(Dokustandards und Softwareprogramme zur Dokuerstellung / Document standards and software programs for creation of documents) - Ausführungsrichtlinien / Engineering guidelines

Ausführungsrichtlinie_Technische Dokumentation_EN

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Technical documentation – Execution guidance

List of changes

Rev.Nr.	Created Department/ Date	Description oft he change
c	TSI/PV AIS / 27.10.2022	Addition to the revision b

1 Scope and range

Technical documentation in the interest of this standardized guidance entails a structured compilation and provision of all documents necessary to ensure proper, safe and efficient execution of the following activities carried out on plant systems, objects, equipment and products:

- Planning, development
- Erection, manufacturing, installation, start-up procedure
- Production operations, service and maintenance
- Decommissioning
- Demolition and disposal

This guidance applies to all companies of the voestalpine Steel Division located in Linz (also called AG). The latest version of this document is to be provided to the supplier when the contract is signed.

To ensure optimal collaboration, it is recommended that the supplier contacts the central archive division shortly after the signing of contract. This execution guidance can then be discussed in detail with the AG, all open questions clarified, and any further cooperation agreed with the central archive.

voestalpine Steel Division
TSI department—engineering
Central archive
Tel. +43 50304 15-73334
Email: ZDM-Archiv@voestalpine.com

2 Purpose

This implementing guidance serves as a binding document and, in addition to legal provisions and standards, specifies general requirements for the creation, processing and delivery of user-friendly documentation to the AG.

This document governs the documentation requirements:

- to ensure a smooth transfer to the central archive
- to enable a long-term, electronic backup of the documents
- to ensure efficient processing when necessary

It is the responsibility of the contractor to check the consistency of the requirements with regard to the documentation work to be performed and, if necessary, to keep in touch with the client voestalpine Steel Division (also called AG).
In case of doubt, contact the client before starting work.

3 Standardised specifications

3.1 General requirements

3.1-1 Regulations, standards

The supplier is obligated to comply with the applicable General Commercial Terms for the Purchase of Plants, Plant Components and Services of voestalpine Stahl GmbH. All documents shall be prepared in accordance with the contract agreement, shall conform to standards and shall be clearly arranged and complete. Base units used in technical documentation must comply with the International System of Units (SI).

3.1-2 Content and scope Documentation

These documents are specified on a project-specific basis or in subject-specific execution guidelines.
The created documents, drawings and parts lists are to be handed over to the AG in the final version (corrected final documentation - "as built documentation").
The names, numbers and labels used in the documents must be the same as the related documents and drawings.

Based on the documentation supplied by the contractor, the client must be able to operate the scope of delivery and carry out all repairs, troubleshooting, maintenance work, spare part orders, production etc. without the assistance of the contractor or one of its subcontractors.

The information relevant for carrying out these activities must be recognizable in the long-term format (without the aid of the creator software)

3.1-3 Standard paper sizes

When creating the drawings, the standardized sheet sizes are to comply with

DIN EN ISO 5457. A0-, A4- overlong sizes for drawings are to be avoided where possible.

3.1-4 Revision Management

Changes must be marked clearly in the amended document in consultation with the AG. A version directory / revision list is to be kept in the document.

3.1-5 Data sheets of serial components, system components, standard components

The classification of an item in the scope of supply as a serial component, system component or standard component is to be discussed with the customer. All data sheets, dimension sheets, certificates for a serial component or system component that was installed in a plant system (such as geared motors, fittings, transducers, drive technologies) are to be provided to the customer in a structured manner. In data sheets that show more than one type, the used component is to be marked. In the case of purchased parts, it is necessary to specify all wear parts (e.g. bearings and seals of a gearbox).

The documentation is to be structured in a way that all documents required for a serial component or system component are consolidated. For the sake of clarity, tables of contents are to be created and handed over to the customer.

3.1-6 File formats to be supplied

3.1-6.1 Long-term viewing format

The long-term format used by voestalpine according to ISO 19005-1 is the PDF / A-2b file format. This replaces paper deliveries to the central archive. The PDF / A-2b file corresponds in format and visually a paper printout. Paper sizes must also be set correctly in the PDF (for example: an A1 must also correspond to the size of an A1 in the PDF file). In addition, the PDF must be rotated properly (Title block on the bottom right). The standard ISO 19005-1 regulates, among other things, that:

- Fonts are embedded
- The file is not encrypted
- Content is to be embedded as Unicode

3.1-6.2 Native format

The native format is the format in which the document was originally created. The software and the version with which this format is created must be agreed with the AG. If, in addition, further software tools, databases, libraries or the like are required for unrestricted processing and right of use, these are to be included in the scope of delivery.

3.2 Structure and labelling

The following structure ensures the reference from equipment to the corresponding documents which allows the retrieval of all the required information from the Central archive.
The structuring of the documentation must be agreed with the AG.

3.2-1 Document labelling

The following elements are used for supplier-independent labelling of documents

Labelling elements	Explanation	Example
Document type	Classification of the document	WSZ (Workshop drawing)
SAP-ZDM Document number	Unique number to identify the documents	13490
Functional location	Relation of the document to a facility (s), location (s)	LCANL-TME-GICHT-LTGEN-AR004
Description	Concise / Meaningful description of the content of the document	„Bolt“ is not a meaningful or unique description

3.2-2 Document types

A reference to the document types can be found in chapter 8. The list of document types cannot be changed, the assignment to the technical department is variable.

3.2-3 SAP-ZDM Document number

In the event of contract, the AG will provide with a set of SAP-ZDM document numbers in the form of document directory or upload lists (see chapter 3.5-3). If additional SAP-ZDM document numbers are required, the supplier must request a new upload list from the customer. Each document is as- signed a SAP-ZDM document number.

Each document must have a document number. If this is not possible due to the document being an ex- tract from another original document (e.g. Data sheet from a catalogue) then this document number must be listed in the table of contents. These documents are to be added to a “zip” file having the same SAP-ZDM number as the table of content file.

If a document has multiple sheets, then all sheets have the same SAP-ZDM document number.

Bills of material, technical calculations, operating and maintenance instructions associated with this documents and are given the same SAP-ZDM number as the drawing to which they belong. In the document directory all SAP-ZDM numbers requested by the AG must be listed, unused SAP-ZDM numbers are to be marked.

3.2-4 Functional location

In addition to the document directory, the contractor will receive a list of functional locations from the AG. Each document may also be assigned to several functional locations, e.g. if the same coupling is in- stalled in several plant sections (with different functional locations).

Example of a functional locations list:

Functional location / technical object	Description
LC	Standort LINZ-Campus
LCANL	Standort LINZ-Campus Technische Anlagen
LCANL-TME	Technische Medien
LCANL-TME-GICHT	Gichtgasversorgung
LCANL-TME-GICHT-LTGEN	Gichtgasleitungen
LCANL-TME-GICHT-LTGEN-AR004	GG-AR003 – GG-AR005 (GL78)

3.2-5 Title block / document header

If the following specifications are met, the company's may use its own title block / header. The Optional data fields are then mandatory if no document directory is delivered.

- All documents must have a standard title block / header.
- For the formats A0 to A3, the title block is to be located in the lower right corner.

Title block, header must contain the following minimum requirements:

Identifying data fields (M=Mandatory, O=optional)

Field name in the title block	voestalpine policy		Data field
Reference number	SAP-ZDM Document No.	Filled out with a SAP-ZDM Number from the document directory. (Can also be filled out in the company head .)	M
	voestalpine Drawing No.	This number is to be filled out if specified by the AG or if an existing drawing is revised. e.g.: JK-LZH4112.1234	O
Document type	e.g.: WSZ, ZSZ, ... see Annex Document types		M
Department, Trade	Mechanic, Hydraulic, Electric, MSR, ... (Chapter 8 Appendix)		O
Review	Review, Chapter 3.1-4		M
File	Filname of Drawing		M
Project	Projectname is specified by the client		M

Descriptive data fields

Field name in the title block	voestalpine policy	Data field
Description	Concise / Meaningful description of the document and assignment to the plant object (content). Abbreviations are to be avoided.	M

Administrative Data fields

Field name in the title block	voestalpine policy	Data field
Created by (compa-ny)		M
CAD-Program	CAD-System the drawing was created in e.g.: Solid Works	M
Date	Date as follows: Day-Month-Year (DD.MM.YYYY)	M
Sheet	Sheet number of this drawing	M
Cont. (following sheet)	Sheet number of the next sheet. If there is no following sheet, the field contains this symbol: -	M
Belongs to	Drawing number to superior document e.g.: Workshop drawing belongs to an assembly drawing "Drawing number -sheet number-Revision"	O
Replaced by	"Drawing number-sheet number-Revision"	O

Format description Data field for the drawing

Field name in the title block	voestalpine policy		Data field
Size	Paper size	Filled out in title block	M
	A0	A oder A0	
	A1	B oder A1	
	A2	C oder A2	
	A3	D oder A3	

For overlong drawings the sheet height must be in accordance to the DIN sizes.

3.2-6 Minimum requirements for 2D-CAD drawings

If not otherwise specified in other standardization policies or on a project-specific basis, the following requirements shall apply:

- Use only true type fonts.
- Uniform layer settings for all drawings created during a project.
- Different layers and colors for contour, dimensioning, center lines, hidden lines, etc.; line types according to valid standard (e.g. DIN EN ISO 128-1.)
- Colors and line types must be set to “ByLayer”.
- Blocks added to the standard utility flow, hydraulic circuit and pneumatic circuit diagrams etc. may not be exploded.

- The supplier may choose names and colours for the individual layers.
- Line weights displayed in the long-term format are to comply with the standards.
- On the screen, DWG and DXF files must look the same as the hard copy (except for line widths and object colors).
- All drawings are to be provided as 2D drawings. (z values (elevation) for all objects in the draw- ing must be set to 0.).
- Drawings are to be made to scale (e.g. if the length of a component is changed, the dimension- ing text must not be edited, but the component must be stretched to the correct length).
- Overview drawings must have a north arrow / zero point (in consultation with AG)
- Scale: The design scale is "1: 1". The drawing frame should be scaled according to the scale and set all associated variables with the appropriate value. (e.g. scale 1: 5 -> Scaling factor of frame = 5).
- Dimensions and hatches must always be represented as such. Exploding these objects into single lines is not allowed. Even frames and tittle blocks may not be exploded.
- Everything is drawn in metric unit “mm“
- No external references may be used in the transferred CAD files.
- all CAD files are to be checked for errors before handover.
- Drawings are to be purged up.
- Drawings must be zoomed to borders.
- There must be no drawing elements outside the frame.
- Limits on the frame (bottom left origin 0,0).
- Drawn should be in the model area; i.e. the frame and title block should also to be in the model area.
- The line type factor (_ltScale) regulates the representation of e.g. Centre lines. The value of line type factor has to correspond with value to the scale of the drawing. e.g. if the drawing is to scale 1:50, then the value for the line type factor 50.

3.2-7 Minimum requirements for 3D-CAD drawings

3.2-7.1 Inventor

If nothing project-specifically, or in other execution guidelines has been agreed on, the following user- defined properties are a minimum:

Properties	Explanation	Naming of custom iProperties	Number of charaters	Origin
Beschreibung	e.g.: template description in German	Beschreibung Zeile 1	75	Model
Description	e.g.: template description in English	Beschreibung_Englisch	75	Model
SAP – ZDM Document number	SAP- ZDM-Number (123456)	SAP-ZDM-Nr.	30	Model
Drawing number	Voestalpine - drawing number (JK-LZB...)	VASL-ZngNr.	25	Model
Standard	Must be filled out for self-created standard parts	Norm	20	Model
Materia l	Material description	Material *	-	Model
Address of creator com-pany	Company Address	Erstellerfirma Adresse	50	Model
Name of creator company	Company name	Erstellerfirma Name	50	Model
Drawn by	Creator of the drawing	Konstrukteur *	20	Model / Drawing
Date when Drawn	Date when Model / or drawing was created	Erstellungsdatum *	10	Model / Drawing
Approved by	Person approving the drawing	Kontrolliert von *	20	Drawing
Date of approval	Date when drawings was approved	Kontrolldatum *	10	Drawing
SAP-functional location to technical Object	Functional location (LCANL-KBF...)	SAP-Techn. Platz	-	Modell
Document type	e.g.: WSZ, ZSZ,... see appendix to Implementation guideline Technical documentation Document type (see chapter 8 Annexes)	Dokumententyp	10	Drawing
Revision	Current revision letter (a ...)	REVISONSNUMMER *	2	Drawing
Revision text	Description of current revision made	Änderungstext *	90	Drawing
CAD-System	CAD-System used to create the design. e.g.: Inventor	CAD-System	20	Model
*iProperties used in Inventor				

Appropriate template files are provided by the AG

– Naming: Syntax

Part:	Document number_naming.ipt
Assembly:	Document number_000_naming.iam
Drawing:	Document number_000_naming_revision.idw

3.2-7.2 Revit

If nothing project-specifically, or in other execution guidelines has been agreed on, the following user- defined properties are a minimum

For all projects the voestalpine project template file is to be used. This is provided by the AG.

- The following applies for the naming: Revit-Project file: Number_naming_-.rvt

3.2-7.3 Other 3D-CAD-Programs

If nothing project-specifically, or in other execution guidelines has been agreed on, the following user- defined properties are a minimum:

– In the parts and assemblies, the properties are to originate from the "model" (see previous chapter Inventor). Furthermore, drawing derivations or plans are to be handed over in DWG and PDF / A-2b. The requirements for layer settings must comply with standards as described in the 2D section.

– Naming: Syntax

Part:	Document number_naming.par
Assembly:	Document number _000_naming.asm
Drawing:	Document number _000_naming_revsion.dft

3.2-8 Minimum requirements for E-CAD drawings

If nothing project-specifically, or in other execution guidelines has been agreed on, the following user- defined properties are a minimum:

– The structuring in the E-CAD system is specified by the AG. If the scope of an E-CAD project exceeds 500 pages, then this E-CAD project has to be reconfirmed with the AG.

– All symbol files used in a CAD project, macro files, form files, article files, etc. must be saved so that a regeneration is guaranteed in case of subsequent changes to a project.

- In the case of references to documents outside the project, the location, the function identifier and the document number must be specified.
- Location and system identification systems must be reconfirmed with the client.
- All sheets of a file or E-CAD project are to be created in the same software. It is not allowed, e.g. to create the sheets 1, 2, 3, 6, 7 in the Elcad and the sheets 4 and 5 in the Autocad. Deviations from this procedure must be agreed with the client.
- E-CAD projects are packed / zipped at hand over (zip, 7-zip, etc.)
- The entire E-CAD project has a document number and is shown in the document directory in one line. In the Document Directory Type field, all existing document types are listed separately by "#" (e.g., AFP # ASP # GRL # KBL # STR).
- For E-CAD documentation, the long-term format must contain structured bookmarks. This structure is identical to that of the E-CAD system.
- The jump function for searching and navigating must be contained in the long-term format.

3.3 Lists

When using voestalpine templates, documents must be submitted as follows:

- Native file format: Microsoft Excel
- Long-term format: PDF/ A-2b

If other templates are used, the documents must be handed over as follows:

- Form specifications and native file format must be agreed with the AG.
- Long-term format: PDF/ A-2b
-

3.4 Requirements regarding changes / revision / additions to as-built

In the event that the customer provides as-built documentation, any editing of these documents by the supplier must be coordinated with the customer. The customer is not held liable for the accuracy, correctness and completeness of as-built documentation.

3.5 Delivery of documentation

3.5-1 Final documentation

The entire documentation is to be handed over in electronic form. Each document must be provided both in its originally created file format and in the file format for long-term preservation. With respect to its type and scope, the entire documentation must correspond to the actually built plant system (as- built). In a drawing, for example, this could be version c.

If any changes to the final documentation are necessary, these changes are to be made in the documents that have already been handed over to the customer.

Data generated by imaging techniques (laser scanning, photogrammetry) must also be handed over, even if they do not conform to the As-built standard.

At the request of the AG, the final documentation may consist of several partial documents, for example:

- Documentation of the design (technical calculations, etc.)
- Documentation of production (material certificates, welding documentation, etc.)
- QA documentation (NDT protocols, pressure test protocols, TÜV certificates, etc.)
- Maintenance and operating instructions

3.5-2 Intermediate documentation

The intermediate documentation will not be archived by the AG.

3.5-3 Upload list

A Document directory is to be created in Excel file format in respect to the technical departments (such as mechanical engineering, electrical engineering). All documents are to be listed in the upload list ac- cording to standard and with correct title block data. The exact data entry procedure is described in the Excel file. If the documents are handed over via a collaboration platform set up by voestalpine and the required data is entered there, delivery of the document directory is not required. Furthermore, in justified cases, after consultation between the client and the contractor (for example, in the case of small volumes of documentation), the delivery of the document directory may be committed.

3.5-4 Handing over of Documentation

The supplier delivers the final documentation directly to the customer (requester).
After inspection, the customer forwards it to:

Abteilung TSI – Engineering, Zentralarchiv

Tel. +43 50304 15-73334

E-Mail: ZDM-Archiv@voestalpine.com

3.5-5 Documentation on data storage medium

Related documentation is to be structured in folders according to their function.

3.5-5.1 Structure and file naming on the data storage medium

Directories are to be created on the data carrier according to the functional location and the documentation stored accordingly (if a document is valid for several functional locations, the first functional location space specified in the title block or document directory is decisive for the assignment.

The naming of the files should look as follows (unless otherwise agreed with the Central Archives of the voestalpine Steel Division, Tel. +46 50304 15-73334, E-Mail: ZDM-Archiv@voestalpine.com):

SAP-ZDM Document number_sheet number_Revision.file extension

e.g.: 113556_001_a.DWG and 113556_001_a.PDF, etc.

3D-CAD and long-term viewing file

File naming see section. 3.2-7.1 or 3.2-7.3

E-CAD and long-term viewing file

Document number_ page number_Revision.file extension

e.g.: 113556_MSD_a.ZW1 and 113556_MSD_a.PDF, etc.

Annotation

For multi-page documents (BOMs, Operations Guide), the document type is specified instead of the page for the part document.

e.g.: 113556_BHB_a.DOC and 113556_BHB_a.PDF, etc.

3.5-5.2 Name, content and form of data storage medium

The transfer of data takes place by means of a collaboration platform of the AG or USB stick or external hard drive. A duplicate copy of the data medium is to be delivered. The data must be transferred in a readable format for the Windows operating system and virus-free. The storage medium is to be la- belled with the following data (or with a supplementary sheet): Company (company name, telephone number, contact person), date, content of the storage medium (project name).

3.5-5.3 Exchange file format / interfaces

3.5-5.3.1 Software tools used by the AG

- Autodesk Products
  3D: Inventor, Revit
  2D: AutoCAD Mechanical, Autocad MEP
- AVEVA: PDMS, E3D, Bocad
- Siemens Comos PT
- RODIKS
- ELCAD
- EPLAN

3.5-5.3.2 Supply of 3D Data

When using other 3D software tools, 3D data including resulting drawing derivations are transferred in the original format. Drawing derivations must also be supplied in long-term format (PDF/A-2b) and as DWG.

In addition, these datasets (construction, steel construction, equipment) are to be transferred as IFC, or as STEP. Any valid versions of the respective interfaces, in consultation with the responsible administration. In the case of STEP files, as much information as possible is to be stored in a STEP file. However, the individual STEP files must not be larger than 100MB.

For systems driven by a database (DB), the voestalpine standard must always be used. If this is deviat- ed, then all symbols, libraries, etc. used must also be transferred to the AG. The structuring on the plan- ning side and the type of operation (direct work on AG DB) must be agreed with the AG.

In the case of a 3D measurement carried out in the course of the planning, the generated point clouds are also to be handed over according to the current version of the "Implementation Guidelines Surveying".

3.5-5.3.3 Supply P&I schematics (piping and instrument flow diagrams):

COMOS is an object-oriented database-supported planning system from Siemens Industry Software GmbH. At voestalpine Stahl GmbH, this software is used to create and document P&I schematics, lists and data sheets.
If the Contractor uses COMOS, the COMOS database must be transferred in its original format. It is a prerequisite that the associated data points (attributes) have been completely filled. At the beginning of the project, the contractor and the customer define how the exact data exchange is to take place.

If the contractor does not have the possibility to create the schemas with COMOS, it is possible to create the schemas with ACAD. The ACAD symbol standard (ZDM30900) of voestalpine Stahl GmbH is to be used unchanged for this purpose. The attributes in the blocks of the ACAD symbols must be filled in order to be able to carry out a later import to COMOS carried out by the PLC in a data-safe manner.

4 General explanations

In case of deviations from the defined requirements or special requirements, the documentation is to be individually adapted to the specific requirements.

5 Documentation

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6 voestalpine Standard policy

These policies are coordinated internally with:

- Control function purchasing
- Control function investment
- Control function Technology
- Forum plant engineering

7 Other applicable / related documents

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8 Appendix

Subsequent documents, in their latest version, if applicable to the agreed scope of delivery and service, shall be considered as binding.

The Appendix must be requested by:

Abteilung TSI-Engineering, Zentralarchiv

Tel. +43 50304 15-73334

E-Mail: ZDM-Archiv@voestalpine.com

type	voestalpine templates
Document types Technical Documentation	ZDM: 992826
Document index Technical Documentation	ZDM: 992827
Graphical symbols for pipelines in flowcharts and site plans	ZDM: 30900, Page 1 and 2