Base Load Power Hub (BLPH)

3D MODEL MANAGEMENT PROCEDURE

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123A90-PML-DIG-PL-00004_Att01	Project Specific 3D Requirements
123A90-PML-DIG-PL-00004_Att02	3D Model Progress Calculation

1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

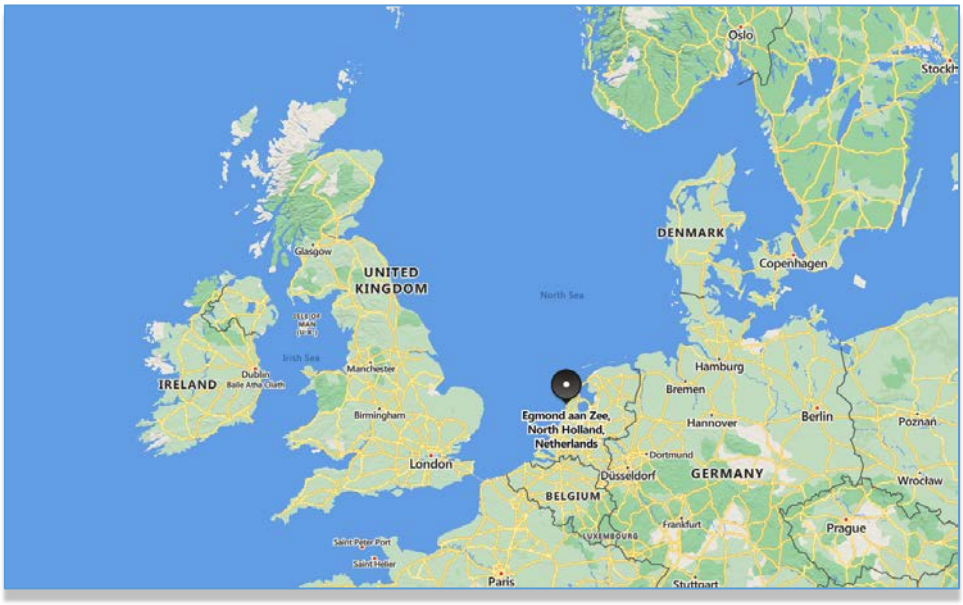


Figure 1 - HOLLANDSE KUST NOORD WIND PARK Location Map

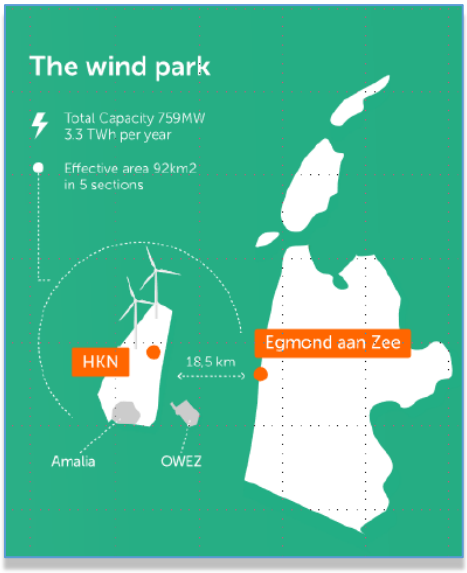


Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

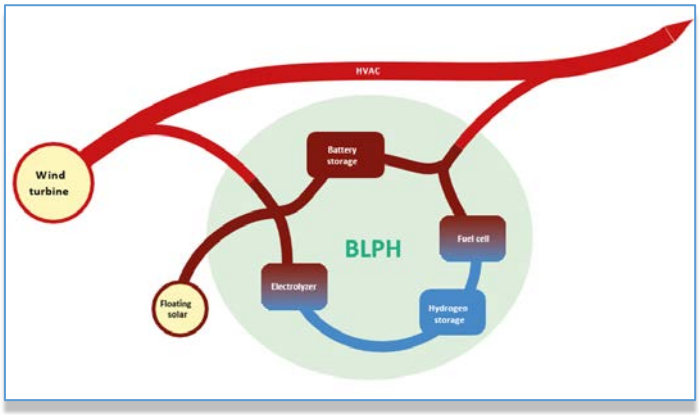


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

2 DOCUMENT SCOPE

The overall objective of the COMPANY regarding the Information Management is to ensure that the CONTRACTOR provides COMPANY with the minimum level of information required to effectively manage its assets and business. Good quality information adds value throughout the full lifecycle of the Asset from Project Execution through Operations to Decommissioning.

COMPANY intend to maximise the use of project information by using it in digital systems which will manage and validate all information, enabling improvements in engineering and construction information consistency, enabling quick search capability between all related data and documentation sources, and integrating with other digital systems including 3D models, photogrammetry, Asset, Facility, Operational and Production management systems.

2.1 REFERENCES

Doc. No.	Description

Table 1 - Reference Documents

2.2 DEFINITIONS

Term	Description
Attribute	Property or characteristic of an Asset object
Commissioning	The functional verification of equipment and facilities that are grouped together in systems

Company	The party that initiates the project. The term "COMPANY" may also include agents or consultants authorized to act for, and on behalf of, COMPANY.
Construction	The project activity at which equipment and structures are installed/erected.
Contract	An acceptance of legal relations between two or more parties for the transfer of goods or services for value.
Data	The term «data» refers to a collection of structured information that can be supplied to, stored in or processed by an IT application. Data is always associated to the time at which exclusively created.
Engineering Database	Managed collection of process plant data that represents information about objects for a particular Asset.
Information	Information in the form of documents and data including drawings, indexes, databases, 2D and 3D models etc.
Operation	The organization responsible for operating the plant after start up.
Project	Unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and resources.
Project Tools	Refer to all the applications used during the project execution, including Engineering systems (e.g. 2D and 3D cad), procurement systems, construction systems, etc.
Tag	Label composed of letters and numbers allowing to uniquely identify an Asset's object.

Table 2 - Definitions

2.3 ACRONYMS

Acronym	Description
NA	Not Applicable
LCI	Life Cycle Information
MTO	Material Take-Off
PCV	Pressure Control Valve
E3D	Aveva Everything 3D Software
PAU	Plant Area Unit

PID	Process and Instrumentation Diagram
PBS	Plant Breakdown Structure
MDR	Master Document Register
E	Engineering Phase
P	Procurement Phase
C	Construction Phase
DMS	Document Management System

Table 3 - Acronyms

3 SCOPE OF WORK

The Detail Engineering of the BLPH project includes the realisation of a 3D model.

The 3D CAD Model is a collection of graphical data and databases which describes the facilities of a plant for design, checking and visualisation purposes. The 3D CAD Model is accessed via a 3D CAD system. The graphical data and the engineering attributes shall be an integral part of an engineering database supporting the design process which will be ultimately owned by the Company.

The 3D CAD engineering databases shall allow integration and consistency of the different design stages and the different disciplines, such as piping, civil, structure, mechanical, safety, instrumentation, electrical and HVAC equipment into one 3D CAD Model.

3.1 OBJECTIVES OF THE 3D MODEL

The 3D CAD Model shall provide a visual check on safety, operability and maintainability of the facility during the engineering, procurement, construction, commissioning, installation, production and maintenance phases.

The 3D CAD Models delivered to the Company should allow as a minimum to:

- Perform clash checks to ensure 3D CAD Model is clash free;
- Confirm proper escape ways and access for maintenance, handling and lifting;
- Confirm process requirements for slopes, low points, etc.;
- Extract Material Take-off (Bills of Material);
- Produce 2D engineering drawings such as plot plans, layouts with safety distances, plan and elevation views, etc.;
- Produce piping drawings;
- Produce safety drawings;

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- Produce other engineering disciplines drawings as structural, HVAC, instrumentation and electrical, etc.
- Extract data for specific studies such as piping stress analysis, 3D explosion modelling, radiation studies, gas dispersion studies, etc.;
- Allow Real-Time visualization of the 3D CAD Model using third party software

3.2 3D CAD SYSTEM

3D Model of the topsides BLPH Platform will be developed with the AVEVA E3D software version 3.1.6.

For 3D review, Autodesk Navisworks 2020 will be used.

3.3 STRUCTURE AND BUILDING

All primary and secondary structural steel members, including columns and bracings of the BLPH Topsides and Transition Piece will be developed and defined in the TEKLA software and imported in E3D with a specific tool (TEKLA interoperability).

3.4 SAFETY

Escape ways will be developed and defined in the 3D model. Safety drawings (escape ways, safety equipment…) will be extracted from 3D model.

The following safety equipment are intended to be considered in the 3D model during the Detail Engineering stage (if any):

- Deluge skids,
- Fire Hydrants and Fire Monitors
- Safety Showers
- Twin Agents skids
- Bottle racks for fire extinguishing systems
- Lifesaving equipment

3.5 INSTRUMENTATION

The following will be considered during the Detail Engineering phase in the 3D model:

- All instrumentation valves (PCV, PSV, ,…) piping flow elements, etc…, flowlines, critical lines and lines in congested areas will be considered in 3D model.
- For "off-line" instrumentation, only tappings will be indicated, with due consideration taken to installation /access and process constraints.
- Trays and ladders shall be modelled if their sizes are above or equal to 100mm.

3.6 ELECTRICAL

The following will be considered during the Detail Engineering phase in the 3D model:

- Electrical equipment (Junction boxes, heat tracing, lighting fixtures and their support, small power sockets, welding outlets and power junction boxes, local Control Stations and their supports (if any), Field Electrical panels (if any) and cable trays/ladder and their supports in the substation false floor, MCT frames, etc…)
- Trays and ladders shall be modelled if their sizes are above or equal to 100mm.
- Equipment in technical room will be modelled in 3D model.

3.7 ARCHITECTURAL

All buildings and shelters including architectural items, such as roofs, walls, ceilings, floors, louvres and relief panels shall be modelled.

All equipment and furniture located inside buildings, technical rooms, control rooms, etc. shall be modelled. The electrical, instrumentation and telecom equipment (switchboard, transformer, cabinets, panels, etc.) located inside buildings shall be modelled within the corresponding discipline.

All doors, gates and windows shall be modelled respecting the following requirements:

- Doors shall be modelled in open position and as unique object independent of the wall.
- Windows shall be modelled in closed position.
- Gates shall be modelled in open position and as a unique object.

For walls and architectural layers related to the walls, such as insulation or fireproofing, corresponding opening shall be modelled at the location of doors and windows.

All penetrations through buildings and shelters with piping, cables, ducts, etc. shall be modelled.

3.8 PIPING

All piping lines, including underground piping, as defined in the P&IDs and whatever the nominal diameter for the As-Built 3D CAD Model, shall be modelled with in-line appurtenances and instruments. The corresponding insulation, proofing and tracing information shall be included in the 3D CAD Model.

The requirements for modelling of piping in equipment packages are identical to modelling of piping outside package boundaries.

The manual valves should be modelled in the position (open/close) corresponding to the normal production situation, in accordance with P&IDs requirements.

The instrumented and automated valves shall be modelled with the corresponding actuators, accessories and access platforms when necessary.

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All piping and valves, including manual valves shall be tagged in the 3D CAD Model in accordance with P&ID.

Piping MTO will be generated from the 3D model.

3.8.1 Piping lines studies creation

The 3DO's shall model all non-official lines, such as copies, other purposes lines or lines without a specific project name, on hierarchy "000-PIPE-STUDY".

For a line study generated from an existing project line as an alternative, the 3DO shall input the attribute NAME of related PIPE with the existing line name plus the ending "-STUDYn", where n indicates the progressive number assigned following the" creation priority order.

In case of a new line with incomplete number or undefined data, the 3DO shall input on name attribute the fluid code with the addition of the ending "-STUDYn", where "n" indicates the progressive number assigned following "th" creation priority order.

The 3DO shall model all lines without line number and piping class on hierarchy "000-PIPE- STUDY": lines can be moved to proper hierarchy only once all missing data are fully defined.

All lines created under the "000-PIPE-STUDY" hierarchy will be deleted before issuing in as built.

3.9 HVAC

All HVAC equipment and packages, including at a minimum coolers and chillers, shall be modelled with corresponding relevant ducts accessories (dampers, valves, sensors, etc.) and supports.

3.10 SUPPORT DESIGN

All piping/cable tray/HVAC support will be modelled and shown on the 3D Model, using the MDS module of E3D and leveraging on the Project specific Multidisciplinary Supports Catalogue.

Support MTO will be generated from the 3D model.

3.11 EQUIPMENT MODELLING

All mechanical equipment shall be modelled with as a minimum, vessel trims, instrumentation, nozzles, skirts and supporting items. Modelling shall be made according to equipment data sheets and further updated with Vendor data.

In addition to the nozzles connected to process lines, all nozzles for instrument connections shall be modelled in order to validate the layout of the vessel area and the definition of the necessary access platforms to the instruments or valves.

Packaged or skidded equipment shall follow the same requirements as mechanical equipment and shall be modelled with the same level of detail as outside package boundaries. All tagged components shall be included in the 3D CAD Models as individually selectable geometric objects.

As part of the modelling of the mechanical equipment, handling and maintenance areas shall be considered and modelled.

3.12 HANDLING

All main handling ways (main routes used for equipment transfer to the deck laydown area) will be considered in the 3D model during the Detail Engineering stage. Handling volumes for main mechanical equipment will be also modelled to avoid obstructions. In particular, the 3D modelling will take into account the heaters bundle removal area as well as the pig's removal area, as required.

In addition, all the transfer volumes (hatches) will be defined in the 3D model.

Main fixed handling equipment (monorail, davit) will be shown.

3.13 ESCAPE ROUTES

Escape routes are reproduced by a STRU or EQUI element with at least two equipment primitive boxes, with:

- A footprint box with height 100 mm above deck or floor, with OBST 1 and level 0-10 (visible)
- A headroom box above the footprint box with the escape route actual height, with OBST 1 and level 8-10 (hidden)
- The footprint box and headroom box shall have the same width.

3.14 ACCESS ROUTES

Access routes are represented by a STRU or EQUI element with at least two equipment primitive boxes, with:

- A footprint box with height 100 mm above deck or floor, with OBST 1 and level 0-10 (visible)
- A headroom box above the footprint box with the escape route actual height, with OBST 1 and level 8-10 (hidden)
- The footprint box and headroom box shall have the same width.

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3.15 MAINTENANCE VOLUMES

Elements representing maintenance volumes shall have OBST 1 and Level 8-10. These volumes provide a dedicated space necessary for maintenance (for ex. equipment internal parts and valves).

3.16 FIRE WATER NOZZLE COVERAGE ELEMENTS

If cone and pyramid graphical elements are placed in the model to show the volume and area that a fire water nozzle covers, the AVEVA Plant equipment primitives used to display such nozzle coverage shall have OBST 0 and Level 8-10 in order to be normally hidden in the model.

3.17 CRANE RADIUS

Design elements used to represent the radius of movement of a crane in the facility shall use level 8-10 and OBST 0. The elements representing the physical crane itself, shall use level 0- 10 and OBST 2.

3.18 EXCLUSIONS ZONES

Exclusion zones for transportation, installation and drilling activities will be modelled as required.

3.19 FUTURE EQUIPMENT AND PIPING

Future equipment and Piping will be considered for space reservation.

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4 3D MODEL ORGANISATION

4.1 E3D ADMINISTRATOR - DATA BASE

The E3D administrator - data base is responsible for the following activities:

- Development and updating of the piping data base
- Administration of user files
- Allocation of user files
- File maintenance
- Control of all documentation associated with the system
- Set-up and preparation of data exchange between AVEVA DIAGRAMS & AVEVA ENGINEERING
- Import of Piping Classes from CLA PUMA/ELENA.
- Import of the 3D structural steel model, developed with TEKLA.

4.2 3D MODEL COORDINATOR

The overall supervision of the non structural 3D modelling activities will be performed by a 3D Piping co-ordinator. He will be responsible for the following activities:

- Co-ordination/filing of the disciplines input in the 3D Model activities under his responsibility
- Coordination of the non-structural 2D CAD production
- Coordination with the discipline lead engineers with regards to layout design issues and preparation of Review Comment Sheets
- Development of the plot plans, piping, escape routes and mechanical handling layouts
- Coordination of software issues and preparation of Problem Report Sheets
- Assist the project management in setting the project review
- Ensure management of equipment data used in the 3D Model
- Responsible of 3D model schedule and review session
- Interface with other disciplines
- Ensure that the 3D model is developed according to the latest applicable data
- Instruction to modify the 3D model is managed by layout engineer through official intenal memo

4.3 3DO (3D OPERATOR)

- 3DO executes the plant modelling under piping PSL supervision, with the documentation received.

- Checks the activities done and sends back to piping PSL the documentation used for correct archiving.

4.4 ACTIVITIES DESCRIPTION

At the start of the project the Piping DM, Piping PSL and 3DA check the 3D model basic rules for the following points, with particular focus on:

- Project setting on Aveva E3D;
- Database creation;
- Piping class and catalogues import;
- 3DO's system accesses;
- 3D modelling team responsibilities;
- 3D modelling procedure details.

The 3D modelling procedure provides for the following steps:

The PSL's send to Piping PSL the list with the item and relevant drawing. The piping PSL transfers the same document and information to 3DO's.

Rules for pending information (HOLD ITEM): if any, it shall be properly identified and communicated by PSL's to Piping PSL, who will ensure proper visibility and tracking The 3DO's execute the 3D modelling under piping PSL supervision.

The 3DO's give back to Piping PSL the documentation used during 3D modelling activities for correct archiving.

3D model progress will be updated by extracting all reference data from modelled items. 3DA is responsible to extract data and report with particular reference to piping MTO.

PSL's are checking that the relevant activities are made according to the contractual/technical documentation and the best engineering practices.

PSL's shall perform the following activities:

- Transfer to Piping PSL, as soon as possible, all necessary information useful for 3D modelling activities such as document work copies, check copies and preliminary documents in progress;
- For the purpose of assigning the correct progress data, certify all items status.
- Check relevant items, in compliance with the last document revision.
- Interface with Piping PSL to guarantee the modelling correctness and consequently the correct engineering development.

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- Provide support to 3DO's during activities relevant to their discipline items.
- Organize periodical 3D model Interference Check.

PEM, as mutually agreed with all PSL's, organizes in advance - ahead of the scheduled 3DMR - an internal 3DMR.

Three (3) different 3D model review steps are foreseen, according to the engineering progress, at 30%, 60% and 90%.

Following the official 3DMR, Piping PSL prepares the 3DMR Report for official issue to client.

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5 ENGINEERING DEVELOPMENT

The following rules will govern the engineering for Detail Engineering the 3D Model.

5.1 P&ID CHANGES

A complete monitoring of the P&ID changes will be performed. As part of the monitoring, the following procedure will be followed:

- P&ID revision will be issued to the 3D Piping co-ordinator with all changes clearly identified
- The 3D Piping co-ordinator will evaluate the impact on the 3D Model
- The 3D Piping co-ordinator will then planned accordingly the updating of the 3D Model

5.2 EQUIPMENT/SKID INFORMATION

The integration of 3D CAD Models of equipment or packages developed by Subcontractor or Vendor into the 3D CAD Model is under the Contractor responsibility.

The Contractor shall ensure that import is relevant with the level of detail of the main 3D CAD Model which generally implies shape simplification and detail being removed from the original 3D CAD Model provided by the Subcontractor or Vendor.

It may be tolerated to integrate 3D CAD Model of equipment or packages developed with a third party software directly within the main 3D CAD Model provided that:

- the exchange format will be compatible with MCAD module of Aveva E3D, such as STEP-File, IFC, AutoCAD Files (.dwg dxf), Inventor Files (*.ipt, *.iam), Revit Files (*.rvt, *.rfa), SolidEdge Files (*.par, *.asm, *.pwd,*.psm), SolidWorks Files (*.sldprt, *.sldasm, *.sldfpp, *asm), STEP Files (*.stp, *.step, *.stpz, *.stp.z), Universal 3D Files (*.u3d).
- the exchange file is cleaned of any unnecessary details that would slow down the 3D CAD Model, such as, but not limited to: internals elements, bolting, fillets, chamfers, engraving, holes, etc. prior to its integration within the 3D CAD Model.
- Items involved in the cabling design (local JB's, control Panels, Motors, …) shall be modelled by CONTRACTOR as Aveva equipment, with the connection points.

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5.4 ISOMETRIC

The 3D Model shall be used to developed and issue fabrication deliverables as isometrics with the "ISODRAFT" module.

All the isometric information shall be as minimum as following:

- Line Number;
- Process Data;
- Piping Material List;
- Notes and information;
- Document Number;
- Revisons and data.
- The ISO format has imported directly in Isodraft.

6 3D MODEL VERIFICATION

The objective of this paragraph is to set out the principal rules for review and checking of the 3D Model during the Detail Engineering phase.

6.1 DESIGN REVIEW

On a continual basis, internal design review check of the 3D model will be organised. "Walkthrough" capability of the design review software will be used.

Each problem encountered will be formally detailed with drawings extracted from the 3D model.

6.2 CLASH REVIEW

At detailed engineering stage, once the model has reached a certain level of complexity, a validation of the overall modelling must be performed and clash freeing procedure must be initiated, the aim of this procedure being to resolve all different clashes existing within the model. As this checking requires to stop all activities on the model, the following procedure will be followed during the project:

- A date for clash checking is set by the 3D coordinator.
- Clash check program is run and a clash action report is issued. This report shall be sorted by discipline and shall differentiate the different types of clash.
- Resolution of the clashes is performed with all disciplines involved. Solutions are review and agreed by the disciplines. Some clashes may also be accepted.
- Modifications are performed, and a new clash check is performed to confirm the clash free status of the model and a finalized clash report is issued.

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7 MODEL DATA COMPILING: GENERAL RULES

During the activity of items modelling, the project naming rules shall apply in order to have the information and the data easily available, as well as to ensure uniformity in their filling and simplify navigation in the model.

The use of item standard naming rules allows:

- Immediate availability of information
- Item's status required to update the model progress

7.1 COMPILING NAME PROPERTY FOR TAGGED ELEMENTS

Tagged elements shall be modelled by 3DO's indicating the TAG Code present in the original document in the NAME attribute of the element.

7.2 COMPILING NAME PROPERTY FOR NON-TAGGED ELEMENTS

3DO shall model all non-tagged elements, for example:

- ESCAPE WAYS;
- MAINTENANCE AREA;
- LAY DOWN AREA;
- VOLUME …;

into the respective area of the model, filling the NAME property with a brief description of the object.

The correct description is agreed with the discipline PSL and shall be consistent among the project and same type of elements.

3DO periodically extracts reports to check the correct modelling and status of non-tagged ele- ments.

7.3 MODEL DATA COMPILING

The modelled elements have attributes to be filled with project data; these data can be viewed, extracted and used during design.

3DO shall enter the attributes of each discipline item into the dedicated module.

General project data (for ex. line list data, equipment list data) come from Engineering through the executing of C/U feature by the 3DO.

During 3D model development, 3DO'S shall fill in the following data:

- NAME id of the modelled element, corresponding to the TAG (in case of tagged elements) or to a defining word (in case of non-tagged elements)

- :STATUS progress status, to be compiled only when the element is modified, as defined in Att. 02.
- :SITUATION element condition: New / Existing / Future / Hold / Loose / Hook-Up / Trim Line
- :DRWGNO Reference document number, for ex. P&ID; Data Sheet; Plot plan
- :DRWGREV Reference document number revision

In case of uncertain data, 3DO'S shall input a brief description of the origin of the data used.

Ex.:

DRAWING NUMBER – "data import from feed": element modelled as in FEED engineering

DRAWING NUMBER – "pump catalogue, 14/05/2017": element modelled using a pump catalogue.

8 AS-BUILT

The 3d model will be updated with the As-built Documentation produced from various disciplines during erection activities. Moreover, field welds will be added on piping lines.

All UDA (User Defined Attribute) reference drawings will be update with As-built revision.

After these activities, All DB descriptions (Content Type) will be switched from project [PRO] to As-built [ASB]

All items with the "STUDY" suffix will be deleted before issuing as constructed.

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Base Load Power Hub (BLPH)

3D MODEL MANAGEMENT PROCEDURE

Attachment 01

PROJECT SPECIFIC 3D REQUIREMENTS

Document Number: 123A90-PML-DIG-PRO-00004_Att01

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1 SCOPE

Scope of this attachment is to collect and describe the project specific requirements related to the 3D model activities.

The following topics will be presented below:

- E3D architecture and DB catalogue
- Naming rules for 3D objects
- Draft/Draw hierarchies
- E3D and Naviswork colour codes

1.1 REFERENCES

Doc. No.	Description
123A90-PML-DIG-PL-00004	3D Model Management Procedure
123A90-PML-DIG-PL-00004_Att02	3D Model Progress Calculation

2 E3D ARCHITECTURE AND CATALOGUE

2.1 E3D MODEL HIERARCHY

E3D system has a tree-structured hierarchy allowing a proper organization of the model and an easy navigation in the same.

The design model is organized into a deck code-discipline based on SITE-ZONE hierarchy, where the SITE shall contain all elements for a discipline in each facility area.

All changes to the hierarchy and/or additions of SITE, ZONE must be agreed and approved by the PSL and 3DA.

As for everything that has to be created under the ZONE it has to be agreed with the 3DA

2.1.1 LOCATION Syntax

Location Code	Location Description
100	Under Lower Deck
101	Lower Deck
102	Upper Deck
JKT	Mono Pile

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2.1.2 Discipline Codes

Discipline Codes	Description
STRU	Structures
PIPE	Piping
SUPP	Supports
MECH	Mechanical
ELEC	Electrical
INST	Instrumentation
SFTY	Safety
HNDL	Handling
TELE	Telecom
ARCH	Architectural
HVAC	Hvac

2.1.3 Fluid Codes

Fluid Codes	Description
AV	Atmospheric Vent
CB	Concentrated Brine
CI	Chemical Injection
DI	Deionised Water
HY	Hydrogen
IA	Instrument Air
DM	Demineralized Water
N	Nitrogen Gas
SWR	Sea Water Return
SWS	Sea Water Supply
VL	LP Vent
WW	Waste Water

2.1.4 Site creation Information

SITE name in the 3D model shall be:

<location code>-< discipline code >

/101-MECH

Attribute DESC: 'Lower Deck'

SITE name in the 3D model for study:

/MECH-STUDY

Attribute DESC: 'Site for Mechanical Study'

The piping SITE to be created will be different from others as here below indicated:

<000>-< discipline code >

/000-PIPE

Attribute DESC: 'Deck'

/000-PIPE-STUDY

Attribute DESC: 'Site for Piping Study'

2.1.5 Zone creation Information

ZONE name in the 3D model shall be:

<location code>-< discipline code >-<object type>

/100-ELEC-EQUIPMENT

/100-ELEC-CABLETRAY

/100-ELEC-JUNCTIONBOX

/100-ELEC-MISC

Only for Piping ZONE the name is created by:

<PIPE>-<FLUID CODE>

/PIPE-AV

Attribute DESC: 'Atmospheric Vent'

All SITE and ZONE Position and Orientation shall be:

*Orientation**: E 0 N 0 U 0 WRT World***

*Position**: Y is N WRT /* and Z is U WRT World***

2.3 E3D DB NUMBERING

During E3D project set-up, the SITES will be created in the following databases (DB):

Owning Team	Name	Description	Type	Number
ARCHITECTURAL	DB-ARCH-001	Database for Architectural Activity	DESI	3540
ARCHITECTURAL	DB-ARCH-001S	Database for Architectural Study	DESI	3541
HVAC	DB-HVAC-001	Database for Hvac Object	DESI	3530
HVAC	DB-HVAC-001S	Database for Hvac Object Study	DESI	3531
HANDLING	DB-HANDL-001	Database for Handling Activity	DESI	3535
HANDLING	DB-HANDL-001S	Database for Handling Activity Study	DESI	3532
SAFETY	DB-SFTY-001	Database for Safety Object	DESI	3525
SAFETY	DB-SFTY-001S	Database for Safety Object Study	DESI	3526
TELECOM	DB-TELE-001	Database for Telecom Object	DESI	3520
TELECOM	DB-TELE-001S	Database for Telecom Object Study	DESI	3521
ELECTRICAL	DB-ELEC-001	Database for Electrical Object	DESI	3510
ELECTRICAL	DB-ELEC-001S	Database for Electrical Object Study	DESI	3511
INSTRUMENT	DB-INST-001	Database for Instrument Object	DESI	3515
INSTRUMENT	DB-INST-001S	Database for Instrument Object Study	DESI	3516
MECHANICAL	DB-MECH-001	Database for Mechanical Object	DESI	3505
MECHANICAL	DB-MECH-001S	Database for Mechanical Object Study	DESI	3506
PIPING	DB-PIPING-001	001 Database for Piping	DESI	3500
PIPING	DB-PIPING-001S	Database for Piping Study	DESI	3501
ADMINCRW	CRW-PROJECT-DICT		DICT	3102
ADMINCRW	CRW-PROJECT-PROP		PROP	3103
ADMINCRW	CRW-PROJECT-CATA		CATA	3100
SCHEMATIC	RM_DICTIONARY		DICT	2104
SCHEMATIC	DIAG-STECIL-TEMPLATE	Schematic Template and Stencil	SCHE	2112
SCHEMATIC	CRW-All-Stencil	Standard Stencil	SCHE	3460
SCHEMATIC	CRW-ALL-PROJECT-DIAGRAI	All Project Diagrams	SCHE	3461
MASTER	TAGS-DICT	Tags adm dictionary	DICT	3352
MASTER	TAGS-GEN	Crosswind Grids	ENGI	3315
MASTER	TAGS-LIST	Tags Adm List	ENGI	3316
MASTER	TAGS-CONF	Tags adm configuration	CONF	3350
MASTER	TAGS-CONC	Tags adm conceptual model	RDFN	3351
STRUCTURES	DB-STRU-001	Database for Structural Object	DESI	3550
STRUCTURES	DB-STRU-001S	Database for Structural Study	DESI	3551

2.4 TEAMS

Name	Description		
ARCHITECTURAL	Design Team for Architectural Department		
HVAC	Design Team for Hvac Department		
HANDLING	Design Team for Handling Activity		
SAFETY	Design Team for Safety Department		
TELECOM	Design Team for Electrical Department		
ELECTRICAL	Design Team for Electrical Department		
INSTRUMENT	Design Team for instrument Department		
MECHANICAL	Design Team for Mechanical Department		
PIPING	Design Team for Piping Department		

3. MULTIDISCIPLINARY ADDITIONAL INFORMATION AND 3D MODEL ATTRIBUTES

3.1 PIPING

3.1.1 Piping Lines Organization

Each SITE is containing the ZONE(S) where 3DO shall model the objects PIPE.

Each ZONE represents a system and is identified according to the same system tag indicated on the line list.

Each ZONE contains the piping lines related to the indicated system.

The BRAN of each PIPE does not need to have the attribute NAME.

The system automatically gives to the BRAN the line name by adding the ending "/Bn" where "n" indicates the BRAN progressive number assigned following the creating order priority.

EXAMPLE: BRAN: 1"-DM-038-01CS-N/B1

It is recommended that the 3DO shall model the main BRAN first and record it with the ending "/B1" so as to allow an easier identification of the line routing.

3.1.2 Trim Lines and Hook Up Tag Rules (to be defined)

For the TRIM LINE (equipment) the name of PIPE may be change with instrumentation reference code or with the code of equipment nozzles.

Example

- ***NAME_1:*** *1"-DM-038-01CS-N*
- ***BRANCH_1*** *3"-DM-038-01CS-N*
- ***BRANCH_1*** *2"-DM-038-01CS-N*
- ***Attribute :SITUATION:*** *Trim Line*

3.1.3 Hook-Up Lines

Hook-Up lines will be modelled as PIPE. If only a part of the line is in Hook-up it must be modelled as a bran with the suffix / HOOK in the name.

- ***NAME PIPE:*** *1"-DM-038-01CS-N*
- ***NAME HOOK-UP BRAN:*** *1"-DM-038-01CS-N/HOOK<sequential number>*
- ***Attribute HOOK-UP BRAN ":SITUATION":*** *<Hook-up number>*
- ***Attribute HOOK-UP BRAN "PURPOSE": HOOK***

3 MODULE DRAFT

3.2 DRAFT HIERARCHY

3.2.1 Discipline Codes in AVEVA Draft

The draft module has a tree hierarchy that allows a correct organization of the drawings.

The project is organized on the type DEPT, where the DEPT must contain the descriptive codes of the reference discipline.

Discipline Codes in AVEVA Draft	Description
ARCH	Architectural
CIVI	Civil
ELEC	Electrical
HVAC	HVAC
INST	Instrumentation
MECH	Mechanical
PIPE	Piping
PSUP	Pipe Support
SAFE	Safety
STRU	Structural
TELE	Telecom
GENE	General

3.2.2 DEPT naming rules

DEPT name in the 3D model shall be:

DRAFT-<Discipline Code>-<Description>

A temporary DEPT shall be created as follows:

DRAFT-FOR-STUDY-<title>

3.2.3 REGI, DRWG and SHEE naming rules

The REGI, DRWG AND SHEE does not need any further implementation of NAME attribute.

4 MODULE ISODRAFT (IN PROGRESS)

4.1 OPTIONS FILE

2 Options files extraction will be used: one for checking and one for final issue for construction.

The files shall be defined during the detail engineering phase.

4.2 OPTION FILE NAME

The "Option file" name for checking will be:

A2_BLPH_WORK_COPY.txt

The "Option file" name for issued will be:

A2_BLPH_EDITABILE_COPY.txt

5 E3D COLOUR CODING TABLE

The following table indicates the E3D colors sorted by purpose:

RULE NAME	COLOUR	TYPE	OBJECT	PURPOSE	RULE DESCRIPTION
EQUIPMENT	Tan	SOLID	EQUI		Rule for General Equipment
EQUIPMENT CHECK	khaki	SOLID	EQUI	CHK	Rule for Checked Equipment
EQUIPMENT FUTURE	Darkbrown	SOLID	EQUI	FUT	Rule for Future Equipment
EQUIPMENT RESPECT AREA	Tan	50%	EQUI	OBST	Rule for Respect Area of Equipment
EQUIPMENT RESPECT AREA -SUBE-	Tan	50%	SUBE	OBST	Rule for Respect Area of Equipment
EQUIPMENT STUDY	Yellowgreen	SOLID	EQUI	STDY	Rule for Study of Equipment
EQUIPMENT ELECTRI-CAL	turquoise	SOLID	EQUI	ELE	Rule for Electric Equipment
EQUIPMENT INSTRU-MENTATION	violet	SOLID	EQUI	INST	Rule for Instrumentation Equipment
EQUIPMENT FINAL	Powderblue	SOLID	EQUI	ISSU	Rule for Final Equipment
HANDLING EQUI AREA	grey	12%	EQUI STRU PIPE	HANL	Rule for Handling Area & Pipe Expansion
HANDLING ZONE AREA	grey	12%	ZONE	HANL	Rule for Handling Area
PIPE INSTALLED	gold	SOLID	PIPE		Rule for installed pipe
PIPE ISSUED	Powderblue	SOLID	PIPE	ISSU	Rule for Pipe Issued
PIPE FUTURE	Darkbrown	SOLID	PIPE	FUT	Rule for future pip
PIPE STUDY	Yellowgreen	SOLID	PIPE	STDY	Rule for Study of pipe
PIPE ONLY FOR DELIV-ERY	chocolate	SOLID	PIPE	SLOT	Rule For Pipe Only For Deliv-ery
PIPE ONLY DELIVERED	aquamarine	SOLID	PIPE	SLIS	Rule For Pipe Delivered only
PIPE REMOVABLE SPOOL	mauve	SOLID	PIPE	RS	Rule for Removable Spool
BRANCH HOOK-UP	plum	SOLID	BRANCH	HOOK	Rule for Hook-Up
PIPE INSTALLED FIRST CHECK	tomato	SOLID	PIPE	CKIA	Rule for First check of pipe
SAFETY ROUTE / FIRE & GAS SYSTEM	Forestgreen	SOLID	EQUI	ROUT	Rule for Safety Route
SAFETY EQUI AREA	Forestgreen	50%	EQUI	SFTY	Rule for Safety Area
FIREPROOFING	Deep pink	SOLID	SCTN PANE	PFP/0	rule for fireproofing
STRUCTURES BY TEKLA	Steel blue	SOLID	STRU		Structures By Tekla
STRUCTURES FLOOR	grey/Wheat	SOLID	STRU	FLOO	Structures Floor

STRUCTURES OLD	aquamarine	SOLID	STRU	SECO BRAC PRIM STAI LEGS ROWS BUIL LADD	Structures Old
STRUCTURES STUDY	Yellowgreen	SOLID	STRU	STDY	Structures Study
SUPPORTS ISSUED	Powderblue	SOLID	EQUI STRU	ISSU	Rule for Supports Issued
TEMPORARY SUPPORT	Wheat	SOLID	EQUI STRU	TEMP	Rule for Temporary Supports
SUPPORTS LOGIC	salmon	SOLID	EQUI STRU	GDA	Rule for Logical Supports
SUPPORTS PHYSICAL	Brown	SOLID	EQUI STRU	GDAB	Rule for Physical Supports
SUPP EQUI STRU HOOK-UP	plum	SOLID	EQUI STRU	HOOK	Rule for Supports in Hook-up
TRAY ELECTRICAL	turquoise	SOLID	PIPE	ELE	Rule for Electrical Cable Tray
TRAY FUTURE	Darkbrown	SOLID	PIPE	FUT	Rule for Future Cable Tray
TRAY INSTRUMENTA-TION	violet	SOLID	PIPE	INST	Rule for Instrumentation Ca-ble Tray
WALL EQUI	Lightgrey	SOLID	EQUI STRU	WALL	Rule for Equipment Wall
ARCHITECTURAL FEED STRUCTURAL FEED	Lightgold	SOLID	STRU EQUI	FESA	Rule For Architectural And Structural Feed
ELECTRICAL FEED INSTRUMENTATION FEED	Orange	SOLID	PIPE EQUI	FEEI	Rule For Electrical And In-strumentation Feed
PIPING FEED	Springgreen	SOLID	PIPE	FEPI	Rule For Piping Feed
EQUIPMENT FEED	Wheat	SOLID	EQUI	FEEQ	Rule For Equipment Feed
SAFE FEED	Magenta	SOLID	EQUI	FESY	Rule For Safe Feed
PIPE STRESS	Blue	SOLID	PIPE	STRE	Rule For Pipes Stressed

6 NAVISWORK COLOUR CODING TABLE

The following table indicates the correspondence between E3D and NAVISWORK for all model objects:

TABLE 1 - 3D MODELS COLOUR CODE TABLE			
OBJECT	TYPE	E3D COLOUR	Autodesk Naviswork COLOUR
EQUIPMENT (MECHANICAL)	SOLID	TAN	250
EQUIPMENT (FUTURE)	SOLID	DARKBROWN	255
EQUIPMENT CLEARANCE AREA	TRANS. 50%	TAN	250
EQUIPMENT (STUDY)	SOLID	YELLOWGREEN	230
EQUIPMENT (ELECTRICAL)	SOLID	TURQUOISE	236
SKIDS (IMPORTED MODEL)	SOLID	GOLD	19
EQUIPMENT (INSTRUMENTA-TION)	SOLID	VIOLET	246
HANDLING VOLOUMES	TRANS. 12%	GREY	13
HVAC DUCTS	SOLID	SANDYBROWN	251
PIPE INSTALLED	SOLID	GOLD	19
PIPE INSTALLED (STRESSED AND/ OR SUPPORTED	SOLID	TOMATO	217
PIPE INSTALLED (IFC)	SOLID	POWDERBLUE	241
PIPE FUTURE	SOLID	DARKBROWN	255
PIPE (STUDY)	SOLID	YELLOWGREEN	230
TEMPORARY SUPPORTS AND INSTALLATION AIDS	SOLID	KHAKI	253
HOOK-UP (ALL)	SOLID	PLUM	14
ESCAPE ROUTES (CARPET)	SOLID	FORESTGREEN	23
ESCAPE ROUTES (VOLUME)	TRANS. 50%	FORESTGREEN	23
FIREPROOFING	SOLID	DEEPPINK	22
STEEL STRUCTURES	SOLID	STEELBLUE	27
FLOORING	SOLID	GREY	13
STEEL STRUCTURES (STUDY)	SOLID	YELLOWGREEN	230
PIING SUPPORTS (IFC)	SOLID	POWDERBLUE	241
TEMPORARY SUPPORT	SOLID	WHEAT	249
PIPING SUPPORT (LOGIC)	SOLID	SALMON	11
PIPING SUPPORT	SOLID	BROWN	9
ELECTRICAL CABLE TRAYS	SOLID	TURQUOISE	236
CABLE TRAYS (FUTURE)	SOLID	DARKBROWN	255
INSTRUMENT CABLE TRAYS	SOLID	VIOLET	246
WALLS	SOLID	LIGHTGREY	12
ARCHITECT. AND STR. FEED	SOLID	LIGHTGOLD	229
ELECTRICAL & INSTR. FEED	SOLID	ORANGE	3

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PIPING FEED	SOLID	SPRINGGREEN	231
EQUIPMENT FEED	SOLID	WHEAT	249
SAFE FEED	SOLID	MAGENTA	8
PIPE STRESS	SOLID	BLUE	7

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Base Load Power Hub (BLPH)

3D MODEL MANAGEMENT PROCEDURE Attachment 02
3D MODEL PROGRESS CALCULATION

Document Number: 123A90-PML-DIG-PRO-00004_Att02

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00	10/10/2023	Issue for Review (IFR)	V. Fasoli	G. Casolo	D. Lo Sterzo
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1 DOCUMENT SCOPE - 3D MODEL PROGRESS MEASUREMENT

As described in the main 3D Model Procedure, each model component is characterized by a progress step variable (:STATUS attribute) which will change every time an improvement is made in the 3D model.

The progress of the 3D model is measured collecting data from the :STATUS attribute of all elements.

These data are collected in a table type progress measuring file, indicating for each discipline the progress percentage of the objects contained in E3D model. For every discipline, the overall progress is also graphically indicated to have an immediate vision of the 3D model status.

The overall project progress is also indicated, collecting data from the other tables, in terms of overall percentage, and graphically.

1.1 REFERENCES

Doc. No.	Description
123A90-PML-DIG-PL-00004	3D Model Management Procedure
123A90-PML-DIG-PL-00004_Att01	Project Specific 3D Requirements

Table 1 - Reference Documents

1.2 DEFINITIONS

Term	Description
Attribute	Property or characteristic of an Asset object
Commissioning	The functional verification of equipment and facilities that are grouped together in systems
Company	The party that initiates the project. The term "COMPANY" may also include agents or consultants authorized to act for, and on behalf of, COMPANY.
Construction	The project activity at which equipment and structures are installed/erected.
Contract	An acceptance of legal relations between two or more parties for the transfer of goods or services for value.
Data	The term «data» refers to a collection of structured information that can be supplied to, stored in or processed by an IT application. Data is always associated to the time at which exclusively created.

Engineering Database	Managed collection of process plant data that represents information about objects for a particular Asset.
Information	Information in the form of documents and data including drawings, indexes, databases, 2D and 3D models etc.
Operation	The organization responsible for operating the plant after start up.
Project	Unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and resources.
Project Tools	Refer to all the applications used during the project execution, including Engineering systems (e.g. 2D and 3D cad), procurement systems, construction systems, etc.
Tag	Label composed of letters and numbers allowing to uniquely identify an Asset's object.

Table 2 - Definitions

1.3 ACRONYMS

Acronym	Description
NA	Not Applicable
LCI	Life Cycle Information
MTO	Material Take-Off
PCV	Pressure Control Valve
E3D	Aveva Everything 3D Software
PAU	Plant Area Unit
PID	Process and Instrumentation Diagram
PBS	Plant Breakdown Structure
MDR	Master Document Register
E	Engineering Phase
P	Procurement Phase
C	Construction Phase
DMS	Document Management System

Table 3 - Acronyms

2 PIPING LINES PROGRESS STEPS

The piping object includes an UDA type attribute named :STATUS, as per all others 3D model objects.

The 3DO, under piping PSL supervision, shall fill in the attribute step values mentioned above, in order to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	Preliminary modelling (piping routing FROM/TO completed)	30 %
2	All in-line elements completed	60 %
3	Stress analysis started	65 %
4	Stress analysis completed	75 %
5	Stress analysis not required	75 %
6	Flow check completed and Hook Up defined	85 %
7	Piping supports completed / not required	95 %
8	Interference check completed (error free with indication in clash check report). Isometric issue and “locking” of piping line in model	100 %
D	DELETED	0 %

3 MECHANICAL EQUIPMENT

3.1 MECHANICAL EQUIPMENT PROGRESS STEPS

The mechanical equipment includes an UDA type attribute named:STATUS.

The 3DO, under piping PSL supervision, shall fill in the attribute step values mentioned above, in order to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	Equipment imported from other model (FEED) and/or estimated Dimensions	10 %
2	Equipment as for Equipment list	30 %

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3	Equipment modelled with preliminary data sheet	**30%**
4	Equipment modelled with preliminary Vendor drawing (maintenance areas and nozzle orientation to be defined): bid drawing	**50%**
5	Equipment modelled with Vendor drawing (maintenance areas and nozzle orientation have been defined).	**80%**
6	Equipment modelled with construction drawing comments included.	**90%**
7	Positioning completely defined.	**95%**
8	Equipment completed with As-built construction drawing & Interference Check completed (error free).	**100%**
D	DELETED	**0%**

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4 ELECTRICAL AND INSTRUMENTATION

4.1 ELECTRICAL AND INSTRUMENTATION EQUIPMENT PROGRESS STEPS

The electrical, instrumentation equipment include an UDA type attribute named: STATUS.

The 3DO's shall fill in the above-mentioned attribute step values in order to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	ELE/INSTR Equipment imported from other model (FEED) and/or estimated dimensions	10%
2	ELE/INSTR Equipment as for Equipment list	30%
3	ELE/INSTR Equipment modelled with preliminary data sheet	30%
4	ELE/INSTR Equipment modelled with preliminary Vendor draw- ing (maintenance areas and nozzle orientation to be defined): bid drawing	50%
5	ELE/INSTR Equipment modelled with Vendor drawing (mainte- nance areas and nozzle orientation have been defined).	80%
6	ELE/INSTR Equipment modelled with construction drawing comments included.	90%
7	Positioning completely defined.	95%
8	ELE/INSTR Equipment completed with As-built construction drawing & Interference Check completed (error free).	100%
D	DELETED	0%

4.2 ELECTRICAL AND INSTRUMENTATION CABLE TRAYS

3DO's, besides electrical, instrumentation and telecom equipment, shall model the cable trays for electrical network distribution as well as for instrument signals and power.

For cable trays modelling 3DO's shall use the E3D Cable Trays Module.

As for the piping lines, the electrical and instrumentation cable trays are composed by PIPE (the main line body) and BRAN (secondary branches).

Trays components are contained in a dedicated Database Library.

In case of any item missing in database, the 3DO shall send an e-mail to piping PSL as described in previous para. 11.3.

4.3 ELECTRICAL, INSTRUMENTATION CABLE TRAYS NAMING RULES.

The 3DO shall name each electrical/instrumentation/telecom cable tray routing by inserting it in the related ZONE, filling in the NAME attribute according to discipline PSL instructions (SERVICE).

The PIPE BRAN do not need any further implementation of NAME attribute.

The system will assign automatically to the BRAN the trays name also adding the ending "/Bn" where "n" indicates the progressive number given following the creation priority order.

It is recommended that the 3DO shall model the main BRAN first or he will record it with the ending "/B1" for an easier identification of cable tray routing.

4.4 ELECTRICAL, INSTRUMENTATION AND TELECOM CABLE TRAYS PROGRESS STEPS

The electrical, instrumentation and telecom cable tray include an UDA type attribute named: STATUS.

The 3DO's shall fill in the above-mentioned attribute step values in order to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	ELE/INSTR/TELE cable trays imported from other model (FEED) and/or estimated dimensions	10%
2	Preliminary modelling (routing from/to closed)	35%
3	Preliminary check	45%
4	Routing completed with correct dimensions	60%
5	Final check by Ele/Instr/Tele PSL	65%
6	Cable tray supports completed	85%
7	Holds closed. Interference Check completed (error free).	95%
8	Layout final issue	100%
D	DELETED	0%

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4.5 INSTRUMENT VALVES PROGRESS STEPS

Instrument valve includes an UDA type attribute named

: STATUS.

The 3DO's shall fill in the above-mentioned attribute step values to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	Element preliminary modelled and/or by catalogue.	50 %
2	Element modelled with vendor drawing.	100 %
D	DELETED	0 %

5 SAFETY ELEMENTS

5.1 SAFETY EQUIPMENT PROGRESS STEPS

The safety item includes an UDA type attribute named: STATUS.

The 3DO's shall fill in the above-mentioned attribute step values in order to identify the modelled object progress status.

The table below shows how to fill the attribute :STATUS.

STEP No	Description	PROGRESS
1	SAFETY Equipment imported from other model (FEED) and/or estimated dimensions	10 %
2	SAFETY Equipment as for Equipment list	30 %
3	SAFETY Equipment modelled with preliminary data sheet	30 %
4	SAFETY Equipment modelled with preliminary Vendor drawing (maintenance areas and nozzle orientation to be defined): bid drawing	50 %
5	SAFETY Equipment modelled with Vendor drawing (maintenance areas and nozzle orientation have been defined).	80 %

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6	SAFETY Equipment modelled with construction drawing comments included.	**90%**
7	Positioning completely defined.	**95%**
8	SAFETY Equipment completed with As-built construction drawing & Interference Check completed (error free).	**100%**
D	DELETED	**0%**

5.2 ESCAPE WAY PROGRESS STEPS

The safety item includes an UDA type attribute named: STA- TUS.

The 3DO shall fill in the above-mentioned attribute step values in order to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	Escape Way imported from other model (FEED) and/or estimated dimensions	**10%**
2	Preliminary modelling	**50%**
3	Final modelling and interference check completed	**100%**

6 STRUCTURES

6.1 STRUCTURES EQUIPMENT PROGRESS STEPS

The status structural STEP(S) will be split according to platform levels (deck code) and then inserted into SITE hierarchy.

The 3DO shall fill in the above-mentioned attribute step values in order to identify the modelled object progress status.

The table below shows how to fill the attribute: STATUS.

STEP No	Description	PROGRESS
1	Preliminary modelling / Import from other model (FEED)	**10%**
2	Main Steel Structures	**40%**

3	Joints	**50%**
4	Floorings and Walls	**70%**
5	Secondary Steel Structures (Bridge Landing, Stairs, Walkways)	**85%**
6	Tertiary Steel Structure Equipment supports, Monorails, etc	**100%**

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