DAIMLER

Powertrain Requirement Specifications Part V Documentation

Version 2021

Version	2021	Number of pages	23
Last revised	25.03.2021		
File / template	01_LH5_PT_V2021_en.docx		

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1. General Information

1.1. Preface

All new procurement projects at Daimler are characterized by highly demanding cost-reduction targets and by extremely high requirements with regard to the productivity of the production equipment.

In addition to the manufacturing-related optimization of the workpieces, there is an ongoing detailed revision of the technical standards of the production equipment.

The results are recorded in the following specifications:

➢ **Powertrain Requirement Specifications Part I**	**General Information**
➢ **Powertrain Requirement Specifications Part II**	**Mechanical Components**
➢ **Powertrain Requirement Specifications Part III**	**Electrical Components, Control Technology and Production-Oriented IT Systems**
➢ **Powertrain Requirement Specifications Part IV**	**Production Equipment**
➢ **Powertrain Requirement Specifications Part V**	**Documentation**
➢ **Powertrain Requirement Specifications Part VI**	**IT Security**
➢ **Powertrain Requirement Specifications**	**Workpiece-Specific Scope (created individually by the planner representative)**

The individual specifications may deviate from the optimum solution, but are considered as an economical measure within the overall system.
As a basic rule, any suggestions from our suppliers to improve the availability of production equipment or provide potential savings will be given careful consideration. Should you have any such suggestions, please do not hesitate to submit these to Daimler.

1.2. Validity and Obligations

These requirement specifications define the production equipment specifications "Documentation" for all production-sites and centers in the divisions

- Mercedes-Benz Cars Powertrain (abbreviated as "MO") of Mercedes-Benz AG and
- Daimler Trucks Powertrain (abbreviated as "Trucks") of Daimler Trucks AG

and jointly referred to as "Daimler" in the following.

Compliance with the requirement specifications is binding and shall be confirmed in the bids.
The requirement specifications valid at the time of the contract award are binding.

The requirements of MBN 9666 shall be met. The specifications in these requirement specifications supplement the requirements of MBN 9666.
If the tenderer feels that deviations are required with regard to the individual points, this shall be indicated in the tender and approved in writing by DAIMLER.

The contractor shall ensure that all parties involved in the contract adhere to the latest Daimler regulations.
This tender document may not be disclosed to third parties without the prior consent of Daimler!
This supply specification applies for the documentation of:

- New systems and machines
- Modifications to existing systems and machines

1.3. Record of Revisions

Version:	Last revised:	Chapter:	Change:
15.0	03/2018	1.3.1 Changes from version 14.0 to version 15.0	Modification notes re-inserted.
		4.2.4 Documents for Approval	Documents for Approval – specifications now in Requirement Specifications Part I, General Information
		4.2.5 Documents for Shipping Acceptance	Documents deleted
		4.2.6 Documents for Acceptance of the System	Information on documents for preventive maintenance added
		11.1 Production Equipment	Specifications for Plant 068 inserted
		Appendix 01: Delivery Addresses	Note on "Other plants" inserted
		Appendix 02: Forms and Parts Lists	Form for system components requiring monitoring for Plants 010, 020, 040, 068 added.
		Appendix 03: Maintenance Schedules	Updated for Plant 010
2020	06/2020	Directory Structure	Directory structure changed: Directory of complaints moved to DAI directory, parts requiring monitoring inserted in DAI directory, change information directory and directory 03-06_parts requiring monitoring added, corresponding description extended
		Chapters 1.7 and 4.7 Format and Quality	Correctly positioned saving of data moved from Chapter 4.7 to 1.7.
		Chapter 13.3 Procedure	Procedure change Scope of delivery correction. Specified table for Powertrain plants inserted.
		Chapter 4.2.5 Documents for the Dispatch Release	Paper only on site at system, energy checklist removed Noise level log renamed sound level log
		Chapter 4.2.6 Documents for Operational System + Acceptance of the System	Hard copy
		Chapter 4.2.7 Documentation after Operational System + Acceptance	Defects list with completion note
		Chapter 4.3 Technical Documents as Hard Copy	Deleted
		Chapter 4.4 Identification of the Folders and their Labeling	Deleted
		Chapter 4.7 Data Exchange	Data exchange upload link and data storage medium software added

Version:	Last revised:	Chapter:	Change:
		Chapter 5 Factory Planning Documents	Digital factory requirement specifications applicability
		Chapter 6 Test Records, EU Declaration of Conformity, etc.	Deleted
		Chapter 7.6 Engine Data and Measuring Systems	Newly inserted
		Chapter 11 Production Equipment	Re-described, new checklists for W010
		Chapter 13.3.3.1 Hardware Documents	System Modification
		Chapter 9.9 Fluid Technology	Hard copy, lubrication tech. laminated
		Appendix: Delivery Addresses	Deletion of delivery addresses in paper for Plant 010, Plant 040 and Plant 068
		Appendix 03	Operating instructions for MB Cars dispatch release
2021	03/2021	Chapter 4.2 Scope of Technical Documents Included in Delivery	Delivery according to DEEP specifications added
		Chapter 4.2.5 Documents for the Dispatch Release	Plants 020, 069 paper issue change
		Chapter 4.2.6 Documents for Operational System + Acceptance of the System	Function flow chart omitted Plants 020, 069 paper issue change DEEP specifications inserted
		Chapter 4.3 Technical Documents as Hard Copy	Chapter deleted
		Chapter 4.7 Data Exchange	Save data record with EQ no., delivery date, and specified structure inserted.
		Chapter 9.3 Structure of the Electrotechnical Documentation	Create EPLAN project with EQ no. and add creation date to files to be supplied specified

1.3.1. Changes from Version 2020 to Version 2021

Any changes in the Function Descriptions and significance from the previous version are indicated as follows:

- Newly added text is underlined (and also displayed in blue in the file).
- Deleted text is ~~crossed out~~.
- In both cases, the lines / paragraphs concerned are marked at the left margin by a vertical line.

Changes made for editorial reasons are not marked.

1.4. Contacts

For general questions regarding the content of these requirement specifications, please contact the mailbox listed below:
LH5-Dokumentation@daimler.com
If you have any order-specific questions, please contact the client's representative
(as per the WV/DV-compliant procedure).

1.5. Identifications for Sites and/or Scopes of Validity

Unless otherwise indicated, the chapters/sections are valid for all locations and/or scopes of validity.

1.5.1. Scope of Validity

The range of validity of the requested machines has to be taken from the request for quotation or requested from Daimler.
Codes 1 to 5 meet the requirements for all special machines as per MBN 9666.

1.6. Style and General Documentation Requirements

1. Language version of the technical documentation according to EN 292-2, Part 2: The documentation **shall** be compiled in the **official language** of the country in which the system or machine is to be used. A second language, e.g. English, can also be specified.
2. An expert employed by the client shall be able to do the following to the system, machine or installation, using the supplied documentation
   2.4. Operate it
   2.5. Maintain it
   2.6. Configure it
   2.7. Calibrate it and
   2.8. If necessary, program it
3. Maintenance instructions for trained staff, i.e. work which may only be performed by specialist personnel, such as mechanics, and instructions for machine operators are to be created, clearly separated from one another.
4. As required, the concrete version and time schedules of system documentation can be agreed and fixed with the responsible department.
5. The documents shall be well-structured and easy to understand.

1.7. Format and Quality

- Drawing formats shall always conform to DIN EN ISO 216. The DIN A1 drawing format shall not be exceeded for chip removing tools as well as chucking tools, test equipment, components and jigs and fixtures (see MBN 81022). Details can be found in the respective chapters on the individual document types of these documentation requirements.
- The following applies to all production locations and centers in the area of responsibility of MO/PT and Trucks at Daimler:
  The documentation for systems, machines, production equipment, jigs and fixtures shall be supplied in a reproducible form in the original file format as described in this requirements specification.
- **All files shall be stored in the correct locations. This means that after opening, the data shall be readable immediately without subsequent processing.**
- **On delivery with a directory structure, the maximum directory path length including the file names and the reproducible, digital originals shall not exceed 150 characters. If necessary, the directory names shall be sensibly abbreviated.**

2. Standards and Regulations

- The laws, standards, guidelines, recommendations by professional associations and the corporate supply specification, MBN 9666, as well as the Daimler AG standards applicable at the time of order placement shall be complied with.
- More extensive specifications can be found in the PP/PT and Trucks requirement specifications and in special Daimler project folders.

3. Contacts and Delivery Addresses

3.1. Contacts at Contractor's Company

The contractor shall designate a representative and fill in the "MB Cars Contact Persons" form. This form shall be appended to the first delivery of the system documentation.
Client's Contacts
The first contact person at the client is always the designated representative of the project. For questions on the specifications for the documentation design, see also chapter 1.4.

3.2. Delivery Addresses

The recipients for the various parts of the documentation associated with order processing — from the tender right up to the delivery of the final technical documentation for approval — can be found in appendix 01 (delivery addresses) of the requirement specifications.
The delivery addresses specified in the delivery addresses table apply to delivery of the overall system documentation scope 6 weeks before the deadline for the operational system + acceptance.
These documents shall always be addressed to the delivery addresses specified in the Appendix.
When delivering documentation from this delivery point together with the system or via a contractor employee, the contractor shall ensure that receipt is registered at this point, a check is initiated, and that receipt can be confirmed only by these employees.

4. Overall Scope of System Documentation

4.1. Fundamentals

- The **contractor** shall ensure that **all** of the technical documents necessary to operate and maintain the equipment are forwarded to the client and that they comply with the applicable legal specifications and standards as well as the client's specifications.
- **All parts of the technical documentation shall be assignable using a plant-specific client ID number, i.e. an equipment number, F no. or Y no. The plant-specific client ident number, equipment number, shall be entered on all parts of the documentation.**
- This **client ID number, equipment number** shall be requested from the **responsible planner representative** for the system at Daimler. The structure of this client ID no. will differ for different systems or machines, tools, equipment, jigs & fixtures.

4.2. Scope of Technical Documentation Included in Delivery

After contract award, the documentation shall be delivered at the defined milestones according to the respective specifications in the requirement specifications. The contractor shall ensure that all documents correspond to the current status of the system on site at the point in time of the operational system + acceptance of the system. All changes during installation and commissioning have been updated.
For all documentation parts, the alterable data as per requirement specifications shall be supplied.

Whether the documentation shall be designed according to the specifications concerning the directory structure or the specifications concerning the DEEP administration system, Digital Equipment Engineering Portal, together with the SLE, the bill of materials editor, shall be clarified with the project manager prior to contract award. The Daimler training course offer for the SLE software tool shall be used prior to the start of technical documentation creation.

After the contract award, taking part in a documentation start meeting is obligatory at the start of the design phase.
The meeting participants on the part of the contractor are the project manager(s) and the contractor employees who have been commissioned with the compilation of the technical documentation.
For Daimler, the assigning project manager or planner and the contacts for the technical documentation and the relevant maintenance department of the corresponding target plant take part.

The documents mentioned here are only examples and do not claim to be complete.

4.2.1. Documents Relating to the Request for Quotation

Documents relating to the request for quotation shall be prepared and supplied in accordance with the specifications and in consultation with the **representative of Daimler appointed at the client's end**.

4.2.2. Bid

Documents relating to the request for quotation shall be prepared and supplied in accordance with the specifications and in consultation with the **representative of Daimler appointed at the client's end**.

4.2.3. Schedules

Documents relating to the request for quotation shall be prepared and supplied in accordance with the specifications and in consultation with the **representative of Daimler appointed at the client's end**.

4.2.4. Documents for Approval

- **Documents for approval shall be submitted to the planning representative responsible no later than 2 months after the contract is awarded. The specifications as per Requirement Specifications Part I, General Information, shall be complied with.**

4.2.5. Documents for the Dispatch Release

These documents shall be submitted to the responsible representative 6 weeks before the date of dispatch release as a data record in the specified data formats in the specified directory structure.

Minimum scope of delivery:

- Operating instructions as Word and PDF files
- Electrical and fluid plans, navigable pdf, including associated parts lists according to the respective plant specifications. The pdf and the bill of materials shall additionally be uploaded to MDM with the specified template or to DEEP according to the specifications.
- Parts lists for the mechanical design of the system. These shall additionally be uploaded to MDM with the specified template or to DEEP according to the specifications.
- Documents for preventive maintenance, specified VI plans or maintenance documents according to the respective plant specifications. For Plant 010 (Untertürkheim) the standard form 01_W010_Wartungsplan_Standardformular.xls shall also be e-mailed to pool_gab_wartung@daimler.com
- List of all system components requiring monitoring and all specified recurring tests, e.g. test certificates for safety facilities, calibrations, and German Statutory Accident Insurance Association V3. All respective verifications shall also be supplied.
  For Plants 010, 020, 040 and 068 the form 06_MB_Cars_W020_Ueberwachung.xlsx, with completion example, shall be used.
  For Plant 030_034 the forms 08_W030_034_Schlauchleitungen.xls, 09_W030_034_Sicherheitsbauteile and 10_W030_034_Sicherheits- u. Schutzscheiben shall be used.
- Sound level log
- IT documents from Appendix 02_Formulare_und_Teilelisten_LH5\05_Formulare_Powertrain_NEU-in-TeilV

Electrical circuit diagrams and fluid power system documents shall be supplied in paper form with the system and stored on site at the system, or attached to the system as specified.

The following applies to Plants 020, 030/034, 069: Electrical circuit diagrams, fluid power system documents, and the operating instructions, including the operating instructions in paper form, shall also be supplied on delivery of the system and shall be stored on site at the system or attached to the system as specified.

- The folders provided with the system shall be clearly labeled with the lettering "Preliminary Documentation," e.g. with a red binder label.

4.2.6. Documents for Operational System + Acceptance of the System

These documents shall be supplied to the delivery addresses in the "Lieferanschriften.pdf" attachment 6 weeks before the deadline for the operational system + acceptance.

For Mercedes-Benz Cars Plants 010, 040, 068:
All documentation, except for the electrical circuit diagrams and fluid power system documents, shall be henceforth supplied only in digital form. The latter shall be stored at the appropriate places on site at the system.

The following additionally applies to Plant 030/034:
The scope of the documentation to be supplied in digital and paper form, according to folder structure, shall be designed according to the for*m 02_W030_034_Erfassung_tech_Unterlagen.xlsx, "Final Documentation" tab or "Data Storage Medium Filing Structure" tab. The current version shall be requested from the responsible maintenance planner in this case*

For Daimler Truck Plants 020 and 069: paper documentation as agreed

To be supplied is the total scope of the documentation, with all changes during installation and commissioning of the system, including all forms and tables specified by the respective Daimler plants. All documents shall correspond to the actual status of the implementation "on site". Delivery of the documentation in the prescribed data formats including the modifiable data formats in a specified directory structure with associated paper output in the specified design for the plants. See appendix to the requirement specifications, Lieferumfang_V14.xlsx, and the following chapters.

At the process stage of operational system + acceptance a new label shall be pasted over the label "Preliminary Documentation" on the existing folders, or the folders shall be fully replaced as specified by the respective plants.

- **All** of the technical documentation necessary to operate and maintain the system shall be supplied. This also includes the parts of the documentation which were not prepared by the contractor himself. All defects found at the release for dispatch shall be rectified.

  The documents listed here are intended as minimum specifications as a reminder. If these are not available by the operational system + acceptance process step, the operational system + acceptance deadline can be rejected by the client.

- Test records, EU Declaration of Conformity, installation declaration for incomplete machines, manufacturer declaration. DGUV V3 (Requirement Specifications Part III, Form_01_-_Pruefprotokoll_el._Pruefung_ortsfester_Arbeitsmittel), declaration of conversion
- Test certificates for installed component parts,
- Certificate of competence of the person conducting the tests,
- Means of production card – Plant 010: Via the representative specified on the client side, other plants according to the respective plant specifications
- Expert acceptances in accordance with VAwS in the case of testing obligations prior to commissioning, risk assessment, Ex-protection documents on installed components, warranty, verification that the system contains no radioactive substances
- MFU – Machine capability examinations
- Documents on calibration processes and proof of initial calibration
- Operating instructions. This shall also be saved as a pdf file on the control panel
- Programming instructions, commissioning instructions, manuals and descriptions
- Delivery of the Sistema data record (as software, no printout) for determining the performance level.
- Software license certificates, special approvals
- Electrical and fluid plans, EPLAN P8, navigatable pdf, including associated parts lists according to the respective plant specifications. The pdf and the bill of materials shall additionally be uploaded to MDM with the specified template or to DEEP according to the specifications.
- Parameter lists, setting instructions,
- Documents for mechanical design with parts lists. The bills of materials shall additionally be uploaded

to MDM with the specified template or to DEEP according to the specifications.

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- Production equipment drawings, production equipment plans, production section drawings, documentation with a Daimler production equipment item number shall be supplied in paper form in accordance with MBN 81022 or the respective plant specifications.
- Documents for preventive maintenance, specified VI plans or maintenance documents according to the respective plant specifications. For Plant 010 (Untertürkheim) the standard form 01_W010_Maintenance Schedule_Standard Form.xls shall also be e-mailed to pool_gab_wartung@daimler.com.

- List of all system components requiring monitoring and all specified recurring tests, e.g. test certificates for safety facilities, calibrations, and German Statutory Accident Insurance Association V3. All respective verifications shall also be supplied.
  For Plants 010, 020, 040 and 068 the form 06_MB_Cars_W020_Ueberwachung.xlsx, with completion example, shall be used.
  For Plant 030_034 the forms 08_W030_034_Schlauchleitungen.xls, 09_W030_034_Sicherheitsbauteile and 10_W030_034_Sicherheits- u. Schutzscheiben shall be used.
- Documentation of bought-in parts
- Parameter specifications for the CAD systems used to produce the documents

4.2.7. IT documents from Appendix 02_Formulare_und_Teilelisten_LH5\05_Formulare_Powertrain_NEU-in-TeilIVDocumentation after Operational System + Acceptance Process Step

Delivery of New Documentation in the case of non-defect-free operational system + acceptance.

New delivery shall take place a maximum of four weeks following the operational system + acceptance deadline.

Total scope of documentation, current status after correction of all defect items, including all forms and tables specified by the respective Daimler plants as for delivery for operational system + acceptance.
Delivery of the documentation in the prescribed data formats in a specified directory structure.
In addition, the paper output of all modified documents for exchange in the existing documents in the plants with the specification for delivery of a paper output or if delivery of a paper output is specified in the appendix to the requirement specifications, Lieferumfang_V14.xlsx.

For Plants 010, 040 and 068, table Änderungsindex_Muster, adapted to the delivery of the changed documentation, shall also be provided.
The list(s) of defects drawn up by Daimler with the contractor's processing notes shall also be appended in directory 01 Doc content\Delivery note.

4.3.

4.4. Identification of the Folders and their Labeling

For Plant 030/034:
The folder labeling shall be designed according to the current form 02_W030_034_Erfassung_tech_Unterlagen.xlsx, "Cover Sheet" tab or "Final Documentation" tab, column D.

The folders shall be labeled with the following minimum details:
- Equipment number. This shall be requested from the planner representative for the system at Daimler AG.
- Details of the contents, for substantial documentation, relating to the system concerned.
- System name
- Folder number / quantity
- Contractor or manufacturer of the system
- The client's system ident number, e.g. the serial number

Example:

Labeling of folders	Meaning
Daimler NNNNN Fn nnn nnnnn to Fm mmm mmmmm	Equipment number of the system and, in the case of fixtures and production equipment belonging to the system, the corresponding F, Y, or B number in addition. Fixtures that have not been assigned to a system only have an F or Y number.
Electrics for = K Head control	Content details (system-specific), electrical documentation of the system component =K (head control)
Transfer machine TFM1	System name
EDOK 1 v. 4 Mech 1 v. 7	File number / no. of files, Folder number/number of folders
TRANSBAU GmbH	Contractor or manufacturer of the system
Ser. no. 12345	The client's system ID no. e.g. the serial number of the system

*1) **Example:**
The equipment number of Daimler AG is **plant-specific**. **Different identification criteria** apply at different plants.
Equipment Number

Plant 010, Untertürkheim	For systems, machines, supply and disposal equipment: the equipment number of the system, e.g. 910100001209.
Plant 040, Berlin	E404000526611-0000, E404000526611-WAM1
Plant 068, Hamburg	J681XXXXX Production equipment including fixtures plus mechanical documentation on fields F3, F7, F9, B8, F6, Y4 and F0 shall comply with MBN 81022

The contractor shall take care that documents from any subcontractors used are also included in the dentification system. This also applies for the numbering of the folders.

4.5. Delivery Note for the Supplied Documentation

- For every delivery of documentation, a complete directory shall be supplied, with the documents supplied marked.
  The delivery note shall also indicate the equipment number of the system/machine.
- **An entry on the delivery note should identify which phase of the delivery is concerned:**
  - Bid
  - Approval
  - Data exchange test purposes
  - Dispatch release of the system
  - Operational system + acceptance of the system
  - Subsequent delivery after non-defect-free operational system + acceptance of the system

4.6. Proof of Scope of Delivery

- The documents listed below on the scope of delivery shall be created/filled out:

  Plants 010, 040, 068: MB_Cars_Docu_Powertrain

  Plants 030/034: 02_W030_034_Erfassung_tech_Unterlagen.xlsx.

4.7. Data Exchange

For the data exchange with Mercedes Benz Cars an upload link shall be requested via the particular e-mail address of the documentation management of the corresponding plants in the Delivery Addresses appendix. Alternatively, the contractor's download link can be used.

Plant 010 email address: **Mbox_Zentrale_Anlagedoku_Werk_10@daimler.com**

Plant 068 e-mail link: **Mbox_Zentrale_Anlagendoku_Werk_68@daimler.com**

Plant 040 email address: **Mbox_Zentrale_Anlagendoku_Werk_40@daimler.com**
By agreement with the representative, remote data transmission by means of OFTP is also possible; see SWAN*direct* SERVICE.

The data record shall be saved with the system equipment number. The delivery date shall be attached in the form YYYYMMDD. The specified directory structure shall be adhered to.

For MB Cars:
Data storage medium belonging to the system shall be supplied in a separate folder and handed to the responsible representative during the operational system + acceptance process step.
The MB Cars_entry sheet_data storage medium shall be completed, signed and entered in the folder and appended to the digital version of the documentation.

Documents in MDM or according to DEEP and MTM specifications,
see chapter on the respective documentation.

The following applies to Daimler Trucks Plants 030/034:
The data shall be supplied on data storage media depending on the data volume. The basis for the data to be supplied is the current form 02_W030_034_Erfassung_tech_Unterlagen.xlsx.

The following applies to Daimler Trucks Plants 020 and 069: Data delivery subject to consultation

Other plants also as agreed.

5. Machine Installation Plans and Layouts, Factory Planning Documents

The current version of the specifications according to the attached appendix (Powertrain Cars Digital Factory requirement specifications) shall be adhered to.

Compliance with the specifications in the requirement specifications for Powertrain Cars Digital Factory shall be coordinated with the Planning representative designated in the workpiece-specific requirement specifications.

6. Test Records, EU Declaration of Conformity, Test Certificates, Software License Certificates, Exemptions and Similar Parts of the Documentation

The specifications in the requirement specifications for providing a paper version of the particular plant parts, or the corresponding appendices and forms, shall be observed

7. Operating Manuals, Operating Instructions, Service Documents

7.1. General

The descriptions and maintenance documents necessary to operate and maintain the system shall contain enough detail so that the system can be kept in an operational state at all times or can be restored to operation in the shortest possible time.

7.2. Implementation

Operating manuals, operating instructions, service documents and descriptions shall be produced in **DIN A4 portrait format**.

For the supply of reproducible documents in the original file format, the documents shall be produced using the version of software that the client is using at the time the order is placed. The contractor shall ask the client for information about the software currently in use.
Exceptions to this require special approval in writing.

A pdf file of the operating instructions shall be loaded into the machine display. The final version shall be included for operational system + acceptance. This shall correspond to delivery of the documentation for the operational system + acceptance to Daimler.

7.3. Maintenance Documents, Maintenance Schedules

All documents required for maintenance and repair shall be provided to ensure that the system is ready for operation. Descriptions, instructions, associated drawings, associated pictures, work instructions, notes on required tools and spare parts, existing exploded views, notes on required qualification of the person performing maintenance or repair.

SPECIAL TOOLS, SALVAGING CONCEPT, WORKING INSTRUCTIONS, EXCHANGE INSTRUCTIONS

The plant-specific forms and Excel tables are to be used for maintenance as found in the forms appendix.

The following applies to Plant 010 in Untertürkheim:
The form W010_Wartungsplan_Standardformular.xlsx shall be sent to the email address pool_gab_wartung@daimler.com for approval and coordination and, following coordination, shall additionally be enclosed with the documents for shipping release or the operational system + acceptance.

7.4. Lubrication Charts, Lubrication Instructions

All required documents are to be provided for maintaining operation of the system.
Lubrication point diagram, lubrication instructions, lubrication data sheets, lubrication installation.

The lubrication point diagram shall be engraved onto an anodized aluminum plate and affixed to the system as agreed with the representative. The engraving shall be blackened.

With automatic lubrication, the lubrication schedule is documented in EPLAN P8 — overall electrical and fluid engineering project.

7.5. Calibration

Documents for the calibration of installed component parts — e.g. calibration descriptions, calibration certificates, proofs and specifications, initial calibration test record — shall be supplied.

7.6. Engine Data and Measuring Systems

According to Requirement Specifications Part III, Electrical Components, an entry sheet shall be created for motor data and measuring systems.

For Mercedes-Benz Cars:
Table 04_Freigabeliste_Motoren_Vorlage.xlsx, Appendix to Requirement Specifications Part III, Electrical Components, shall be supplied.

For Plant 030/034:
Form 03_W030_034_Motordatenerfassung.docx shall be completed.

8. Electrical Documentation - Software

8.1. General

- **Only software which has been approved by the client may be used to execute the order.**
- **License rights shall be transferred to the client.**
- **The software used and all respective data storage media shall be listed in the specified entry sheet for data storage media, Appendix MB Cars_Erfassungsblatt_Datenträger, and supplied in an accordingly labeled folder. The entry sheet shall be filed in the specified directory structure.**

The structure of the software program is defined in Requirement Specifications Part III ("Electrical Components, Control Technology and Production-Oriented IT Systems") for the corresponding project and can be viewed there. The specifications from Requirement Specifications Part III apply.

8.2. Software Documentation

In the case of SIMATIC Safety Integrated, PLC and NC software the printout of the safety program shall be filed in PDF format, with generation date of the software, check digit, and the password in the specified directory structure of the documentation, directory Electrical Components, PLC.
The program shall be verified.

Systems with safe technology:

1. **Distributed Safety:**

	File
	Safe Matrix, **signed**, as pdf
	Safe Matrix as Excel file
	Distributed Safety printouts, **signed** as pdf
	Siemens Annex of the Safe modules as a pdf file
	Step 7 project at time of operational system + acceptance

2. **Sinamics Safe**

	File
	Safe Matrix, **signed**, as pdf
	Safe Matrix as Excel file
	Siemens Annex of the Safe modules as a pdf file
	Step 7/Sinamics project at time of operational system + acceptance
	Siemens Sinamics Acceptance Test basic package*
	Sinamics Acceptance Test: Completed Excel file
	Sinamics Acceptance Test: **signed** pdf of test

*Excerpt from Siemens Acceptance Test basic package:

Tabelle 2-3: Beispieldateien und Projekte

Komponente	Hinweis
SI_AcceptanceTest_S120_V31.zip	Diese gepackte Datei enthält das Skript in Form einer XML-Datei. Diese kann dann in ein bestehendes Projekt importiert werden. Des Weiteren ist die nachstehende Excel-Datei in der Zip-Datei enthalten.
SI_AcceptanceTest_S120_V31.xls	Excel Tabelle, die der Dokumentation des Abnahmetests dient.
Ordner „Trace templates"	Hier sind Tracevorlagen zu finden, die für den Test der Sicherheitsfunktionen verwendet werden können.
52248627_SI_AcceptanceTest_ S120_V31.pdf	Dieses Dokument.

3. **Integrated Safety:**

	File
	Safe Matrix, **signed** as pdf
	Safe Matrix as Excel file
	Step 7/NCU project at time of operational system + acceptance
	Integrated Safety ATW file
	Safety Integrated Test, **signed** pdf of test

4. **Kuka Safe:**

	File
	Safe Matrix, **signed**, as pdf
	Safe Matrix as Excel file
	KUKA project at time of operational system + acceptance
	Check log of Safe Check Robotics, **signed**, as pdf
	SafeOperation log from Work Visual, **signed**, as PDF
	Robot documentation showing the 3D coordinates of the safe rooms as pdf

9. Documentation – Electrics and Fluid Technology

9.1. General

- The electrical engineering and the associated fluid technology shall be created in an EPLAN P8 project. The EPLAN P8 basic project .zw9 as specified by Daimler shall be used. The EPLAN P8 version used at Daimler in the example version 235 can be seen from the project name, e.g. MB_Basic_Project_235_7451_V33. The EPLAN basic project .zw9 and associated supplier guidelines can be downloaded from the supplier portal in DocMaster.
- The specifications
  - Powertrain_CAD-Vorgaben_EPLANP8-MDM.pdf and
  - Powertrain_Kurzanleitung_EPLANP8-MDM.pdf

  in the CAD templates appendix for the requirement specifications shall be adhered to
- The entire project, including all automatically created documentation parts, shall be supplied in EPLAN P8 binary format, .zw1, as a navigable pdf and, in accordance with the specific plant specifications, the associated parts list or spare and wear parts list with plant-specific specified table.
- The pdf and the bill of materials shall additionally be uploaded to MDM with the specified template.
- The documents shall be prepared in accordance with the applicable electrical and fluid engineering standards and regulations, e.g. DIN EN 81346, ISO 1219. See also the MBN 9666 specifications

and requirement specifications.
- The documentation shall match the actual detail of the system. If options are not used, then they shall be removed from the documentation.
- The paper documentation may be delivered in a scaled format, DIN A3L to DIN A4. The printout shall be one-sided. Holes shall be punched in the documentation, along the binding margin, and then put in appropriate folders.

When storing the paper output in folders in A4 portrait format, sufficient space shall already be kept free upwards when creating the circuit documents in the original A3L format so that circuit-relevant parts are not destroyed in the paper printout in A4 format with subsequent punching. Care should also be taken that the documentation can still be read from below or from the right and is not presented upside down.

9.2. Structure of the Hardware Documentation

The entire system shall be subdivided and marked according to DIN EN 81346 with system and location codes. It may be necessary to use function groups within the system code.
The higher-level code for a system, =, can be subdivided (using a dot acc. to DIN) into the system code and the function group.
The code for a location, +, can also be subdivided (using a dot acc. to DIN) into a coarse and a fine location.

Example for the system structure:

System code =,	e.g. =K, for head control
Location code +,	e.g. +H1, switch cabinet 1
Sheet number	e.g. 0001

Examples for system codes:
For smaller systems without any third party parts, the entire system can have a single system code.

Systems with subdivided codes:
Parts from subcontractors, hydraulic units, measurement units, jigs and fixtures, etc.
For transfer lines: General part, head control, units, major units, measuring devices, jigs and fixtures, etc.

Examples for location codes:
Switching cabinet, control panels, unit control panels, terminal boxes

The selected coding system shall be described in the description of the system structure within the wiring documentation. This subdivision shall be documented in all types of documentation and shall be adhered to. The contractor shall ensure that the parts of the documentation supplied by subcontractors shall be seamlessly included in this coding system.

9.3. Structure of the Electrotechnical Documentation

The overall documentation shall be structured according to DIN EN 81346 in relation to both the system and the location. For smaller systems, one system or function code is permissible for the entire system.
The EPLAN project shall be created with the EQ no. of the system. On creation of the .zw1 file, the creation date of the .zw1 file shall be added to the EQ no. in the format YYYYMMDD, e.g. 9101000NNNNN_YYYY-MM-DD.
The respective, navigable pdf file shall be designed accordingly.

The selected system and location codes shall comply with the standard and shall be described within the documentation. The following structure applies for each system or, for larger systems (transfer lines), for each part of the system:
- Version data sheet for changes to hardware plans
- Tab
- Cover sheet
- Table of contents
- Description of the system structure and the identification system used
- Overview of all configurable components and their parameters
- Grounding scheme
- Connection plan, cabling plan
- Bus plan, bus structure, bus topology
  When using bus systems, a bus plan shall be produced providing a coherent overview of the bus structure.

This shall include notes about connections, the installation location, cable carriers and connectors as well as bus addresses and, for Profibus, the DP addresses.
- Electrical circuit diagram / wiring diagram
- Power supply
- Emergency off, electrical power supply, controls system on/machine switch-on
- Main electrical power circuit
- Control circuits with PLC
- Links to other systems

etc.
- Terminal connection plan
- Connector connection plan, connector plan
- Bill of materials
- Cable list
- Diagram of the structure of the system
- Layout of the switching cabinet, control panels
- List of sources of supply / list of suppliers

9.4. Description of the System Structure

Description of:
- System structure and system and location codes used together with names in plain text
- Structure of the codes to identify the equipment
- The system used for cross-references
- Wire core identification
- The subcontractors involved and the parts that they produced (system codes) and contact person

9.5. Power Supply, Signal Exchange, Cross-References to Other Systems

The first connected equipment with complete production equipment identification shall be indicated in the documents.
For supply lines and power supplies, the power distributors, power sub-distributors and connected fuse shall be specified.
When signals are exchanged between systems or machines, or with linked machine assemblies, etc., the EQ number of the system section or function group, the installation location and the first connected production equipment (usually a terminal strip) shall be specified with the complete equipment identification.

9.6. Bus Plan, Bus Structure

When using bus systems, a bus plan shall be produced providing a coherent overview of the bus structure. This shall include notes about connections, the installation location, cable carriers and connectors as well as bus addresses and, for Profibus, the DP addresses and cable length.

9.7. Wiring Diagram / Circuit Diagram

- Complete production equipment ID code with leading sign on all of the tools or symbols shown.
- All the necessary details for configurable production equipment such as values to set, codes, parameter specifications shall be entered in the plan on the production equipment or by using a caption.
- No connections should be shown which do not end on a connection to a piece of production equipment or on a voltage cross-reference.
- For modules or equipment boxes and small pictures of production equipment, the IDs shall be entered so that automatically produced terminal and wiring plans are produced correctly.
- The wiring rule to draw wires from left to right and from the top down shall be followed.

The codes and labels for wire cores shall be entered in the plan.

9.8. Overview of All Configurable Components and their Parameters

If parameterizable component parts are described in the documents, the values set on the component parts shall be specified after commissioning or operational system + acceptance. Should it not be possible to show these values directly on the components, then an overview of all of these components shall be produced and supplied

with the documentation, including the lists of parameters, specifying all parameters, header data, component IDs, manufacturer, type and order number.

9.9. Fluid Technology

In the overall project, the documentation for the associated existing fluid technology is followed by the electrotechnical documentation

- Hydraulics
- Pneumatics
- Cooling
- Lubrication
- Service water
- Gas

The electrical documentation shall always correspond to the hydraulic and pneumatic documentation. This means that electrical engineering production equipment identification codes shall be found in the fluid power systems documents and vice versa.

Depending on the specifications on contract award, the respective data or paper issues shall be designed according to the existing directory structure or according to the specifications on delivery of DEEP with SLE

The paper form of the electrical and fluid power systems documentation shall be separately created and filed at the system at the designated locations. The lubrication documents shall be available in laminated form.

10. Measuring Machines, Measuring Equipment, Hardening and Welding Systems

10.1. Technical Documentation

For measuring machines, measuring equipment, hardness and welding systems, the same requirements on system documentation apply as for systems and machines.
Additional types of documentation which shall also be supplied:

- Measurement programs
- Characteristics
- Probe linkages
- Parameter settings
- Measurement schemes
- Probe arrangement plans
- Circuit board layouts
- Interface card layouts
- Configuration & coding documents
- Drive parameters
- Source code

10.2. Presentation and Format

The same rules apply as for the various types of documentation for systems and machines.

11. Documentation of Mechanical Design

The documentation for the mechanical design of a system is divided into the following documentation parts at Daimler:

- Production Equipment - Tools and Production Equipment - Jigs and Figures, Requirement Specifications Part IV.
- Plant design
- Parts of the system that contact the workpiece

11.1. Production Equipment

-
- For tools, Requirement Specifications Part IV, Production Equipment – Tools
- For tool presetters, Requirement Specifications Part IV Tool Presetters

- For Daimler Trucks devices, Requirement Specifications Part IV, Production Equipment – Jigs and Figures applies

- For Mercedes-Benz Cars jigs and fixtures, MBN 81022 applies. The data shall be uploaded in MTM.

- For Plants 010 Untertürkheim and 068 Hamburg, press shop and die shop divisions, agreements shall be made with the representative appointed by the client.

  The specifications of the following forms additionally apply to Plant 010, Untertürkheim, Forge, Casting Die Production, Sheet Forming, and Welding Production units, or the following checklists shall also be supplied:

  W010_V2020_CheckI_AV_DG.docm
  W010_V2020_CheckI_AV_EntgratWZG.docm
  W010_V2020_CheckI_AV_Pressenwkz.docm
  W010_V2020_CheckI_AV_Schmiede.docm
  W010_V2020_CheckI_AV_Schweiss.docm
  W010_V2020_CheckI_AV_SKG.docm

11.2. Mechanical Design of System

The documentation shall be supplied completely digital and – if no patent rights or industrial property rights exist – in an editable format and for the respective plants in paper form, in accordance with the designated requirement specifications.
For system parts in contact with workpieces, MBN 81022 applies for Mercedes-Benz Cars. The data shall be uploaded in MTM.

11.2.1. General

- Overarching laws, regulations of standards, delivery specifications and requirement specifications of Daimler shall apply.
- Drawing formats shall always conform to DIN 476. The DIN A1 drawing format should not be exceeded. The documents shall be output in paper format according to plant specifications as per the selected DIN format for creating the drawing, e.g. created in DIN A1, output in DIN A1.
- In general, documentation produced with a CAD system which is then supplied via data transmission is preferred. The CAD system used at Daimler is Siemens NX. The original data format and step data, dxf data, tif data and pdf data shall be supplied.
- If the contractor employs another CAD system, the original data format of the CAD system shall always be used as well as the associated step data, dxf data, tif data and pdf data supplied.
- A written exemption shall be obtained for this deviation.
- To be supplied for long-term archiving:
  Drawings shall be supplied in raster format, TIFF with 200 DPI compressed to CCITT G4 (fax group 4) conforming to Optigraphics TIFF standard raster format. If the data is directly saved from the CAD system as a raster image, a resolution of 600 DPI can be used (higher quality). A resolution of 200 DPI is mandatory when scanning in paper documents. For formats up DIN A0, stripe TIFF shall be used. Drawings from A3 to A0 shall be in landscape format (when shown on the screen unrotated) for A4 it can be portrait or landscape format depending on the orientation of the sheet.

11.2.2. Scope of Delivery

- The documentation shall include a machine overview with every individual station, a station overview with associated modules, a module overview with associated submodules, the submodules with the individual parts and the individual parts. The drawings of the single parts shall include all specifications required for manufacturing the respective parts. These shall be provided as 2D data and, in the case of assemblies,

also as exploded views. The client can also request the associated 3D data.
- Gearboxes, motor spindles, ball spindles, spare and wear parts which do not count as documentation of jigs and fixtures, tools and workpiece drawings. Manufacturer, part and serial numbers shall be specified in particular for the motor and ball spindles.
- The corresponding parts list for all assemblies, including the parts documented in MTM, shall be provided as a file in the Excel format specified in the Excel version used by Daimler.
- In general, manufacturer part and serial numbers for motor and ball screws, motors of NC joining modules, motors, scales, hydraulic or pneumatic special cylinders, gears and pumps shall be referenced in the parts lists as specified by the respective plants.
- The overall scope to be specified comprises: standard parts, purchased parts and structural components. Only component parts that are NOT included in the EPLAN electrical components + fluidics project are specified here.
- The designation of spare and wear parts as well as parts in contact with the workpiece shall be supplemented with E for spare part, V for wear part, EW for spare part in contact with the workpiece and VW for wear part in contact with the workpiece. As specified during contract award, the bills of materials shall be uploaded to MDM with the specified template or to DEEP with SLE according to the specifications.

Further specifications are made in a data exchange agreement with the designated representative.

12. Ordering Lists

For MB Cars plants a separate order list need no longer be supplied.

- The following applies to the electrics + fluidics:
  The complete parts list with electrical and fluidic components is transferred from the EPLAN project via the interface.

The following applies to electrics + fluidics and mechanics:
- The manufacturing areas (electrics, fluidics, mechanics) are identified in the lists.
- Complete the Name (import) field.
- **The following shall additionally be noted:**

- For motors, measuring systems, transmissions, linear units, revolver heads, pumps, pneumatic and hydraulic special cylinders, etc., the serial numbers of the installed parts shall be specified.
  Please enter the serial number in field "Technical description (import)".

- For assemblies e.g. tool spindles, gripper units, etc. notes should be provided as to whether it makes more sense to buy individual spare parts (e.g. spindle bearings) or complete units.
  Please enter this information in field "Technical description (import)".

- Production equipment requested and approved via the MTM or Siemens NX (Smaragd) system shall be supplied in a separate order list stating the Daimler part number (warehouse number).

Specifications for Plant 020:

Form appended to the requirement specifications:
W020_Bestellliste 1.8.xlsm shall be used.

Requirements for Plants 030, W034:

04_W030_034_VT_ET_Elektrik.xls, 05_W030_034-VT_ET_Mechanik.xls
06_W030_034_VT_ET-Liste_Hydr_Pneu

The list: 03_W030_034_Beschreibung_VT_ET-Liste.pdf shall be observed

13. Documentation Guidelines for Modifications to Systems

13.1. General

The production of new, revised originals will depend on the technical documentation available at the client and on the extent of the modifications.

13.2. Production of Documentation

The technical documents shall continue to be used in their existing form and shall be resupplied in the same format, with any conversion back from a newer format. To improve the reproducibility however, following modifications to the system, the updated documentation shall be supplied in the original file format.
Before accepting the order, detailed consultations are necessary about the production of documentation.

13.3. Procedure

Before start of the conversion measures, the contractor shall request a reproduction of all affected parts of the documentation from Daimler. For each request the contact data of the corresponding client shall be stated. If the documentation concerned is available in its original file format, then a new version of the documentation shall be produced, using only the corresponding, approved software.

For MB Cars plants and the Truck Plant 030/034:
With the data to be changed, the contractor will receive a separate description of the procedure for implementing the change.

13.3.1. Changes to the Hardware Documentation

- The person making the changes shall enter the changes in the received copies, using a **red pen/pencil**. In addition, the name, company and change date shall be entered legibly next to the changes. The person making the changes shall leave the documentation with the **changes marked in red** at the system. In addition, the hardware change sheet shall be completed in the electrical documentation.
- To produce new versions of documents, only copies of the changes may be taken away. When updating the documents, care should be taken to ensure that the component identification system and the structure of the documentation are maintained, as chosen by the original author.
- In the changed documents, a suitable entry shall be made in the change field included in the document template.

13.3.2. Changes to the Software Documentation

- The person making the changes shall enter the changes using a **red pen/pencil** in the software printouts kept locally. In addition, the name, company and change date shall be entered legibly next to the changes. The person making the changes shall leave the documentation with the **changes marked in red** at the system. In addition, the software change sheet in the printout of the program shall be completed.
- A **backup copy** of the modified software shall be made immediately and provided to the representative. The person making the changes shall make their own backup to be used to produce a new printout.

13.3.3. Supply of the Updated Documentation

13.3.3.1. Hardware Documentation

- Scope of supply according Appendix 03 to the requirement specifications, Lieferumfang_.xlsx.
- Delivery is made to the respective delivery addresses of the plants as referenced in the Delivery addresses table.
- The delivery note shall contain the following:
  - Daimler's plant-specific system ID number (in Plant 010, Untertürkheim section, this is the equipment number of the system)
  - Note that this is a revised document

- The client's change order number
- A tabular overview of the changed, newly added, and removed sheets in the new version of the documentation shall be supplied. For Mercedes-Benz Cars and Plants 020 and 034, the form 01_MB Cars_W034_Aenderungsindex_Muster.xlsx shall be used.

14. Appendix

The appendices are as follows:

14.1. Index of Terms

Delivery Address for System Documentation

The delivery addresses specified here are valid for delivery of the entire system documentation as specified by the addressees of the respective plants. **The delivery addresses of all plants not listed here shall be requested from the representatives of the particular work orders for these plants.**

Delivery addresses at Plant 010 (all sub-plants), Plant 040 and Plant 068

Delivery of the documentation to document management in paper form is not required.
Exclusions see Appendixes in Requirement Specifications Part V, Documentation.

For the data exchange with Mercedes Benz Cars an upload link shall be requested via the e-mail address given here for the documentation management of the corresponding plants.
Alternatively, the contractor's download link can be used.

Plant 010 e-mail link: **Mbox_Zentrale_Anlagendoku_Werk_10@daimler.com**

Plant 068 e-mail link: **Mbox_Zentrale_Anlagendoku_Werk_68@daimler.com**

Plant 040 e-mail link: **Mbox_Zentrale_Anlagendoku_Werk_40@daimler.com**

Delivery address at Plant 020 Mannheim

Address:

Daimler AG
Mercedes-Benz Werk Mannheim
Ms./Mr. "Representative"
HPC: Dept.:
Abladestelle: xy
Hanns-Martin-Schleyer-Str. 21-57

68305 Mannheim

Additional data:

The documents shall be addressed to the respective representative(s) at Daimler AG Mannheim responsible for the system ordered.

Delivery address at Plant 069 Kassel

Address:	Additional data:
Daimler AG Ms./Mr. "Representative" HPC: Dept.: 34112 Kassel, Germany	The documents shall be addressed to the respective representative(s) at Daimler AG Kassel responsible for the system ordered.

Delivery addresses at Gaggenau Plant,
030 Product organizational units, 034 Transmissions
Delivery address at Plant 034 (Transmission Plant), delivery address at Plant 030

DAIMLER AG
Mercedes-Benz, Werk Gaggenau
Maschinendokumentations-Archiv Gaggenau/Rastatt
Abladestelle 063 (Zentrallager, Bau 18), HPC 507
Sulzbacherstrasse Tor 4
76568 Gaggenau
Germany

NOTE: This translation is for information purposes only.
The German version shall prevail above all others.

DAIMLER

Powertrain Requirement Specifications v14.0

Documentation for Factory Planning, Digital Factory

Version 1.1

Version	1.1	Number of Pages :	9
Stand/As of	15.03.2018		
Document:	Appendix 02 - Documentation Digital Factory v1.1.docx		

DAIMLER

Table of Contents

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1. General

1.1 Preface

This document defines the specifications for production equipment with regard to the requirements for

the provision of digital data and models

as a supplement to or as additional details about the specifications in the General Powertrain Requirement Specifications:

- **Powertrain Requirement Specifications Part I** **General Information**
- **Powertrain Requirement Specifications Part II** **Mechanical Components**
- **Powertrain Requirement Specifications Part III** **Electrical Components, Control Technology and Production-Oriented IT Systems**
- **Powertrain Requirement Specifications Part IV** **Production Equipment**
- **Powertrain Requirement Specifications Part V** **Documentation**

Compliance with the requirement specifications is mandatory and is not overridden by this document.

1.2 Record of Revisions

Version:	**As of**:	**Chapter:**	**Changed by:**
1.0	05.03.2018	1-5 Initial creation	Marc Ölschläger PT/TSD
1.1	28.06.2018	Chapter 4, Inserted reference to Powertrain Requirement Specifications Part I, Chapter 2.6. Contacts Table deleted and WV/DV compliant procedure changed according to the specifications.	Waldemar Steiner PT/TSD

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1.3 Contacts

For order-specific questions (e.g. specifications for energy data, machine data, production planning, and procedure simulation), please refer to the **representative specified on the client side corresponding to the WV/DV-compliant methodology**.

All mentioned CAD models, files, documents, and other forms of documentation shall be delivered to the responsible Planning representative mentioned in the workpiece-specific Requirement Specifications, Chapter 1.3.

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2. Factory Planning and Layout

The data requested in this chapter shall be provided by the dates stated in Chapter 5.

2.1 Data Formats

Line layouts, machine installation, and foundation plans shall be provided for the factory planning process in the Microstation CAD format corresponding to the currently applicable CAD guidelines. Individual machines, systems, and other equipment shall be supplied as Microstation 3D cells.

The applicable specifications can be obtained from the FAPLIS site:

https://www.faplis.de/wiki/display/FAPINFO/Downloads

Alphanumeric data on energy consumption, employed substances, and system properties shall be supplied in a specific Excel template. The Excel template is provided by Daimler and can be requested from the responsible representative (keyword "production medium card for RFQ").

2.2 Layout Concept for the RFQ

The requirements of Chapter 2.4.1 in Powertrain Requirement Specifications Part I, General Information apply.

2.3 Machine Installation and Foundation Plans

Shall be supplied in duplicate as paper schematics drawn to scale.

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3. Production Equipment Data

The data requested in this chapter shall be provided by the dates stated in Chapter 5.

3.1 CAD Models of the Machines and Systems

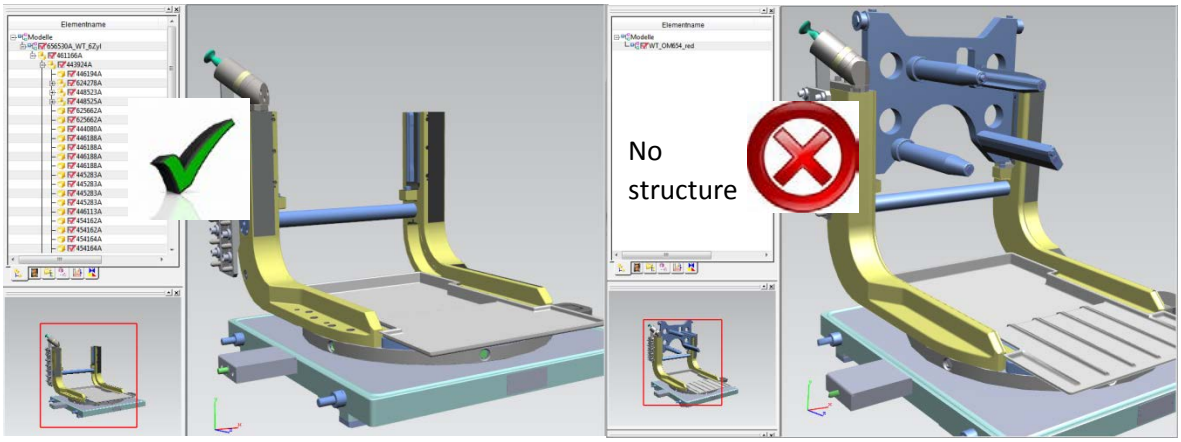
3.1.1 Scope of the Non-Product-Dependent Parts of a System

Shall be supplied in the original data format, e.g. Siemens NX, or in the jt format. In the individual case, step files may be provided as per agreement with the contacts mentioned in Chapter 1.3.

3.1.2 Scope of the Workpiece-Dependent Parts of a System

The provided data shall allow a complete consideration of the collision between machine and product. Everything that in reality moves shall be kinematizable. This includes pickers, robots, clamping devices, feed devices, doors, gantries, lifting devices, rotating tables, shrouds, service units, power ducts etc.

- The 3D data shall be provided in **JT format with XT Breps**.
- The structure of the assemblies shall be contained in the JT (no monolithic files)



- Moving and fixed parts shall be individually mapped in the model in order to allow creation of kinematics. End positions and opening angles shall be apparent from the model. Ideally, the kinematics including axis boundaries will have already been created.
- Robots, hose packages and corresponding tools and pickers shall be provided as separate files. In case they are not kinematized, the opening angles, lift and direction of rotation shall be supplied.

- Each picker shall be provided kinematizable and as a separate 3D file with complete structure. In the case of pickers and jigs and fixtures a reference frame (vehicle zero) is also required to enable positioning of the components. For pickers, but also tools, a coordinate system shall be inserted as TCP in the model.
- Hand-guided tools like power screwdrivers, socket wrench sockets, extensions, etc., shall be supplied as separate files.

3.2 Machine Data for the Detailed Planning of Production Processes

For selected workpieces, Daimler AG carries out computer-aided planning of production in the form of a consistent digital process chain.

It comprises the modules: product analysis, production engineering, tool planning, line time balancing and NC simulation. The scope of the required data depends on the scope defined in the system-specific requirement specifications and shall be coordinated with the contacts listed in Chapter 1.3. Specifically, the following data shall be supplied:

Machine model	Machine data sheet for kinematics and control system model: NC archive (text file), if necessary read out from machine
Tool data (metal cutting only)	Tool plan in .dxf or NX format
Time study flow chart	
Fixtures	NX 11.0033 or JT
Processing point plan	
Production section drawings	

For tools, all specifications of the "Powertrain Requirement Specifications, Part IV – Machinery and Equipment – Tools" also apply.

4. Material Flow and Process Simulation

If the project-specific requirement specifications specify that a simulation be performed, it shall be created as per **"Powertrain Requirement Specifications – Material Flow and Process Simulation"**. Further details will be specified in agreement with the representative, e.g. the requirements for partial scopes of the production system (if the contract is awarded without GC), the degree of detail of the simulation and the schedule for the presentation of the results and handing over of the model.

For conducting the simulation operations, the planning department shall provide the planned shift model, the planned number of employees, the interference range and other input data for the simulation that cannot be influenced by the order placement.

The supplier is responsible for complying with the specifications (e.g. the OEE number) in terms of the necessary availabilities, cycle and machine setup times as well as tool quantities per die and tool change times.

Upon consultation with the representative, Daimler AG can provide an existing simulation model if necessary.

The parameterized simulation model, including documentation, shall be provided to Planning and to the contacts listed in Chapter 1.3 on completion of the simulation studies.

The data requested in this chapter shall be provided by the dates stated in Chapter 5.

The specifications in the Powertrain Requirement Specifications, Part I, General Information on Simulation Availability, Chapter 2.6, shall also be observed.

5. Time of Data Provision

Data	Format	Time Frame
System Layout	Microstation (.dgn .cel)	Quotation
Procedural and function description of the system	Excel or test file	Quotation
Energy checklist and technical data	Excel	Quotation
Simulation model	TCX plant simulation (.spp)	See LH Part 1, Chap. 2.6.
Installation plan and foundation plan	Microstation (.dgn .cel)	Order + 2 months
CAD model of the system	JT	For • Design approval and • Inspection
CAD model of workpiece-dependent system parts	JT and CAD native	For • Design approval and • Inspection
Kinematics and control system model of the machine (*1)	Excel or test file	For • Design approval and • Inspection
Tool plan (metal cutting only)	NX or AutoCAD (.dxf)	VA – 6 weeks (*2)
Jigs and fixtures in machine tools	NX or JT	VA – 6 weeks (*2)

(*1) Only if "digital process chain production" requested (*2) VA = shipping acceptance

Interim states of the CAD models shall be provided on request by Daimler AG. A re-delivery of provided data in the event of changes in design or concept shall be ensured up to the final inspection without separate request by Daimler.

Documentation Type	Remark	Number and format of the documents						2 months after AV	6 weeks before	6 weeks before	4 weeks after
		W10	W40	W68	W20	W30/34	W69	For Approval, Data, Hard Copy as Requested	Shipping Acceptance, Data, Hard Copy as Requested	Acceptance, Data and Hard Copy acc. to Plant Specifications	Acceptance, In Case of Inspection Not Without Defects Data and Hard Copy of Changes
Production equipment card	Template	Template about representatives	Excel, hard copy	Excel	1 sheet, hard copy	1 sheet, hard copy	1 sheet, hard copy				
AWF lubricant card	Template	PDF	PDF	PDF	1 sheet, hard copy	1 sheet, hard copy	1 sheet, hard copy				
Instructions, operator, and operating instructions,		Word, PDF, hard copy	Word, PDF, hard copy	Word, PDF	Word, PDF, hard copy	Word, PDF, hard copy	Word, PDF, hard copy			X	X
Documentation, e.g. exemptions, declaration of conformity, manufacturer's declarations for incomplete machines, DGUV3, performance measurements, appraiser test certificates (TÜV, DEKRA), conversion declarations		Word, PDF, hard copy	Word, PDF, hard copy	Word, PDF	Word, PDF, hard copy	Word, PDF, hard copy	Word, PDF, hard copy	Acc. to Chapter 4.2.4	Acc. to Chapter 4.2.5	Acc. to Chapter 4.2.5	Acc. to Chapter 4.2.5
Function and flow chart		Original file format, .dxf, PDF	Original file format, .dxf, PDF	Original file format, .dxf, PDF	Original file format, .dxf, PDF	Original file format, .dxf, PDF	Original file format, .dxf, PDF			X	X
Electrics + fluid plans (one EPLAN-P8 project)		EPLAN P8 .zw1, navigable PDF, hard copy in the control cabinet	EPLAN P8 .zw1, navigable PDF, hard copy in the control cabinet	EPLAN P8 .zw1, navigable PDF, hard copy in the control cabinet	EPLAN P8 .zw1, navigable PDF, hard copy in the control cabinet	EPLAN P8 .zw1, navigable PDF, hard copy in the control cabinet	EPLAN P8 .zw1, navigable PDF, hard copy in the control cabinet	X	X	X	X
Electrics + fluid plans incl. parts lists		MDM, Excel	MDM, Excel	MDM, Excel				X	X	X	X
PLC and NC documentation, visualization of safety program, Safe matrix,		.pdf, Excel	.pdf, Excel	.pdf, Excel	.pdf, Excel	.pdf, Excel	.pdf, Excel			X	X
PLC and NC handbook, programming instructions, description for visualization		.pdf, 1 copy	.pdf, 1 copy	.pdf, 1 copy	.pdf, 1 copy	.pdf, 1 copy	.pdf, 1 copy			X	X
Software licenses		PDF, hard copy	PDF, hard copy	PDF, hard copy	PDF, hard copy	PDF, hard copy	PDF, hard copy			X	X
Entry sheet, software	Daimler template	Excel	Excel	Excel	Excel	Excel	Excel			X	X
Lubrication instruction acc. to DIN 8659, Part 1, Lubrication installation, Lubrication plan		Word, .pdf, Excel, hard copy	Word, .pdf, Excel, hard copy	Word, .pdf, Excel	Word, .pdf, Excel, hard copy	Word, .pdf, Excel, hard copy	Word, .pdf, Excel, hard copy		X	X	X
Maintenance and care instructions Notes on special tools Notes on spare parts Calibration description, calibration log		Word, .pdf, Excel	Word, Excel	Word, .pdf, Excel	Word, .pdf, Excel	Word, Excel	Word, .pdf, Excel		X	X	X
Materials for preventive maintenance, servicing or VI plan	Template for the respective Daimler plants	Excel	Excel	Excel	Excel	Excel	Excel	X	X	X	X
Mechanics System / Machine layouts, Foundation / Transport plans		Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy			X	X
Mechanics acc. to Chapter 11.2.2		Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy	Original CAD, STP, DXF, TIF, PDF; hard copy			X	X
Associated parts lists	Template for the respective Daimler plants	Excel, and in MDM	Excel, and in MDM	Excel, and in MDM	Excel	Excel	Excel	x	X	X	X
Ordering lists	Template for the respective Daimler plants	Excel, and in MDM	Excel, and in MDM	Excel, and in MDM	Excel	Excel	Excel		X	X	X

Delivery note for the supplied documentation

Example of the content of a delivery note:

1. Title Block

- Sender data
- Recipient data

2. Data on Assignment of the Documentation

Data assigned by the contractor for the system

- System name
- Serial number of the machine
- Contractor order number or commission number

Data assigned by the client for the system

Project

- Client ID number – see Chapter "Identification of Folders / Labeling"
- Client's order number - purchase requisition (BA) number, outgoing goods (WA) number
- Building and cost center (if known, additional data)

Example:

M120 crankcase transfer line, machine number 15200/98

Order number TF2514/98

For Daimler AG:

Project NRM, DB 9101000NNNNN, DAI order no.:1010032020, BA 010 6 567895 9, Building 141, KST 1991

3. Data on the Delivery Section and Table of Contents

Example:

System documentation for release of dispatch

System documentation for operational system + acceptance

System documentation after change

System documentation after change:

Electro-technology documents and parts list on site at the system

Fluid systems technology documents and corresponding parts lists on site at the system