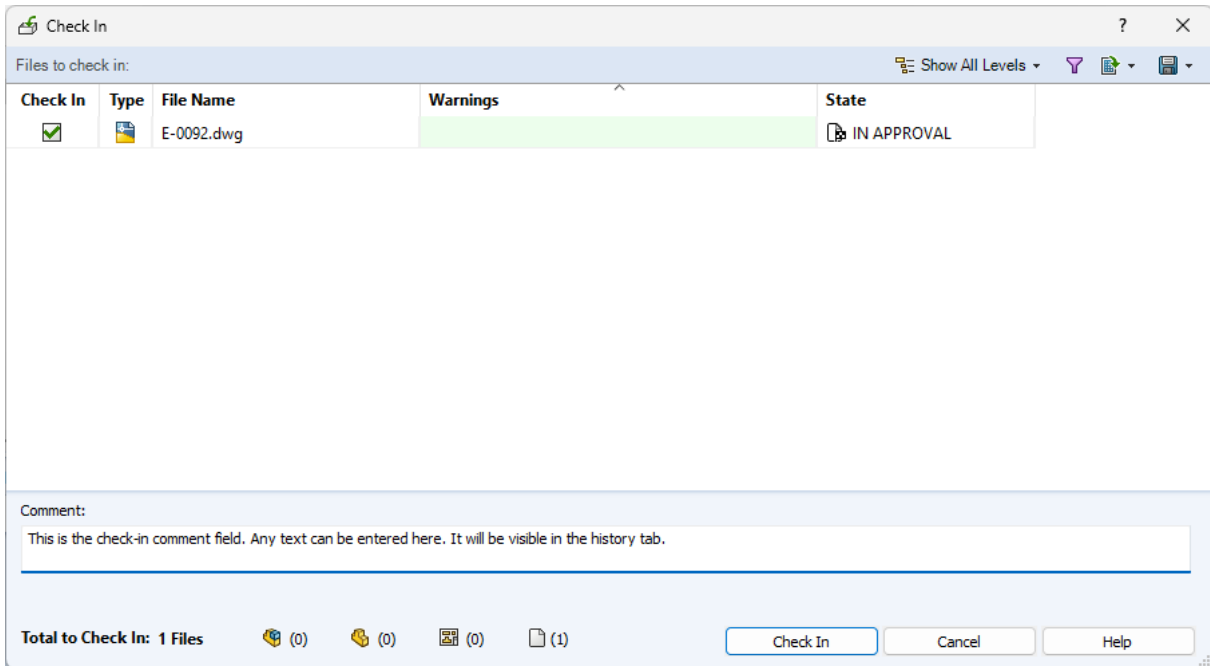The history dialog is shown in the following figure.

Figure 51 Typical Document history dialog.

The history dialog as shown in the figure above show the following:

- A total of 12 versions of this document were created (refer to Version column).

- These versions were all created by user 'kasper'.

- Version 7 contains the APPROVED version of revision 1.

- The comments column for version 7 shows it is changed to CHANGE RE QUEST   because client comments were received.

- Version 8 is the first version containing revision 2.

- Version 11 was labelled 'New trunnion included'. This comment was generated using the 'Label' comment on the documents right-click menu.

- Version 12 was checked-in intermediately because an extra bolt was added. This comment was included during checking in of the version, by completing the comment field on the check-in dialog, as shown in the figure below. Version comments can be searched for using the version comment field on the search card.

Figure 52 Check-in dialog with comment field.

Any of the previous versions can be viewed using the view bottom at the top of the history dialog. Multipe versions can be viewed simultaneously, allowing for version comparison. This could be handy when comparing commented Checkprints to the updated version of a checkprint.
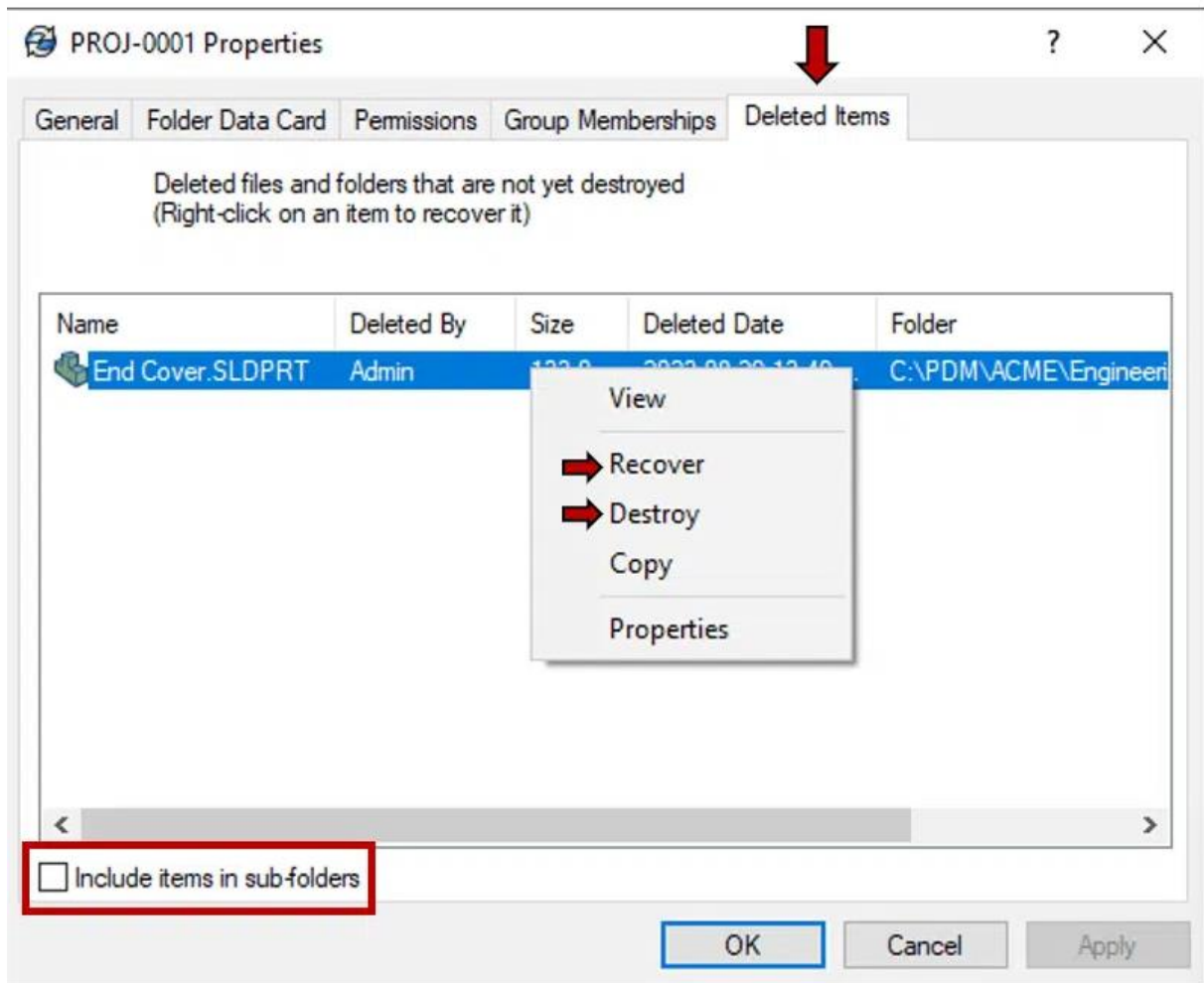
4.14. Recovering deleted data

Figure 53 Recover deleted files

Right-click any folder in PDM and select Properties. From the Deleted Items tab, right-click a file and select recover(only the admin has the destroying rights). If the file was deleted from a sub-folder, click the option to 'Include items in sub-folders' to view the full list.

4.15.   Undo check-out

Will be included shortly!

4.16.   Using client numbers

Will be included shortly!

4.17.   Transmittals

Seding files to a client can be done using transmittals. This can be done as follows:

4.17.1   Create TRN document

A new transmittal document can be created from a template via the righ-click menu:
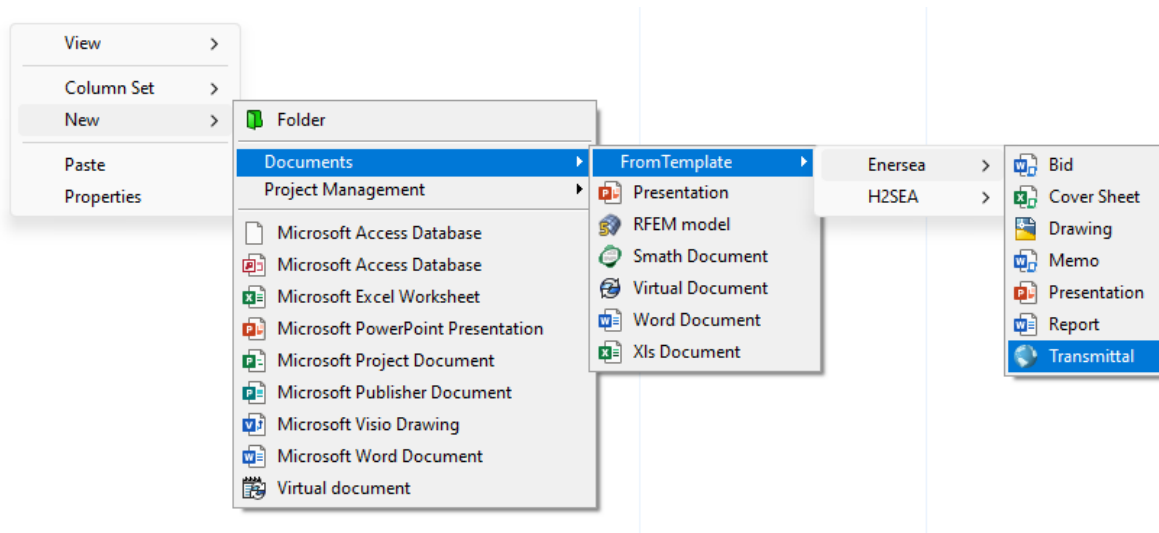

Figure 54 Finding the transmittal template

Selecting the Transmittal template will open the transmittal template dialog as shown in the following figure:

Figure 55 Transmittal template dialog.

This dialog can be completed in the normal fashion. Once checked in the transmittal will enter the "STUDY TRN" state.

It should be noted that:

- The Use Client number tick determines whether the documnents contained in the transmittal will be identified on the transmittal and in the created ZIP file by their Enersea or Client number and revision will be used.

- The transmittal subject field is filled out with the current date by default, but can be changed by the user to different values, e.g. "First issue" or "Released for construction". This subject will be shown on the transmittal itself and be part of the created ZIP file's name.

4.17.2   Adding documents to the transmittal

Once created, documents can be added to the transmittal by:

1. Selecting documents
2. Right-clicking the documents and selecting "Copy"
3. Right-clicking on the transmittal and selecting "Paste as reference"

It should be noted that:

- Linked documents can be anywhere in the database; they do not have to be in the same folder as the transmittal.

- The link between the transmittal and the document is version-specific. i.e. when the document was at version 5 when it was linked, version 5 will remain linked to the transmittal, even if newer versions exist. Since opening a document always opens the latest version, care should be taken to use the history dialog to view the actual linked version of a document.

- Not all documents have to be linked at once. If documents originate from different folders, they can be pasted as reference per folder.

- Linked documents will only appear in the "Contains" tab of the transmittal once the transmittal has been checked in. The will only be shown in the transmittal itself, once it has been exported (next section).

- More documents can be added to a transmittal while the transmittal is in "STUDY TRN". The transmittal has to be checked-out to allow for "Paste as Reference".

- Removing links can be done after checking-out the transmittal by using the   "Custom reference" button and deselecting the document to be removed from the transmittal. The custom reference button can be found on the right-hand side of the transmittal's "Contains" tab.

4.17.3   Exporting the transmittal

Once all documents have been linked to the transmittal and the transmittal's meta data have been completed, the transmittal can be transitioned to the TRANSMITTAL state by the transition EXPORT TRANSMITTAL,

This transition triggers the following actions:

1. The transmittal will be transferred to the TRANSMITTAL stage.
2. The metadata of the linked documents will be included in the transmittal itself (excel file).
3. A ZIP file will be created containing a copy of all linked documents with their filename containing document number, revision and state. The "Use Client Data" tick box on the transmittal determines whether the Enersea or Client Data will be used as part of the filename in the ZIP file.
4. The ZIP file will be transferred to the TRANSMITTED FILES state.
5. The ZIP file will be linked to the transmittal.

It should be noted that:

- The transmittal and ZIP file can now be sent to the client.

- PDM assumes that a transmittal in the TRANSMITTAL stage has actually been sent to the client, although this is still up to the user to execute. All transmittals in the TRANSMITTAL stage will be included in the project's MDR.

- Exporting a transmittal can be undone by transitioning the transmittal back to STUDY TRN. This action will delete the ZIP file, but keep the links with the documents linked to the transmittal.

4.17.4   Sending another transmittal

If another transmittal is to be send to the client, the transmittal can be revised by the transition NEXT TRANSMITTAL. This transition will

- Increase the TRN number (~revision).

- Clear the linked document list.

- Update the Transmittal subject field to the current date.

4.18.   Master document registers (MDR)

Will be included shortly!

4.19.   Creating confidential folders

Will be included shortly!

5. Frequently asked questions

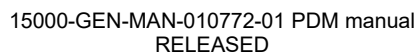Will be included shortly!

Mails teruglezen

6. Tips and tricks

Will be included shortly!

Presentative en onenote

Begin in pdm met nieuwe documenten

7. Glossary

Appendix A   Workflow

The figure below shows the complete PDM workflow (including the automatic transitions and workflow states).

Figure A-1 Complete PDM workflow. Automatic transitions are shown in red. Notifications are indicated using the bell symbol.