Project name	Fine Chemical and Raw Material Engineering Projects	Area	
Unit description		Design phase	Detailed Design

North Huajin United Petrochemical Co., Ltd.

Fine chemical and raw material engineering projects digital delivery

Digital Delivery Specification For Supplier

(Supplier Version)

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Revision			
Rev.	Section No.	Content	Page No.
1	3.8	Add delivery requirements for sub-project contractors	6
	5.1 2）	Detailed description of unpacking requirements of equipment and numbering requirements of factory objects after unpacking	6
	5.3	Modify the requirements of "manufacturer code" according to the project	6
	6.1.1	Detailed filling instructions for “Appendix 1 Supplier Digital Delivery List” and “Appendix 2 Inspection and Maintenance Parts List”.	7-8
	6.3	Add requirement of 3D model software and deliverable format for process package equipment supplier.	10
	8.5	Specify that the supplier needs to use the "management platform for supplier digital delivery" for delivery, and provide Annex 8 Operation Instructions for the management platform for supplier digital delivery	13
	Annex 2	Add a property“recommended replacement cycle (month)” to Supplier Spare Parts List.	Annex 2 Excel
	Annex 3	Refine the classification of plant objects and improve the attribute table according to the project requirements	Annex 3 Excel
	Annex 4	Increase the scope of telecom equipment document delivery	Annex 4 Excel
	Annex 6	Detailed delivery reference documents	23
	Annex 7	Modify the principle of splitting tag number of package equipment	25
	Annex 8	Newly increased	26

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1. General

1.1 Purpose

This procedure has been developed to regulate and guide suppliers of China North Industries Group Corporation Limited in their digital delivery work, to clarify the content and format of delivery, and to constrain supplier behavior. This procedure shall comply with current national and industry confidentiality regulations and relevant standards. Suppliers should be performed in accordance with the latest version of this regulation.

1.2 Scope of suppliers range

1.2.1 Supplier categories include single equipment suppliers and package equipment suppliers.

1.2.2 The single equipment supplier shall arrange and deliver according to the tag number. The package equipment supplier shall negotiate with the designing company or the owner to disassemble the packaged equipment into single equipment, arrange and deliver according to the unpacked single equipment tag.

1.2.3 Relevant equipment category of static equipment supplier are as follows:
Vessel, reactor, tower, heat-exchanger, torch, boiler, spherical tank, storage tank, cooling tower, gas holder, silo(equipment), hopper, storage, filter, special valves like relief valve etc. piping component like piping filter, etc.

1.2.4 Relevant equipment category of rotating equipment supplier are as follows:
Pump, compressor, blower, vacuum equipment, refrigerator, Turbine Machinery, internal combustion engine, agitator.

1.2.5 Relevant equipment category of instrument supplier are as follows:
Temperature instrument, pressure instrument, flow meter, level meter, online process analyzer, control valve, control system, other instrument.

1.2.6 Relevant equipment category of electrical equipment supplier are as follows:
Transformer, switch equipment and control equipment, Power factor compensation device, power supply device, frequency converter, power consumption equipment, motor soft start device, electrical integrated automation system, protection and safety automatic device, control cabinet.

1.2.7 Relevant equipment category of special equipment supplier are as follows:

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Crushing equipment, molding and granulating machinery, packaging and filling machinery, drying machinery, conveying machinery, weighing equipment, separation machinery, mixing machinery, plastic processing machinery, rubber processing machinery, feeding equipment, material handling and storage equipment, decoking equipment.

1.2.8 Relevant equipment category of other equipment supplier are as follows:

Fire equipment, environmental protection equipment, lifting equipment, generators, motors, light equipment, hvac equipment.

1.2.9 Relevant equipment category of telecommunication equipment supplier are as follows:

Video surveillance system, broadcasting system, fire alarm system, emergency broadcasting system, wireless digital trunking system, access control system, security system, program-controlled telephone system, communication cabinet, chassis, display system and equipment, other telecommunication equipment.

2. Definition

Owner: North Huajin United Petrochemical Co., Ltd.

Contractor: The parties who have signed the project contract with the owner and are responsible for the implementation and completion of the contract tasks. Among them, the contractors for the individual links of design, procurement, and construction are called design institutions, procurement service providers, and construction organization; those who contract for the entire process of design, procurement, and construction are called EPC contractors.

Supplier: Manufacturers that provide equipment, materials or relevant services for this project.

Licensor: A service provider who provides and transfers process technology.

Digital handler management contractor （DHMC）: Digital delivery management service contractor, in this project, it refers to Sinopec Engineering incorporation.

Delivery platform software provider: Digital delivery platform software, deployment, implementation and technical support provider.

Plant object: The equipment, pipeline, instrument, electrical equipment, building,

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structure and other engineering entities that can be identified individually.

Plant object tag number: Plant object identifier, plant object number, refers to the unique number of a physical entity.

Deliverables: Electronic files that contain delivery information that can be handed over, including database files, Excel files, model files, documents, etc.

Delivery information: The content that needs to be delivered during the design, procurement and construction process, including equipment tag numbers, attribute data, documents and models, etc.

3. Responsibilities

3.1 The suppliers shall ensure that the electronic documents delivered are consistent with paper documents delivered.

3.2 The package equipment suppliers are responsible for summarizing and delivering the documents of functional internal parts, drivers, key accessories, special instruments, and single equipment supplied by the OEM manufacturers, which are attached to the equipment.

3.3 The package equipment suppliers shall carry out a digital delivery for each disassembled equipment according to this procedure.

3.4 The suppliers shall specify the contents and the format of the information from their outsourcing partners and their raw materials providers, processors or inspectors. They shall review and summarize the information for the final delivery.

3.5 The suppliers shall negotiate and agree on the digital delivery contents according to the relevant requirements of the purchaser in order to provide the important engineering information for the operation and maintenance Period.

3.6 The suppliers are responsible for submitting the final version of the digital delivery documents to the Purchaser as required by this procedure.

3.7 The contents of digital delivery shall be adjusted according to the purchaser's feedback until final delivery.

3.8 If the supplier undertakes the design of the process package in the plant, such as additive injection and metering system, powder air conveying system, pellet air conveying system, membrane recovery system, catalyst configuration unit, refrigeration unit,

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incineration system, sludge drying system, it should be It shall be implemented in accordance with the "Regulations on Digital Delivery of Designer", and its suppliers shall follow the "Regulations on Digital Delivery of Suppliers".

4. References

The following documents are necessary for the application of this regulation. For dated references, only the dated version is applicable to this regulation. For undated references, the latest version (including all amendments) is applicable to this regulation.

1) “Regulations on Classification of Objects in Digital Delivery Factory”
2) Digital Delivery Specification For Supplier (Contractor Version)
3) Digital Delivery Specification For Smart P&ID
4) Digital Delivery Specification For 3D Model

5. Numbering regulations

5.1 Plant object tag number

1. The plant object tag number shall be unique and prepared by design unit, or prepared by suppliers according to the principle provided by design unit.
2. The plant object number (tag number) of the package equipment supplier shall be determined in consultation with the owner or contractor during the technical agreement. For the splitting of package equipment, refer to the classification objects whose "Available Level" is "Yes" in the table of "Appendix 3 Equipment Attribute Data", so that all can be dismantled. For details of the package equipment split bit number, please refer to Appendix 7 for splitting tag number principle of package equipment.

5.2 Data document number

The suppliers are required to deliver the data including "Appendix 1 Supplier Digital

Delivery Document", "Appendix 2 Supplier Spare Parts List", "Appendix 3 Equipment Attribute Data ", which are all in Excel format.

1) The name rule of "Appendix 1 Supplier Digital Delivery Document" is: Order / Contract No. - VD- Owner's Unit Number
2) The name rule of "Appendix 2 Supplier Spare Parts List" is described in 5.3 Document Number.
3) "Appendix 3 Equipment Attribute Data" is numbered according to the equipment attribute data template: VA-8 digit code of supplier-owner main item number-factory object classification identification code-four digit serial number.

5.3 Document number

1) Supplier document numbering rule is: VM- Owner's Unit Number -AAAAA-BBB-CCCCCCCC -XXXX.

   AAAAA: procurement document category number, fill in the actual digit of “Appendix 4 Associated Document Delivery Scope”;

   BBB: Procurement document identification number, filled in the actual digits of “Appendix 4 Associated Document Delivery Scope”;

   CCCCCCCC: Manufacturer code, 8 digits, according to the code of Huajin United Petrochemical Supplier Code;

   XXXX: serial number, 4 digits, starting at 0001.

   For example, a sewage pump product is eligible for:

   Unit Number: A611

   Document Category Number: D0701

   Document Identification Number: 01A

   Manufacturer code: 01234567

   The Name of this tag number delivery document is: VM-A611-D0701-01A-

01234567-0001.

2) The delivery of electronic documents shall be sorted out according to the document number, and the content description of the document name shall be filled in the "Appendix 1 Supplier Digital Delivery Document".

3) The suppliers shall be responsible for maintaining continuity of the document number.

5.4 3D model number

The 3D model should be placed in a folder with the numbering rules "Plant object tag number-3D" such as "1100-P-201-3D". The numbering rule for 3D model is "Plant object tag number-3D", and the format is STEP. For example, "1100-P-201-3D.STEP".

6. Delivery Content and Requirements

The suppliers are required to collect the digital delivery information of plant objects based on the plant objects list, including data, document, and 3D model.

6.1 Data

6.1.1 Data delivery content

The supplier data delivery includes Appendix 1 Supplier Digital Delivery Document, Appendix 2 Supplier Spare Parts List, and Appendix 3 Equipment Attribute Data.

Attribute data for the same type of plant objects should be placed in one table.

The detailed entries in the "Appendix 1 Supplier Digital Delivery Document" are as follows:

Order/contract number	Refers to the order or contract number involved in this project
Tag/Number in Supplier Data	Refers to the unique number of the physical entity
Plant object	Refers to the name of the equipment. Fill in the

name/purpose	purpose of the equipment when there is no equipment name.
Data template number	Refers to Appendix 3 “template number of attribute data”
Data template name	Refers to Appendix 3 “template number of attribute data”
Unpacking Dependencies	Refers to the package device tag to which the tag belongs after splitting. When the package equipment has a multi-level split relationship, fill in the package number of the highest level. For example, if the motor in the pump can be dismantled from the meter, then the "unpacking subordination" of the meter fills in the pump number. Single equipment does not need to fill in this column
Tag/Number in Supplier Document	Fill in the line number corresponding to column A of this file, refer to the example in Appendix 6
Document name	The name shall describe the main content and characteristics of the document accurately and can be used for retrieval.
Document number	Refers to the actual document number at the time of storage and delivery
Tag/Number in Supplier Model	Fill in the device tag number. Each device tag provides a separate device model. The 3D model of the packaged equipment is not submitted separately according to the split equipment, but is submitted as

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	a whole STP file, named according to the number before unpacking
Model Number	According to the content in 5.4 of this rule, number the name of the 3D model.

The specific items to be filled in "Appendix 2 Supplier Spare Parts List" are as follows:

Plant object tag number	Fill in according to the actual situation, if the spare parts correspond to more than one plant object, each tag should be listed and separated by English characters; for example: 1100-P-201A; 1100-P-201B
Name of spare parts	The descriptions of parts and components shall be the terminology used in the relevant standards, regulations, and manuals
Manufacturing standard/specification/plant code	Fill in the manufacturing standard/specification in turn according to the principle “whether it can be filled in or not”. If it is a special non-standard part, fill in the plant code
Material/style	Fill in a single material or standard form according to the principle “whether it can be filled in or not”
Assembly drawing number	The corresponding assembly number of the spare parts on the drawing
Part number	If any, fill in the specific number of the part on the drawing.
Quantity	Quantity of spare parts, if it is not a spare part, fill in "0"
Accident part or not	Fill in “Yes” if it is. If it is not an accident part, it is unnecessary to fill in this item.

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Plant object tag number	Fill in according to the actual situation, if the spare parts correspond to more than one plant object, each tag should be listed and separated by English characters; for example: 1100-P-201A; 1100-P-201B
Name of spare parts	The descriptions of parts and components shall be the terminology used in the relevant standards, regulations, and manuals
Vulnerable part or not	Fill in "Yes" if it is. If it is not a vulnerable part, it is unnecessary to fill in this item.

6.1.2 Data table format

The data shall be filled in Excel format. Microsoft Office 2013 or above is recommended.

6.1.3 In order to meet the owner's demand for equipment management during the operation and maintenance period, the supplier should also fill in the technical parameters of the spare parts required for the owner’s production and operation according to the data collection template provided by the purchaser.

6.1.4 The suppliers shall specify the contents and the format of the information from their materials providers, processors or inspectors. They shall review and summarize the information for the final delivery.

6.2 Document

6.2.1 Document delivery content

According to the content requirements of Appendix 4 Delivery Scope of Related Documents (Procurement), the supplier shall sort out and submit relevant documents, including: quality certification documents, drawings, operation manual, spare parts list and other documents generated in the process of product manufacturing. The corresponding relationship between the factory object classification code and the document category can be queried from "Appendix 3 Equipment Attribute Data".

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6.2.2 Integration and Split of Document Content

Suppliers cannot combine delivery documents for different orders or contracts.

If a document is for multiple plant objects, the relationship should be indicated in the list of digitally delivered documents. For the specific filling method, please refer to the example in Appendix 6.

Documents of the same type should be formed independently when they can describe one plant object or several plant objects individually. For example, the copy of nameplate should form an independent document for each equipment instead of combining copies of nameplates for multiple equipment into a single document.

6.2.3 Document Format

The electronic documents delivered (except for special format requirements) should be in PDF format (Adobe Acrobat Standard 2017).

When the original document is a paper document, it should be scanned as a PDF file with clear resolution (minimum 300 dpi required).

The text direction of all pages shall be consistent with the reading direction, and the tilt angle of the scanned PDF file shall not exceed 5 degrees.

The topography or copy of the nameplate shall ensure that the characters are legible and readable, the image noise is removed appropriately, and the nameplate is placed in the center of the document without leaving a blank area. If there are more than one nameplate in the package equipment, the file should be sorted out according to the plant object number (tag number) agreement with the owner or supplier. The document format can be JPEG or PDF.

When the original document contains more than one document format, it should be uniformly converted to PDF format, which should not contain embedded documents and links to other documents.

6.3 3D model

1） The owner, contractor and suppliers shall negotiate the 3D model delivery, and the suppliers provide 3D models of the packed equipment and single equipment.

2） The 3D model can be modeled by plant 3D software or mechanical 3D software, and the suppliers shall ensure that the equipment shape is complete and accurate.When using mechanical 3D software, the delivery of the three-dimensional model format shall comply with STEP standards ; when using factory 3D software, the delivery model format shall meet the requirements of 'Digital Delivery Specification For 3D Model’.

3） Licensed technology and trade secret involved in the 3D models should do appropriate data processing, but still need to meet the construction requirements of the relevant inspection and maintenance system.

4） Single equipment 3D model shall meet the model accuracy requirements. For single equipment, the suppliers may provide 3D models. If the internal components are available, the supplier may deliver the shape of the equipment and the internal components.

5） The accuracy of the packed equipment 3D model should meet the depth requirements of each single equipment after disassembling, see Appendix 5 for details.

6） The project model accuracy is divided into five levels, see the table below. The content depth of the equipment 3D model is shown in Appendix 5.

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Model accuracy level	Definition	Instruction	Scope
L1	1. Simplified shape: It can exclude surface, apertures and shape, but reflect the equipment general outline. 2. Accurate positioning: pipe direction, shape size, positioning size, may exclude on-site adjustment.	Utilities in Packed equipment. Reference to other suppliers' supply contents in engineering drawings.	Piping and piping accessories, structure classes, instrumentation and electrical classes in package equipment. Tower tray and packing in the tower (positioned according to engineering drawings)
L2	1. Precise shape: all features related to shape, including surface, apertures, modeling, etc. The shape is basically the same as the equipment entity and can be without weld seams. 2. Precise positioning: the actual measured shape data of the equipment is reflected in the model, including on-site positioning adjustment.	Outsourced equipment, selected equipment in the package equipment. Valves, safety valves, regulating valves in the package equipment. Vessels (without inner parts)	Outsourced pump motors. Outsourced compressor regulating valves, safety valves.
L3	1. Precise modeling. 2. Precise positioning. 3. Feature inner parts (including spare parts), modeling the features of the inner parts, and the corresponding part numbers at least.	Vessels, heat exchangers, towers, reactors, air coolers, pumps, machinery, etc. Vessel class with gasket and platform can be modeled without gasket and platform.	
L4	1. Precise modeling. 2. Precise positioning. 3. Accurate inner parts, including all modeling features of inner parts,	Equipment internal parts, etc.	

	and the corresponding details of parts related to them.		
LTS (Technical Secret)	Any model features involving technical secrets or patented technology should be handled and have a corresponding description of the technical secrets in this project. (a brief shape at least)	Dimensions, features, structure, materials, assembly process, etc of technical secrets or patented technology (Know How)	

Notes:

The inner parts are separately requisitioned according to L4 accuracy level, and the patent features are abbreviated.

In general, the inspection and repair parts include vulnerable parts, accident parts and spare parts.

Owners can sign agreement with suppliers if they have special needs.

7) The suppliers shall uniformly convert models designed by other software into STEP format.

7. Submission Time

The suppliers shall submit the digital delivery documents according to the time agreed in this procedure with the owner or contractor (hereinafter referred to as the purchaser). If no time is agreed in this procedure, the delivery shall be made according to the time agreed in the contract. If neither this procedure nor the contract is agreed upon, it shall be provided within one month after the on-site acceptance of the equipment.

8. Handover and Acceptance

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8.1 The suppliers are responsible for summarizing the final version of the "Appendix 1 Supplier Digital Delivery Document" and corresponding electronic documents by different orders/contracts.

8.2 According to the "Appendix 1 Supplier Digital Delivery Document", all of data, documents and 3D models should be put it in a folder, and the naming rules of the folder are consistent with Appendix 1, that is, "Order/Contract No.-VD-Owner's Main Item No.". For the handover form of the deliverable documents, please refer to "Appendix 6 Handover Reference Form of the Deliverable Documents"。

8.3 Delivery documents for different orders or contracts cannot be combined.

8.4 The final version of data, documents and 3D models delivered by the suppliers shall be reviewed and approved by the owner or contractor.

8.5 Suppliers must use the "Supplier Digital Delivery Management Platform" for delivery. For the relevant content of the platform, see Appendix 8 "Supplier Digital Delivery Management Platform Operation Guide".

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Appendix 1. Supplier Digital Delivery Document

Project Name					Supplier/Manufacture				Compiler Name & Mail	
Equipment Name					Order Number				Checker Name & Mail	
Data					Document				Model	
Tag Number	Name/Purpose	Data Template Number	Data Template Name	Subordinate Relationship of Unpacking	Tag Number	Document Name	Document Number	Statement	Tag Number	Document Name

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Appendix 2. Supplier Spare Parts List

Project Name	
Supplier Name	
Contract Number	

Spare Parts											
No.	Tag No.	Spare Part Name	Name of Maintenance/Spare Parts	Manufacturing Standard / Model / Factory Code	Material / Form	Assembly Drawing No.	Part No.	Quantity	Accidental Part or Not	Vulnerable Part or Not	Recommended Replacement Cycle (months)

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Appendix 3. Classification of Factory Objects

Classification of typical factory objects								
Coding			Chinese name of classification	Category attribute 1	Category attribute 2	Table number	Whether a hierarchy	Factory object
Level One	Level two	Level three						
C01			Static equipment					
	C01-01		Containers					
		C01-01-01	Vertical vessel			C01-01-01	Yes	D01-01
		C01-01-02	Horizontal vessel			C01-01-02	Yes	D01-01
		C01-01-99	Other containers			C01-01-99	Yes	D01-01
	C01-02		Reactor					
		C01-02-01	Reactor/Regenerator			C01-02-01	Yes	D01-02
		C01-02-02	Moving bed reactor			C01-02-02	Yes	D01-02
		C01-02-03	Fluidized bed reactor			C01-02-03	Yes	D01-02
		C01-02-04	Tank reactor			C01-02-04	Yes	D01-02
		C01-02-05	Tubular reactor			C01-02-05	Yes	D01-02
		C01-02-99	Other reaction equipment			C01-02-99	Yes	D01-02
	C01-03		Savitar					
		C01-03-01	Plate column			C01-03-01	Yes	D01-03
		C01-03-02	Packing Tower			C01-03-02	Yes	D01-03
		C01-03-03	Hybrid Tower			C01-03-03	Yes	D01-03
		C01-03-99	Other towers			C01-03-99	Yes	D01-03
	C01-04		Heat exchanger					
		C01-04-01	Shell and tube heat exchanger	Structure Type		C01-04-01	Yes	D01-04
		C01-04-02	Spiral wound heat exchanger			C01-04-02	Yes	D01-04
		C01-04-03	Jacketed heat exchanger			C01-04-03	Yes	D01-04
		C01-04-04	Bundle heat exchanger			C01-04-04	Yes	D01-04
		C01-04-05	Plate heat exchanger			C01-04-05	Yes	D01-04
		C01-04-06	Spiral Plate Heat exchanger			C01-04-06	Yes	D01-04
		C01-04-07	Air preheater			C01-04-07	Yes	D01-04
		C01-04-08	Air Cooler			C01-04-08	Yes	D01-04
		C01-04-99	Other heat exchangers			C01-04-99	Yes	D01-04
	C01-05		Torch					
		C01-05-01	Elevated torch			C01-05-01	Yes	D01-99
		C01-05-02	Ground Torch			C01-05-02	Yes	D01-99
		C01-05-03	Free standing chimney			C01-05-03	Yes	D01-99
	C01-06		Boiler					
		C01-06-01	Utility boiler			C01-06-01	Yes	D01-01
		C01-06-02	Industrial boiler			C01-06-02	Yes	D01-01
		C01-06-03	Waste heat boiler			C01-06-03	Yes	D01-01
		C01-06-99	Other boilers			C01-06-99	Yes	D01-01
	C01-07		Industrial Furnace					
		C01-07-01	Heating Furnace	Structure Type		C01-07-01	Yes	D01-01
		C01-07-02	Incinerator			C01-07-02	Yes	D01-01
		C01-07-03	Reaction Furnace			C01-07-03	Yes	D01-01
		C01-07-04	Heat carrier furnace	Flame heat carrier furnace		C01-07-04	Yes	D01-01

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Appendix 4. Delivery Scope of Related Documents (Procurement)

Classification of typical plant objects (procurement)

Categories		Category name	Table number
Level One	Level two		
D01		static equipment	
	D01-01	Vessel	D01-01
	D01-02	reactor	D01-02
	D01-03	tower	D01-02
	D01-04	heat-exchanger	D01-03
	D01-05	Piping components and special valves	D01-04
	D01-99	other static equipment	D01-99
D02		rotating equipment	
	D02-01	Pump	D02-01
	D02-02	Compressor	D02-02
	D02-99	other rotating equipment	D02-99
D03		instrument	D03
D04		electrical equipment	D04
D05		other equipment	D05
D06		special equipment	D06
D07		telecommunication equipment	D07

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Appendix 5. Content Depth of 3D Models

Chart 1 Content Depth of 3D Models of supplier

No.	Supplier Category	Factory Object	Suggested Depth of Content	Model Accuracy Level
1	Horizontal Tank		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Support, Inner Part (if any) Without Backing Board, Platform	L3
2	Vertical Tank		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Support, Inner Part (if any) Without Backing Board, Platform	L3
3	Filter		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Support, Filter component Without Backing Board, Platform	L3
4	Reactor	Reactor(Main Part）	Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Support Without Backing Board, Platform	L3
		Inner Part		L4
5	Regenerator	Reactor(Main Part）	Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Support Without Backing Board, Platform	L3
		Inner part		L4
6	Tower（Plate Column, Packing Tower, Hybrid Tower）	Tower(Main Part）	Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Support, 占位塔内件 inner component	L3

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			Without Backing Board, Platform	
		Inner part	Tray, support, Distributor, etc.	L4
7	Cooling Tower		Contains sketchy inner part	L2
8	Shell-and-tube Heat Transfer		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Tube bundle，Tube sheets，Support	L3
9	Tube Wound Heat Exchanger		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Tube bundle (Simple Form),Header, Tube sheets, support	L3
10	Jacketed Heat Exchanger		Shell, Nozzle, Flange, Bolt, Gasket, Support	L3
11	Tube bundle heat exchanger		Nozzle, Flange, Bolt, Gasket, Tube Bundle (Simple Form), Header, Tube Sheets	L3
12	Plate Heat Exchanger			L3
13	spiral plate heat exchanger			L3
14	Air Cooler	Air cooler（main part）	Nozzle, Manhole, Flange, Bolt, Gasket, Tube Bundle (Simple Form),header, support, pipe plug	L3
		Fan		L2
		Electric Motor		L2
		General Equipment		Chart 2

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15	Air Pre-heater			L2
16	Boiler	Boiler（main part）		L3
		General Equipment	Burner, Blower, Induced draft fan, Soot Blower, butterfly valve, etc.	Chart 2
17	Heating furnace/ Cracking Furnace	Heating furnace / Cracking Furnace（main part）	Nozzle, Operation Door, Fire View Door, Blast Resistant Door Including Platform	L3
		Burner		L2
18	Incinerator			L2
19	Tank	Tank（main part）	Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Inner Part (If any) Without Backing Board, Platform	L3
		Bought-in Components		L2
20	Gas Holder		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Inner part(if any) Without Backing Board, Platform	L3
21	Bunker		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Inner part(if any), Support Without Backing Board, Platform	L3
22	Spherical Tank		Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Inner part(if any), Support Without Backing Board, Platform	L3
23	Steam Turbine		Bearing box, rotor（entire）, Guide	L3

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			Blade Support Ring, Regulation system（Quick Closing Valve）, Shell, Sealing	
24	hydro turbine		Bearing Box, Rotor(entire), Shell, Sealing	L3
25	Expander		Bearing Box, Rotor(entire), Shell, Sealing	L3
26	Electric Motor		Shell, Stator, Rotor, Bearing box	L2
27	Electric Generator	Generator（Main Part）	Bearing Box, Rotor(Entire), Shell	L3
		General Equipment	Steam Turbine, Pump, Heat Exchanger/Air Cooler, Drive Machine, Lubricating Oil Station	Chart 2
28	Pump	Centrifugal Pump	Bearing Box, Rotor(Entire), Division Plate, Shell, Dry Running Gas Seal With Gear Box, O-Rings, Mechanical Seal	L3
		Reciprocating Pump	Crankcase, Sliding Crosshead, Piston Rod With X- Head, Piston Rod, Piston, Piston Ring With Support Ring, Filler	L3
		Screw Pump	Bearing Box, Rotor(Entire), Shell, Dry Running Gas Seal With Gear Box	L3
		General Equipment	Drive Machine, Lubricating Oil Station, Etc.	Chart 2

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29	Compressor	Centrifugal Compressor	Bearing Box, Rotor(Entire), Division Plate, Shell, Dry Running Gas Seal With Gear Box, O-Rings	L3
		Screw Compressor	Bearing Box, Rotor(Entire), Shell, Dry Running Gas Seal With Gear Box,	L3
		Reciprocating Compressor	Crankcase, Sliding Crosshead, Piston Rod With X- Head, Piston Rod, Piston, Piston Ring With Support Ring, Filler	L3
		General Equipment	Drive Machine, Container, Heat Exchanger/Air Cooler, Pump Set, Safety Valve, Lubricating Oil Station, Softened Water Station, Etc.	Chart 2
30	Blower Fan	Fan（Main Part）	Bearing Box, Rotor(Entire), Shell, Shaft Seal With Gear Box	L2
		General Equipment	Lubricating Oil Station, Softened Water Station, Etc.	Chart 2
31	Agitator	Tank Reactor/Container （Main Part）	Shell, Nozzle, Manhole, Flange, Bolt, Gasket, Insulation, Support	L3
		Agitator	Mixer Shaft, Stirred Slurry, Coupling	L2
		General Equipment	Drive Machine, Lubricating Oil Station	Chart 2

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32	Refrigerating Machine (Ice Machine, Freezer)	Refrigerating Compressor（Main Part）	Stator, Rotor, Seal, Bolt, Screw Nut, O-Ring, Gasket, Condensate Liquid, Discharging Nozzle, Venting Nozzle, Main Nozzle	L2
		General Equipment	Drive Machine, Heat Exchanger, Container, Pump	Chart 2
33	Filter		Shell, Rotor, Bearing Box	L2
34	On-line analyzer		Acquisition process pipeline, Gas pipeline, Detection sensor and Accessories	L3

Chart 2 Content Depth of 3D Models of General Equipment from Package Equipment Supplier

No.	Supplier Category	Factory Object	Suggested Depth of Content	Model Accuracy Level
1	Packed Equipment Piping	Primary Piping	Installed By Supplier, Based On The Actual Location Information Include Pipe Welds	L2
		Auxiliary pipeline	Blowing, Flushing, Pipe Discharging, Pipe Venting, Etc.	L1
		Valve		L2
		Fastener	Flange, Bolt, Screw Nut, Gasket	L1
		Piping Component	Elbow, Diameter Change, 3-Way Valve, Plug, Linker, Tube Cap, Blind Spectacle	L1
		Equipment Subsidiary Instrument		L1

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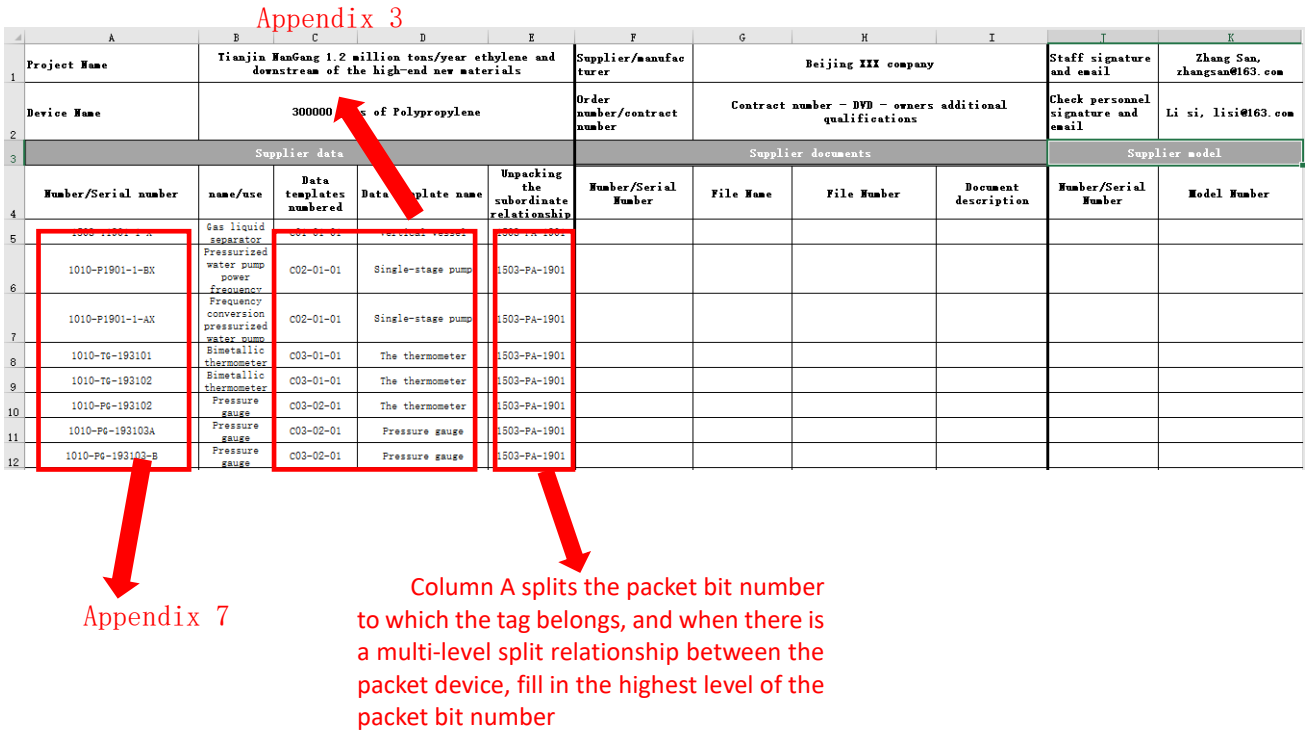
		Support and Hanging		L2
		Special Component	Tube Jacket, Etc.	L1
		Insulation		L1
2	Packed Equipment Structure	Beam, Column, Horizontal Support, Vertical Support, Foundation		L1
		Steel Platform, Ladder, Climbing Ladder, Railing		L1
		Pipe Rack, Cable Tray		L1
3	Packed Equipment Corollary Equipment And Component	Container, Heat Exchanger, Pump, Fan		L2
		Drive Machine	Motor, Steam Turbine, Turbine In Equipment Bundle	L1
		Parts	Valve	L1
4	Package Equipment Instrument	Control Panel, Switch Board		L1
		Outdoor Electrical Equipment		L1
		Operating Column, Switch Capsule, Operation switch		L1
5	Utility Station	Lubricating Oil Station, Softened water station, Inter-level equipment,	Include Piping, Instrument, and Structure.	L1

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		Steam Turbine Condensate System, Dosing Facility, Injecting Facility, Fire Extinguishing System, Fire Water System		
6	Safety relief device	Safety valves Bursting disc		L2

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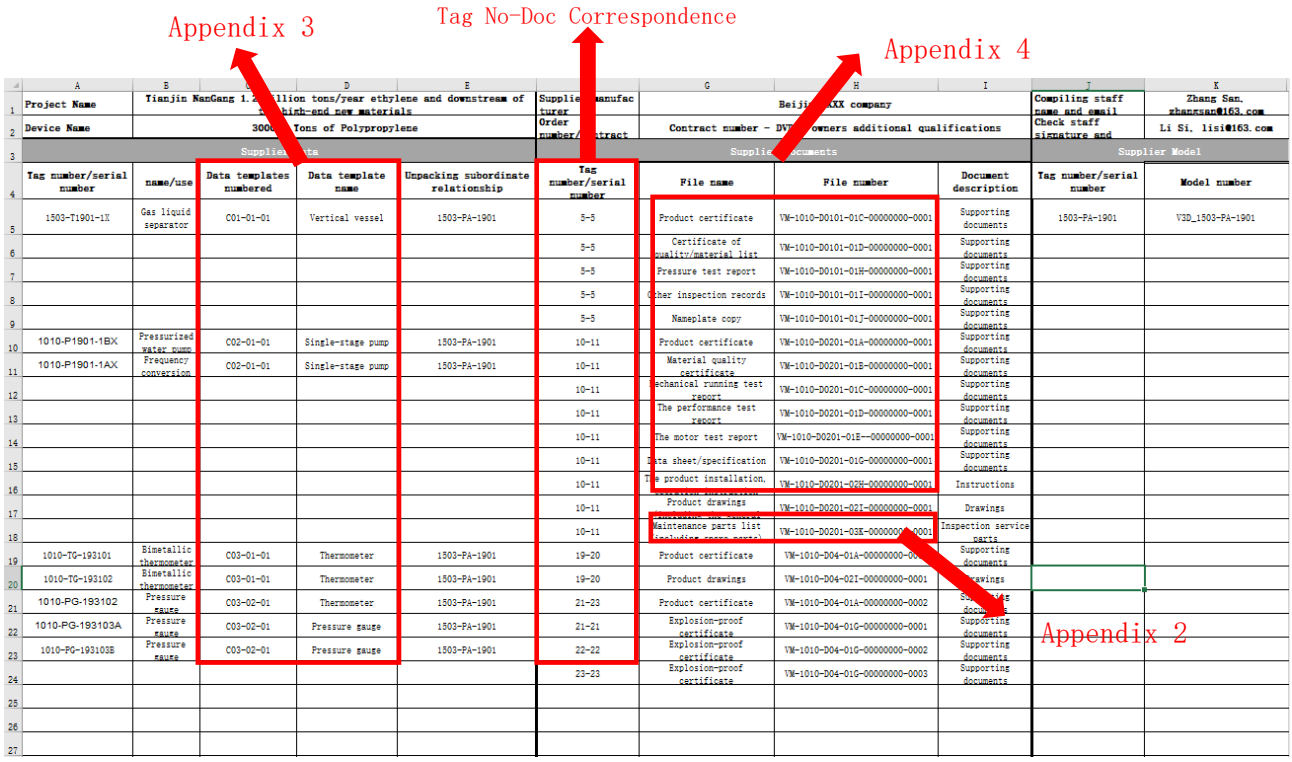
Appendix 6 Reference Form for Handover of Delivery Documents



	A	B	C	D	E	F	G	H	I	J	K
1	Project Name	Tianjin NanGang 1.2 million tons/year ethylene and downstream of the high-end new materials				Supplier/manufacturer	Beijing XXX company			Staff signature and email	Zhang San, zhangsan@163.com
2	Device Name	300000 t/a of Polypropylene				Order number/contract number	Contract number - DVD - owners additional qualifications			Check personnel signature and email	Li si, lisi@163.com
3	Supplier data					Supplier documents				Supplier model	
4	Number/Serial number	name/use	Data templates numbered	Data template name	Unpacking the subordinate relationship	Number/Serial Number	File Name	File Number	Document description	Number/Serial Number	Model Number
5	1010-P1901-1-A	Gas liquid separator	C01-01-01	Vertical vessel	1503-PA-1901						
6	1010-P1901-1-BX	Pressurized water pump power frequency	C02-01-01	Single-stage pump	1503-PA-1901						
7	1010-P1901-1-AX	Frequency conversion pressurized water pump	C02-01-01	Single-stage pump	1503-PA-1901						
8	1010-TG-193101	Bimetallic thermometer	C03-01-01	The thermometer	1503-PA-1901						
9	1010-TG-193102	Bimetallic thermometer	C03-01-01	The thermometer	1503-PA-1901						
10	1010-PG-193102	Pressure gauge	C03-02-01	The thermometer	1503-PA-1901						
11	1010-PG-193103A	Pressure gauge	C03-02-01	Pressure gauge	1503-PA-1901						
12	1010-PG-193103-B	Pressure gauge	C03-02-01	Pressure gauge	1503-PA-1901						

Example Package Device Digital Delivery Split List

As shown in the figure above, during the package device splitting stage, there is no need to fill in the two parts of the data sheet, "Supplier Document" and "Supplier Model".



	A	B	C	D	E	F	G	H	I	J	K
1	Project Name	Tianjin NanGang 1.2 [illegible]illion tons/year ethylene and downstream of [illegible]high-end new materials				Supplie[illegible]manufac turer	Beiji[illegible]XXX company			Compiling staff name and email	Zhang San, zhangsan@163.com
2	Device Name	3000[illegible]Tons of Polypropylene				Order number/[illegible]xtract	Contract number - DV[illegible]owners additional qualifications			Check staff signature and	Li Si, lisi@163.com
3	Supplier Data					Supplie[illegible]ocuments				Supplier Model	
4	Tag number/serial number	name/use	Data templates numbered	Data template name	Unpacking subordinate relationship	Tag number/serial number	File name	File number	Document description	Tag number/serial number	Model number
5	1503-T1901-1X	Gas liquid separator	C01-01-01	Vertical vessel	1503-PA-1901	5-5	Product certificate	VM-1010-D0101-01C-00000000-0001	Supporting documents	1503-PA-1901	V3D_1503-PA-1901
6						5-5	Certificate of quality/material list	VM-1010-D0101-01D-00000000-0001	Supporting documents		
7						5-5	Pressure test report	VM-1010-D0101-01H-00000000-0001	Supporting documents		
8						5-5	Other inspection records	VM-1010-D0101-01I-00000000-0001	Supporting documents		
9						5-5	Nameplate copy	VM-1010-D0101-01J-00000000-0001	Supporting documents		
10	1010-P1901-1BX	Pressurized water pump	C02-01-01	Single-stage pump	1503-PA-1901	10-11	Product certificate	VM-1010-D0201-01A-00000000-0001	Supporting documents		
11	1010-P1901-1AX	Frequency conversion	C02-01-01	Single-stage pump	1503-PA-1901	10-11	Material quality certificate	VM-1010-D0201-01B-00000000-0001	Supporting documents		
12						10-11	Mechanical running test report	VM-1010-D0201-01C-00000000-0001	Supporting documents		
13						10-11	The performance test report	VM-1010-D0201-01D-00000000-0001	Supporting documents		
14						10-11	The motor test report	VM-1010-D0201-01E--00000000-0001	Supporting documents		
15						10-11	Data sheet/specification	VM-1010-D0201-01G-00000000-0001	Supporting documents		
16						10-11	The product installation, [illegible] instruction	VM-1010-D0201-02H-00000000-0001	Instructions		
17						10-11	Product drawings	VM-1010-D0201-02I-00000000-0001	Drawings		
18						10-11	[illegible] Maintenance parts list [illegible]	VM-1010-D0201-03K-00000000-0001	Inspection service parts		
19	1010-TG-193101	Bimetallic thermometer	C03-01-01	Thermometer	1503-PA-1901	19-20	Product certificate	VM-1010-D04-01A-00000000-0001	Supporting documents		
20	1010-TG-193102	Bimetallic thermometer	C03-01-01	Thermometer	1503-PA-1901	19-20	Product drawings	VM-1010-D04-02I-00000000-0001	Drawings		
21	1010-PG-193102	Pressure gauge	C03-02-01	Thermometer	1503-PA-1901	21-23	Product certificate	VM-1010-D04-01A-00000000-0002	Supporting documents		
22	1010-PG-193103A	Pressure gauge	C03-02-01	Pressure gauge	1503-PA-1901	21-21	Explosion-proof certificate	VM-1010-D04-01G-00000000-0001	Supporting documents		
23	1010-PG-193103B	Pressure gauge	C03-02-01	Pressure gauge	1503-PA-1901	22-22	Explosion-proof certificate	VM-1010-D04-01G-00000000-0002	Supporting documents		
24						23-23	Explosion-proof certificate	VM-1010-D04-01G-00000000-0003	Supporting documents		
25											
26											
27											

Example of a package device digital delivery list

As shown in the figure above:

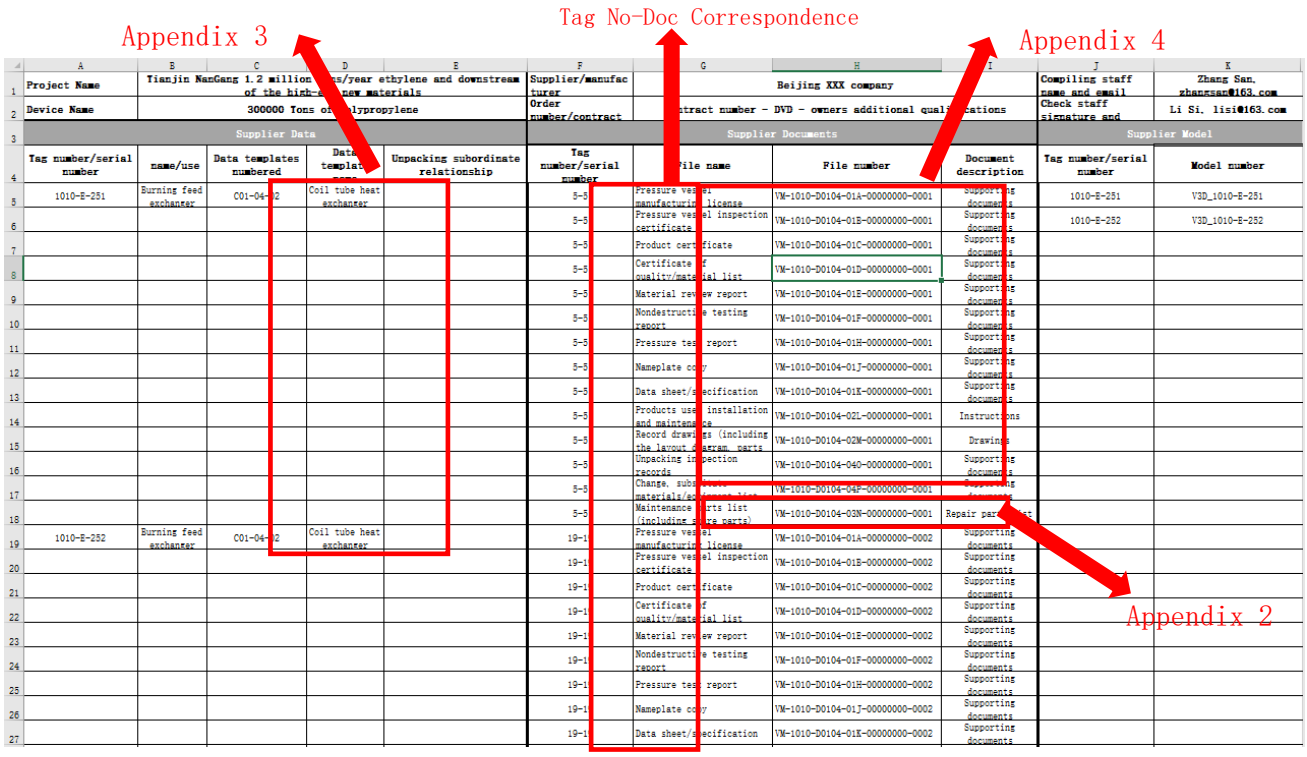
(1) A tag corresponds to a set of documents: column A, line 5, tag number 1503-T1901-1X, from column E line 5 "Certificate of Conformity" to line 9 "Nameplate copy" are all document files with this tag.

(2) When multiple tags share a set of files: line 10 of column A, line 11 of two tick 1010-P1901-1BX, 1010-P1901-1AX share lines 10-18 of column E.

(3) There are two of the above situations: rows 21-23 of column A correspond to three pressure gauge numbers, and "21-23" filled in line 21 of column E indicates that the three pressure gauges share the "product certificate" document; lines 22-24 correspond to the explosion-proof certificates of the three positions respectively.

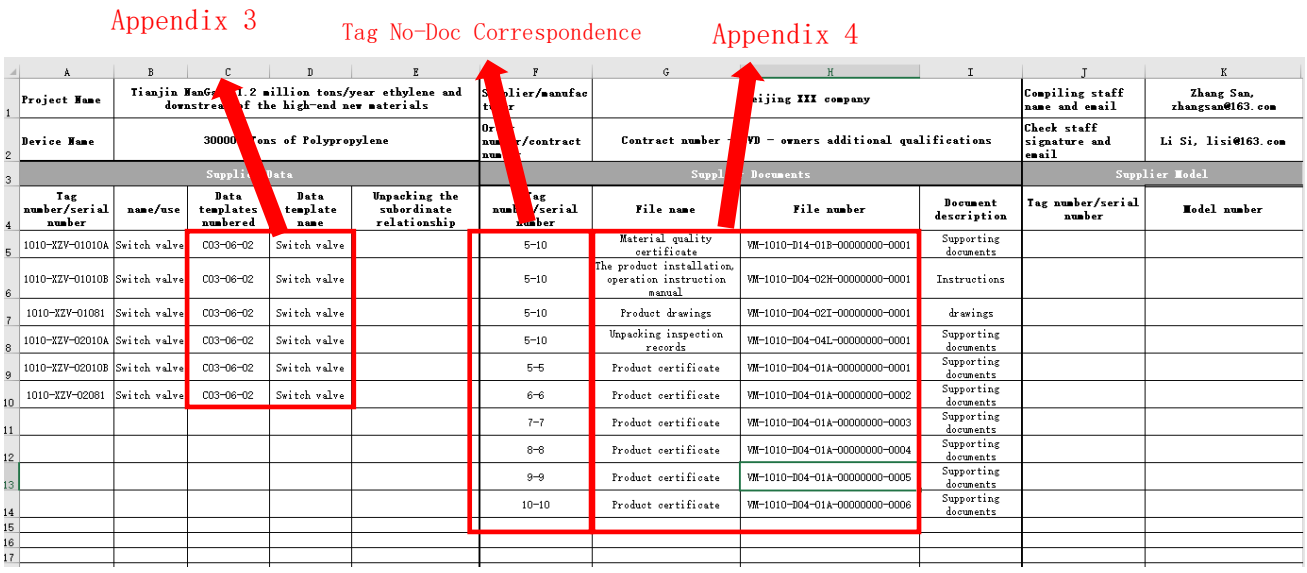
(4) Supplier model (I, J two columns): For package equipment, the 3D model is not submitted by splitting equipment, but is submitted as an STP file as a whole, named by the pre-unpacking tag, as shown in column I, line 5.

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	A	B	C	D	E	F	G	H	I	J	K
1	Project Name	Tianjin NanGang 1.2 million tons/year ethylene and downstream of the high-end new materials				Supplier/manufacturer	Beijing XXX company			Compiling staff name and email	Zhang San, zhangsan@163.com
2	Device Name	300000 Tons of Polypropylene				Order number/contract	Contract number - DVD - owners additional qualifications			Check staff signature and	Li Si, lisi@163.com
3	Supplier Data					Supplier Documents				Supplier Model	
4	Tag number/serial number	name/use	Data templates numbered	Data template name	Unpacking subordinate relationship	Tag number/serial number	File name	File number	Document description	Tag number/serial number	Model number
5	1010-E-251	Burning feed exchanger	C01-04-02	Coil tube heat exchanger		5-5	Pressure vessel manufacturing license	VM-1010-D0104-01A-00000000-0001	Supporting documents	1010-E-251	V3D_1010-E-251
6						5-5	Pressure vessel inspection certificate	VM-1010-D0104-01B-00000000-0001	Supporting documents	1010-E-252	V3D_1010-E-252
7						5-5	Product certificate	VM-1010-D0104-01C-00000000-0001	Supporting documents		
8						5-5	Certificate of quality/material list	VM-1010-D0104-01D-00000000-0001	Supporting documents		
9						5-5	Material review report	VM-1010-D0104-01E-00000000-0001	Supporting documents		
10						5-5	Nondestructive testing report	VM-1010-D0104-01F-00000000-0001	Supporting documents		
11						5-5	Pressure test report	VM-1010-D0104-01H-00000000-0001	Supporting documents		
12						5-5	Nameplate copy	VM-1010-D0104-01J-00000000-0001	Supporting documents		
13						5-5	Data sheet/specification	VM-1010-D0104-01K-00000000-0001	Supporting documents		
14						5-5	Products use, installation and maintenance	VM-1010-D0104-02L-00000000-0001	Instructions		
15						5-5	Record drawings (including the layout diagram, parts	VM-1010-D0104-02M-00000000-0001	Drawings		
16						5-5	Unpacking inspection records	VM-1010-D0104-04O-00000000-0001	Supporting documents		
17						5-5	Change, substitute materials/acceptance list	VM-1010-D0104-04P-00000000-0001	Supporting documents		
18						5-5	Maintenance parts list (including spare parts)	VM-1010-D0104-03N-00000000-0001	Repair parts list		
19	1010-E-252	Burning feed exchanger	C01-04-02	Coil tube heat exchanger		19-19	Pressure vessel manufacturing license	VM-1010-D0104-01A-00000000-0002	Supporting documents		
20						19-19	Pressure vessel inspection certificate	VM-1010-D0104-01B-00000000-0002	Supporting documents		
21						19-19	Product certificate	VM-1010-D0104-01C-00000000-0002	Supporting documents		
22						19-19	Certificate of quality/material list	VM-1010-D0104-01D-00000000-0002	Supporting documents		
23						19-19	Material review report	VM-1010-D0104-01E-00000000-0002	Supporting documents		
24						19-19	Nondestructive testing report	VM-1010-D0104-01F-00000000-0002	Supporting documents		
25						19-19	Pressure test report	VM-1010-D0104-01H-00000000-0002	Supporting documents		
26						19-19	Nameplate copy	VM-1010-D0104-01J-00000000-0002	Supporting documents		
27						19-19	Data sheet/specification	VM-1010-D0104-01K-00000000-0002	Supporting documents		

Example. Static device digital delivery list



	A	B	C	D	E	F	G	H	I	J	K
1	Project Name	Tianjin NanGang 1.2 million tons/year ethylene and downstream of the high-end new materials				Supplier/manufacturer	Beijing XXX company			Compiling staff name and email	Zhang San, zhangsan@163.com
2	Device Name	300000 Tons of Polypropylene				Order number/contract	Contract number - DVD - owners additional qualifications			Check staff signature and email	Li Si, lisi@163.com
3	Supplier Data					Supplier Documents				Supplier Model	
4	Tag number/serial number	name/use	Data templates numbered	Data template name	Unpacking the subordinate relationship	Tag number/serial number	File name	File number	Document description	Tag number/serial number	Model number
5	1010-XZV-01010A	Switch valve	C03-06-02	Switch valve		5-10	Material quality certificate	VM-1010-D14-01B-00000000-0001	Supporting documents		
6	1010-XZV-01010B	Switch valve	C03-06-02	Switch valve		5-10	The product installation, operation instruction manual	VM-1010-D04-02M-00000000-0001	Instructions		
7	1010-XZV-01081	Switch valve	C03-06-02	Switch valve		5-10	Product drawings	VM-1010-D04-02I-00000000-0001	drawings		
8	1010-XZV-02010A	Switch valve	C03-06-02	Switch valve		5-10	Unpacking inspection records	VM-1010-D04-04L-00000000-0001	Supporting documents		
9	1010-XZV-02010B	Switch valve	C03-06-02	Switch valve		5-5	Product certificate	VM-1010-D04-01A-00000000-0001	Supporting documents		
10	1010-XZV-02081	Switch valve	C03-06-02	Switch valve		6-6	Product certificate	VM-1010-D04-01A-00000000-0002	Supporting documents		
11						7-7	Product certificate	VM-1010-D04-01A-00000000-0003	Supporting documents		
12						8-8	Product certificate	VM-1010-D04-01A-00000000-0004	Supporting documents		
13						9-9	Product certificate	VM-1010-D04-01A-00000000-0005	Supporting documents		
14						10-10	Product certificate	VM-1010-D04-01A-00000000-0006	Supporting documents		
15											
16											
17											

Example. Instrument digital delivery list

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Appendix 7 Package Equipment Partition Principle

The dismantling bit number of the package equipment shall follow the principle of dismantling as much as possible, and shall be decided in consultation with the designer.

1. A single device named in the PID, following the PID.

2. The single equipment that is not named in the PID shall be named in accordance with the project "Design Unit Numbering Regulations". If necessary, the "Designer Numbering Regulations" can be downloaded from the unified management platform for digital delivery.

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Appendix 8 Operational Guidance for Suppliers' Digital Delivery Management Platform

Instruction for Supplier Digital Delivery and Management Platform

(Supplier Version)

平台网址Website: https://www.digital-handover.cn/#/login

供应商账号Supplier account : North Huajin United Petrochemical Co., Ltd. Supplier Code (8-digit numbers)

初始密码Initial password: A12345@6

浏览器推荐Recommended browsers: Google Chrome, Microsoft Edge , etc. (Do not support IE browser)

I. 用户登录 User login

1.1 供应商请使用上述账号、密码登录平台，初次登录后需修改密码。

Supplier should use the account and initial password mentioned above to log in. New password is required to set after the first-time login.



1.2 从平台首页点击“华锦项目”进入项目页面。

Click on"Huajin Project" on home page for more detailed information.

