Base Load Power Hub (BLPH)

Project Execution Plan

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ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
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Revision / Change Log

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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

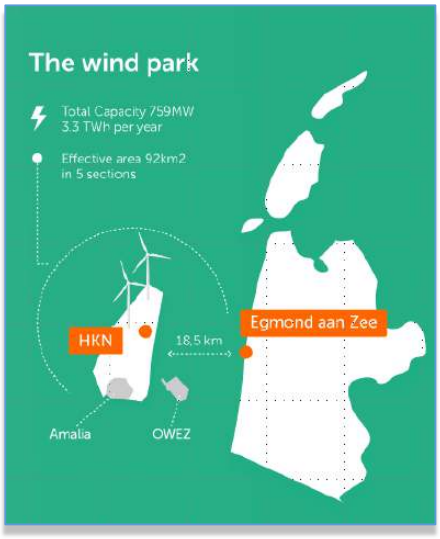


Figure 2 - Wind Park Details

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.

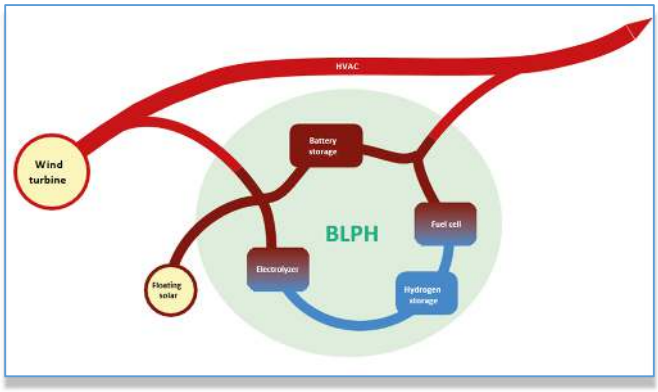


Figure 3 – BLPH Concept

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 objective of this Project Execution Plan (PEP) is to ensure a successful execution of the Main Automation Contractor (MAC) scope of the PROJECT. It describes the various aspects of managing the project, defines the project control elements and roles & responsibilities within the MAC project team and between COMPANY, CONTRACTOR and MAC. Referenced documents in section 2.1 provide further details and are complimentary to the PEP.

This document details the procedures, project management methods and guidelines which shall be used by MAC to manage the Execution phase of the PROJECT. This Project Execution Plan is a formal approved document used to manage and control project execution pertaining to Yokogawa's scope and does not take precedence over Customer Project documentation requirements.

2.1 REFERENCES

Doc. No.	Description
1724000594-MD-LIS-00001	Supplier Master Index Register
1724000594-QC-ITP-00002 / E366772C00-ITP	Inspection and Test Plan
NA	Project Schedule
1724000594-IN-PL-00029 / E366772C00-SVP	Safety Validation Plan
1724000594-IN-LIS-00004 / E366772C00-IO	PCS and Safety System IO List (HW and SW)
1724000594-IN-LIS-00005 / E366772C00-EMCS_IO	EMCS IO List (HW and SW)
1724000594-IN-CA-00006 / E366772C00-PC	Power Consumption and Heat Dissipation
1724000594-IN-LIS-00007 / E366772C00-CL	Systems Cables List
1724000594-IN-RE-00008 / E366772C00-SLE	Safety Controller loading estimation
1724000594-IN-DD-00015 / E366772C00-SA	System Architecture

1724000594-IN-DG-00016 / E366772C00-ND	Network Connection Diagram

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT	HOLLANDSE KUST NOORD WIND PARK Project
MAC(ICSS SUPPLIER)	Main Automation Contractor, Yokogawa Italy
CONTRACT	1724000594
PROJECT	Base Load Power Hub (BLPH)
CS&I	Control Systems & Instrumentation
DCS	Distributed Control System
ERP	Enterprise Resource Planning
ESD	Emergency Shutdown System
F&G	Fire & Gas
FAT	Factory Acceptance Test
FDS	Functional Design Specification
FGS	Fire & Gas System
GDC-I	Yokogawa India Limited, Global Delivery Centre-India
HMI	Human-Machine Interface
HSE	Health Safety & Environment
HW	Hardware
I/O	Input/Output
ICSS	Integrated Control and Safety System
IEC	International Electrotechnical Committee
IFAT	Integrated Factory Acceptance Test
IPS	Integrity Protection System
ISO	International Standards Organisation
LE	Lead Engineer
MAC	Main Automation Contractor
Modpack	Modification package
NW&S	Network & Security
P&ID	Piping & Instrumentation Diagram
PDH	Process Data Historian
PE	Project Engineer
PEP	Project Execution Plan
PERT	Program Evaluation & Review Technique
PLC	Project Life Cycle
PM	Project Manager

PPR	Project Performance Report
PU	Package Unit
QC	Quality Control
QHSE	Quality Health Safety & Environment
QMS	Quality Management System
RACI	Responsible, Accountable, Consulted, Informed
RATS	Range Alarm Trip Setting
RFSU	Ready For Start-Up
SA&C	Safety Assurance & Consultancy
SAP	Business name of ERP system
SAT	Site Acceptance Test
SRS	Safety Requirements Specification
SW	Software
TCO	Total Cost of Ownership
TQ	Technical Query
UPS	Uninterrupted Power System
YGS	Yokogawa Global System (SAP)
WBS	Work Breakdown Schedule

Table 2 - Definitions and Abbreviations

2.3 CONTRACTUAL RELATIONSHIP

The block diagram in Figure 4 illustrates the contractual relationship between COMPANY, CONTRACTOR and MAC in the execution phase.

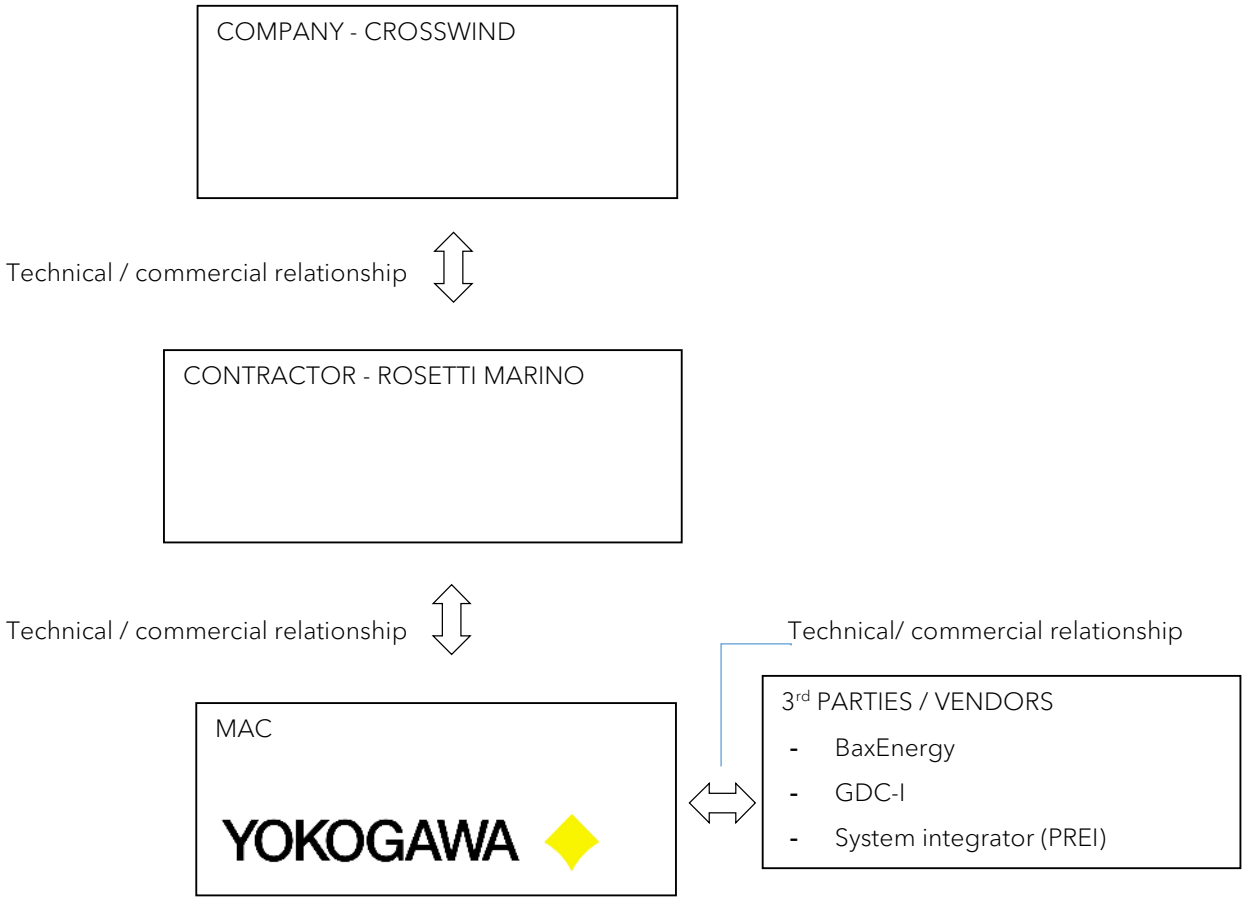


Figure 4: Contractual relationship in execution phase

The CONTRACTOR acts on behalf of COMPANY both technically and commercially and interfaces with MAC for the project deliverables/scope defined in the CONTRACT. CONTRACTOR is responsible and accountable for the PROJECT till Ready For Start-Up (RFSU).

Yokogawa Italy with its affiliates and its subcontractors act as one operational entity in relation to the CONTRACTOR and collectively referred to in this document as MAC. MAC is responsible for the timely delivery of the scope according to the requirements defined in the CONTRACT.

3 INTEGRATION MANAGEMENT

3.1 EXECUTION STRATEGY

This section provides the project execution strategy, its key considerations and the execution locations of the project. The MAC execution strategy is aligned with the overall project strategy.

3.1.1 Key Considerations

MAC considers that the project's objectives are essentially to deliver the scope of the PROJECT within the agreed schedule and meeting CONTRACTOR's technical, executional and Health and Safety requirements of the project.

Key project challenges considered in design of the execution strategy are:

- Schedule
- Cost
- Engineering Consistency
- Coordination with Sub System Vendors
- Flawless project execution and start-up
- Greenfield

3.1.2 Execution Locations

MAC will utilize the diverse locations for the execution phases/activities of the project. The locations are given in Table 3.

Execution phase / Activity	Execution location
Functional Design Specification	Utilization of GDC-I
Bulk Engineering	Utilization of GDC-I
HW Manufacturing and Test	s.i. workshop (North of Italy)
SW Development and Test	Utilization of GDC-I
Network Development and Test	Utilization of GDC-I
SW FAT	Utilization of GDC-I
Sub vendor scope of supply, e.g. Consoles	Acireale (CT), s.i workshop
3rd Party Interface Tests	Ravenna and 3rd Party's premises
Site Acceptance Test	Netherlands and Ravenna
Commissioning and Start-up support	Netherlands and Ravenna

Table 3: Execution locations

3.1.3 Inspection Test Plan

The Inspection Test Plan (1724000594-QC-ITP-00002) details the inspection and test strategy and outlines the inspection and test program. The focus of the document is on the test strategy as an element of MAC's project approach. Inspections are mentioned where deemed appropriate, amongst others Factory Acceptance Tests where CONTRACTOR approval is mandatory.

The test strategy results in a test program that comprises:

- Prototype tests (SW typicals)
- Internal hardware and functional tests
- Hardware Factory Acceptance Test (HW FAT)
- Internal software tests
- Software Factory Acceptance Test (SW FAT)
- Third party package interface tests
- Packing and Shipping inspection
- Site Acceptance Test (SAT)

3.2 INTEGRATED CHANGE CONTROL

The project scope is detailed in section 4.3. The Project Manager will manage the project scope and – in case of changes - will liaise with CONTRACTOR to discuss and agree the path forward. The Project Manager will arrange and issue a Change Request stating the scope, schedule and commercial impact. CONTRACTOR will issue a Change Order after approval of the Change Request.

Changes are defined as (non-exhaustive list):

- Changes to the Scope of Work as defined in the CONTRACT.
- Modifications to the design specification input documents after the defined exchange milestones.
- Modifications to the defined/approved standards, HW - and SW typicals <if such standards are applicable>.
- Requests to escalate/improve the delivery date of certain milestones.
- Requests to delay the delivery date of certain milestones.
- Changes initiated during Acceptance Tests (refer to section 3.2.3).

Change Requests will be calculated using Unit prices given in the Exhibit B-1 or according the options defined in the base contract.

Execution/implementation of changes can only commence after CONTRACTOR's approval of the related Change Request and receipt of the related Change Order or revised CONTRACT.

Changes to scope will be recorded in a Change Register of which a summary will be included in the Monthly Progress Report.

3.2.1 Freeze Dates Principle

In order to meet the project schedule, MAC requires the CONTRACTOR deliverables at pre-defined dates, so-called freeze dates. These dates will be clearly identified in the Project Schedule.

The "Hardware freeze" means the design input provided by the CONTRACTOR is ready for MAC to start the detailed design of the hardware and (final) ordering of the related hardware components.

The "Software freeze" means the design input provided by the CONTRACTOR is ready for MAC to start the detailed application software design. "Software Freeze" includes all design input deliverables in addition to an export of the design database, for example SPI.

The SW database and the Field Wiring database information are highly related. For the project execution, it is assumed that the databases are consistent and unambiguous. Receiving freeze information that is inconsistent, erratic or late induce schedule, scope and/or commercial impact.

3.2.2 Specification Changes / Modpack

It is inevitable that changes occur on process automation projects. MAC's standard approach is to discourage piece-meal changes as much as possible. The CONTRACTOR shall collect all changes that occur after the defined exchange milestones. At a convenient time for all parties, it is jointly decided how and when the accumulated changes are implemented by means of a modification package (Modpack). Refer to Figure 5. This approach will ensure that the hardware built and the application software developed in all cases will have a clear specification basis, increasing controllability and quality of the project.

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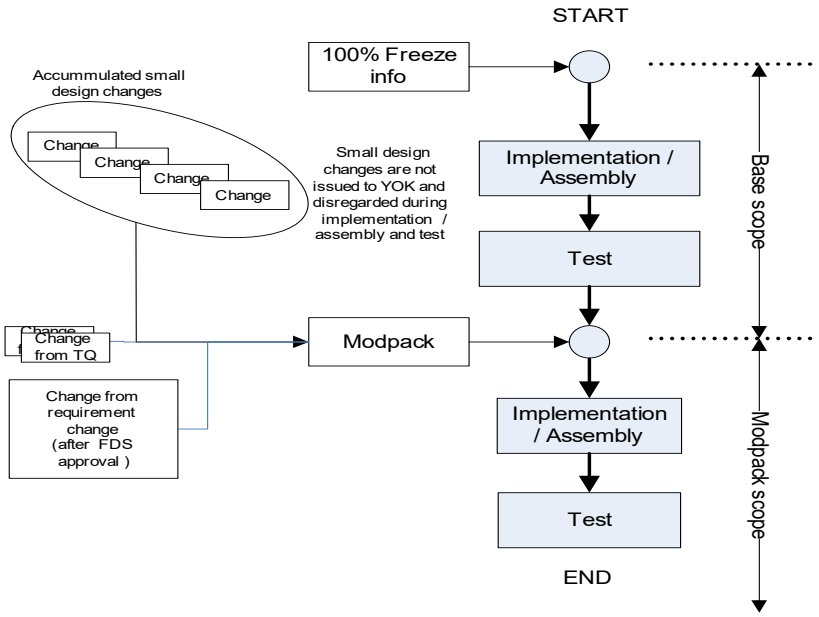


Figure 5: Modpack process

3.2.3 Punch Item Management

Punch items raised during the various acceptance tests shall be strictly categorized to identify that the punch item is originated either from MAC (error in configuration), from the CONTRACTOR / COMPANY (change in design input data) or undefined (for information). If it is an error, MAC is responsible for remediating it and re-do the test. If it is a change, the Management Of Change (MOC) procedure will be followed and if agreed by all parties (on cost & schedule impact), MAC will implement the identified changes followed by an acceptance test. If it is recorded for information, the punch item will be added in the test records and closed as for MAC there is no follow-up defined.

All punch items categorized as error and change are recorded in a punch item database.

3.2.4 Post-Delivery Changes

Hardware and/or software changes after delivery to a Site or Yard (as applicable) will be handled in strict adherence to the MOC procedure.

Special attention shall be paid to Safety System changes taking Functional Safety Management requirements into account. Impact analysis is mandatory for these kinds of changes.

In general, standardisation related changes (e.g. software typicals) are not foreseen during yard/site commissioning. Nevertheless, if initiated, this will be heavily challenged as implementing such changes will have a large influence on the software application/hardware and hence on schedule and cost.

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4 SCOPE MANAGEMENT

4.1 PLAN SCOPE MANAGEMENT

The project scope (statement) is defined by the CONTRACT and related/referenced documents therein. The CONTRACT is expected to be aligned with the quotation issued by MAC as response on the RFQ. A table of compliance is included in the quotation submitted by MAC.

4.2 COLLECT REQUIREMENTS

The CONTRACT and the referenced documents (therein) are assessed in both scope and requirements. The CUSTOMER requirements and the order of precedence of referenced documents are indicated in the contract.

Next to the COMPANY and CONTRACTOR requirements there are MAC internal requirements for executing projects. Adherence to the Yokogawa Quality Management System and Engineering Practices/Guidelines is a mandatory requirement for the MAC project team.

4.3 DEFINE SCOPE

4.3.1 Scope Inclusions

The MAC scope includes the following key elements:

- HW and SW typical
- ICSS (PCS, SIS, FGS and EMCS) design and configuration
- ICSS network infrastructure
- Operator stations, operator consoles
- Cabinets (system, marshalling, network, servers)
- Serial interface hardware & software with third party control systems
- GPS clock synchronization
- Data Historian solution
- HMI of BLPH
- Alarm management

And related to above deliverables the below activities/deliverables:

- Project Management
- Standards and Typical management

- Procurement
- Quality Assurance
- Kick off meeting / project meetings
- Staging, assembly
- Testing (FAT and IFAT)
- Report development
- Commissioning- and Operational spare parts delivery
- Packing
- Shipment DAP(Ravenna)
- As Shipped Documentation
- SAT
- Start up and Commissioning Assistance
- As Built (as shipped) documentation
- Manuals

4.3.2 Scope Exclusions

The MAC scope excludes the following key elements (non-exhaustive list):

- Wireless ICSS infrastructure and gateways (if required)
- UPS
- Shipment of equipment to site (Netherlands)
- As Built (as commissioned) documentation, manuals
- Manual/Operator Instructions for start-up/shutdown/handle the process

4.3.3 Documentation Deliverables

MAC will deliver the documentation deliverables related to the project scope as defined in section 4.3.1. For additional documentation, please refer to "1724000594-MD-LIS-00001" document.

MAC documentation deliverables shall be recorded in the approved Document List as part of the CONTRACT.

4.4 MAJOR MILESTONES/WBS

The project execution will adhere to the MAC standard Project Life Cycle (PLC)/Work Breakdown Structure (WBS):

- Project Initiation

- Basic Design
- Detailed Design/Implementation
- Internal Test
- Factory Acceptance Test
- Shipment & Factory Close Out
- Site Acceptance Test (SAT), Commissioning and Start Up
- Project Closure

Major milestones for the project are:

- KOM
- Freezing I/O List
- Approved Basis of Design/Standards/Functional Design Specification
- Design input Freeze
- Freeze dates for CONTRACTOR deliverables
- Procurement
- Cabinet Construction
- Software Implementation
- Internal Test of H/W and S/W
- FAT and IFAT
- Delivery
- Completed SAT

4.5 PROJECT COMPLETION

The project is completed when:

- All defined and agreed deliverables of the CONTRACT have been accepted by the CONTRACTOR by means of signed FAT/IFAT certificates and/or Inspection certificates.
- All defined and agreed deliverables of the CONTRACT have been handed over to the CONTRACTOR at a location as defined in CONTRACT. CONTRACTOR or freight forwarder of CONTRACTOR has signed for proof of delivery.
- All punch items of type error have been closed.
- All official documents have been closed out (status: received Approved, issued As Built, issued For Information).

- All technical queries have been answered (closed).
- Password database has been handed over to the CONTRACTOR or COMPANY.
- All Change Requests have been processed and contractually closed-out in a mutually agreed way.
- All invoices have been issued to and paid by the CONTRACTOR.
- A release of liens letter has been issued and signed by the CONTRACTOR.

An internal and external Project Closeout meeting will be held to ensure that the project has a clearly defined end and an organized hand-over of responsibility to the group(s) who will use, support and sustain the project deliverables.

5 TIME MANAGEMENT

5.1 PLAN SCHEDULE MANAGEMENT

The Project Schedule details the timescales, sequence and dependencies of activities for the execution phase of the project including the milestones for Hardware and Software freeze dates, FAT/IFAT periods and delivery of materials.

The project schedule is created in Microsoft Projects.

5.2 DEVELOP SCHEDULE

The schedule has been defined on the information provided by CONTRACTOR using a pre-defined (template) Work Breakdown Schedule (WBS) as starting point. The WBS is a hierarchical decomposition of the total scope of work to accomplish the project objectives and create the required deliverables and is following the Project Life Cycle definition (refer to section 7.1).

The planned work is contained within the lowest level WBS components, which are called work packages. A work package can be used to group the activities where work is scheduled and estimated, monitored, and controlled.

Activities are sequenced by the definition of predecessors and successor relationships. Important predecessor to the start of the majority of MAC activities is the receipt of the freeze data and the approval of the Functional Design Specification/standards. Delay in aforementioned milestones will in most cases cause delay in the MAC delivery milestones.

Estimates for required man hours are available from historical data for the majority of activities for project deliverables. In other cases, estimates are created during schedule meetings using other techniques like PERT or analogous estimates. Activity durations are derived from availability of resources.

5.3 CONTROL SCHEDULE

The Project Manager is responsible to monitor the actual progress/project status against the schedule. She will expedite the deliverables by the project team and/or the CONTRACTOR.

Project team members are knowledgeable about the estimated number of hours and duration of the assigned work package. They will inform the Project Manager in case more or less hours are required or if the delivery date will change.

The (senior) Buyer will monitor and expedite suppliers/subcontractors for their timely delivery of materials/subcontracted scope. He/she informs the <Project Manager/Scheduler> in case of delays in materials delivery.

The actual progress/project status will be reported as part of the Monthly Progress Report. In case of deviations, appropriate measures will be discussed/taken.

6 COST MANAGEMENT

6.1 PLAN COST MANAGEMENT

A cost structure is set-up in the MAC ERP system (YGS) using a pre-defined (template) Work Breakdown Structure. It details man hours for various deliverables, materials, subcontracts and other expenditures. The details in the cost structure are derived from the quotation/Purchase Order and Bill of Materials.

Estimates for required man hours are derived from historical data and are approved by respective department managers. Hourly costs are defined by execution location and type of work. Cost for materials is following YGS entries. Frequently used materials have Meta data like cost and lead time in YGS. For other materials and for subcontracted materials/deliverables quotations are providing the cost data.

The Project Manager is responsible for the approval of man hours and the release of procurement requisitions.

6.2 BUDGET (INTERNAL)

During the handover process between Sales and Delivery the budget is established for which the Project Manager is responsible. By combining the estimates of the individual activities with the project schedule, a cost baseline is created.

6.3 COST MONITORING & REPORTING (INTERNAL)

The project cost is monitored using the aforementioned YGS system. YGS provides overviews of labour and material cost, and expenses to monitor and maintain project costs linked with labour timesheets to project management. All the expenditures incurred, and payments received are captured in this system. All Purchase Orders placed, and payments made to vendors are also captured in the system. The YGS cost reporting is included in the internal monthly project report (Project Performance Report (PPR)).

6.4 COST MONITORING & REPORTING (EXTERNAL)

The Monthly Progress Report will include a cost summary for the CONTRACTOR detailing the following:

- Original contract price
- Outstanding Change Requests
- Approved Change Requests
- Received Change Orders
- Invoice status (see below)

A milestone completion certificate will be issued by MAC (signed by the Project Manager) upon completion of each agreed payment milestone. The CONTRACTOR will sign this certificate if agreed and return to MAC as confirmation of milestone completion. MAC will issue an invoice for the amount payable for the milestone

with the signed milestone completion certificate. A register will be maintained for the invoices raised and the payments received.

7 QUALITY MANAGEMENT

7.1 PLAN QUALITY MANAGEMENT

The Project Quality team shall achieve the quality requirements of the PROJECT and quality objectives of MAC in accordance in accordance to the CONTRACT and Yokogawa Quality Management System (QMS).

It describes/specifies:

- The required quality level the project will deliver within the agreed budget.
- The control mechanisms used by the project to assure that the project quality requirements are fulfilled.
- How Yokogawa will assure that project quality control measures are effectively in place and in accordance with the Yokogawa procedures, customer requirements and regulatory standards.
- The roles and responsibilities of each party, with respect to quality control and quality assurance.

Part of QMS is the Yokogawa Project Life Cycle (PLC) as shown in Figure 6. The PLC describes the required process steps and deliverables for each phase which are reviewed during phase gate meetings.

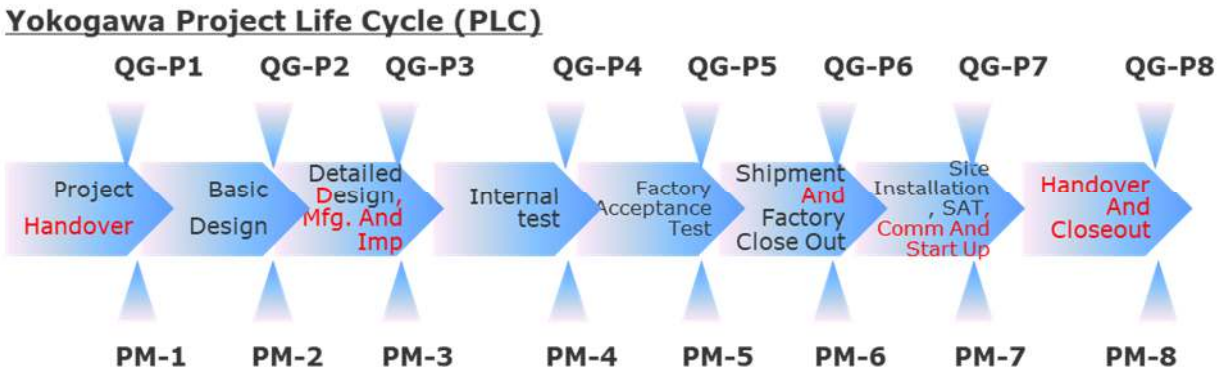


Figure 6: Yokogawa Project Life Cycle

7.2 QUALITY CONTROL

A Quality Control (QC) Engineer is assigned whose task is to gather quality metrics and issue the QC report to the internal project stakeholders on a monthly interval. The QC engineer also functions as an expediter within the project, to ensure that QC activities are executed as planned.

The Project Manager arranges specialists (independent of the project team) who will perform technical Peer-Review which is a technical evaluation of the solutions/deliverables provided by the engineers of the project team.

The Project Engineer and/or the Project Manager have the possibility for a final review of deliverables before these are submitted for approval to the customer.

Subcontracted parties of MAC shall apply equivalent Quality Control for their scope of work. The (Senior) Buyer/Subcontract Manager is responsible to assure QC of the subcontracted party is at appropriate level. He/she may initiate an audit where assistance can be requested from the QHSE Advisor.

7.3 QUALITY ASSURANCE

A QHSE Advisor audits the project against quality and HSE standards of Yokogawa. He/she is involved in the phase gate reviews and will expedite the Project Manager in case critical process steps/deliverables are not met.

A Quality Assurance meeting is held monthly in which the QHSE Advisor reports to Yokogawa Management about the project quality status. Follow-up actions are defined here if applicable.

7.4 FACTORY ACCEPTANCE TESTS AND INSPECTIONS

The Inspection Test Plan (1724000594-QC-ITP-00002) outlines the Factory Acceptance Tests and inspections for this project. Each test contributes to the quality of the deliverables by verification of specifications and requirements versus software application/hardware built.

7.5 SAFETY VERIFICATION

The Safety Validation Plan (1724000594-IN-PL-00029) is a mandatory project deliverable for projects that include Safety Systems. It details the principle activities relating to the Logic Solver verification for functional safety and safety integrity in the life cycle of the project executed by MAC.

The MAC scope of the Safety System will be managed, designed, built and tested according to safety regulations, as per international standards IEC 61508 and IEC 61511.

The Safety Validation Plan and the Safety System by MAC are reviewed/approved by the Safety Assurance & Consultancy (SA&C) group, an independent body within the Yokogawa organization. SA&C issues a Declaration of Conformance (FS) Certificate after assessing compliance to earlier mentioned standards.

7.6 QUALITY, HEALTH, SAFETY AND ENVIRONMENTAL

7.6.1 MAC HSE Policy

"As a company, Yokogawa's goal is to contribute to society through broad-ranging activities in the areas of measurement, control, and information. Individually, we aim to combine good citizenship with the courage to innovate. QHSE excellence supports our goal with a clear focus on customer satisfaction and operational excellence."

Health and Safety of employees, contractors and customers is of the utmost importance to Yokogawa management.

- The aim of Yokogawa is to offer to their employees and third party personnel suitable working conditions.
- Accidents and injuries are preventable and unacceptable. Also material damage must be prevented.
- Line management must do its utmost to avoid personal harm in any form. Therefore line management must take care for the safety of the own employees and third parties.
- Line management is responsible for minimizing absence due to illness as a consequence of working circumstances.
- Everyone is responsible for their own and their colleague's safety at work.
- Employees must comply with the safety guidelines that relate to the working environment and the work to be done. In this context, Yokogawa employees are also responsible for contractors and visitors.
- Yokogawa is responsible for the introduction and maintenance of an effective health and safety management system.
- Considerations concerning safety of employees and third parties always outweigh any other motives.
- There is a continuous strive for improvement of circumstances regarding health and safety.

7.6.2 CONTRACTOR & COMPANY HSE Policy

HSE requirements have to be taken care by CUSTOMER/CONTRACTOR, for example on site/yard.

7.6.3 MAC Quality Policy

YOKOGAWA is an ISO 9001:2015 certified company.

A detailed policy regarding quality, health, safety, ethics and environment is communicated via the documented QMS. Below an abstract is given.

Yokogawa management is convinced of the fact that quality is one of the most valuable assets in the company. However, quality cannot be realized by itself. Quality is determined by our customers, most important, our external customers and second, our own internal customers, being our colleagues.

The managers of Yokogawa recognise and accept the responsibility to establish and maintain a QMS based on the requirements of ISO 9001 and IEC 61508.

Yokogawa is determined to lead in quality for all the solutions we offer. To realise this, we will:

- Recognize the fact that every member of Yokogawa has the strong intention to improve.
- Make every effort to put this intention to practice.
- Always have time for quality by setting our priorities.
- Be conscious of the quality of everything we hand over to each other and our customers.
- Monitor, analyze and improve this quality.
- Make great effort to find and eliminate dis-quality as early as possible.
- Say what we do and do what we say.

Because Yokogawa is providing high quality solutions, it is our primary duty to continuously improve the quality of these solutions.

The above quality policy is confirmed and authorized by the President of Yokogawa Europe B.V. and the Quality Manager.

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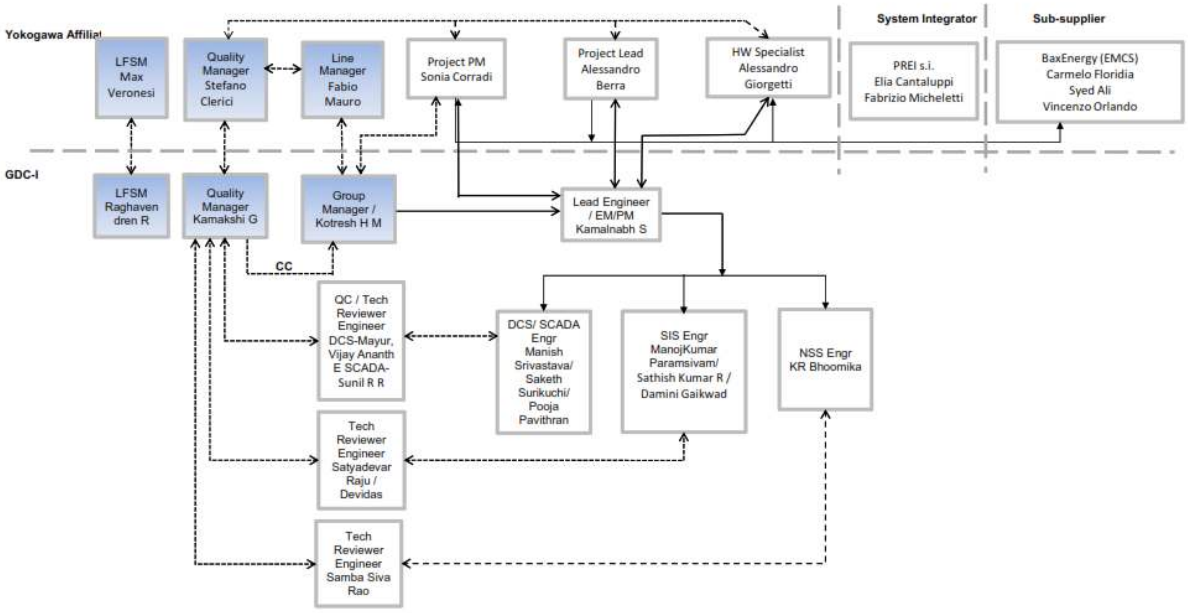
8 HUMAN RESOURCE MANAGEMENT

8.1 PROJECT ORGANIZATION - ORGANIZATION CHART

An efficient project organisation is important for successful execution of the project. The organisation structure is optimised to take the project size and nature into consideration. The Project Manager heads MAC project organisation and is responsible for the overall project delivery. The Project Manager receives the required resources from the resource managers to see through the successful completion of the project.

The Project Organization Chart details the following relationships:

- COMPANY/CONTRACTOR interfaces with MAC project team
- MAC project team



8.2 ROLES & RESPONSIBILITIES MAC PROJECT TEAM

The MAC project team embraces a number of roles with accompanying responsibilities that are further detailed below.

Project Manager

- Heads MAC project organisation and is responsible for the overall project delivery.
- Liaises with the CONTRACTOR's Control Systems & Instrumentation (CS&I) Lead Engineer and the Procurement on a formal basis.
- Produces Monthly Progress Reports and participates in progress meetings with the CONTRACTOR.
- Plans and monitors the scope of work.
- Controls and assures adherence to the project schedule.
- Ensures deliverables are delivered per contract requirements.
- Expedites the CONTRACTOR to ensure prompt delivery of project deliverables and response to required/scheduled actions/activities.
- Monitors and assures adherence to the Project Quality Plan.
- Reviews and authorizes the procurement of hardware/software and subcontracts.
- Is responsible for project resource management & cost performance.
- Reports to the MAC management.

Lead Project Engineer

- Is responsible for all technical deliverables of MAC's scope.
- Acts as technical spokesman towards the CONTRACTOR, suppliers and internal organization (formal commitments are subject to Project Manager confirmation/veto).
- Liaises with the CONTRACTOR's CS&I Lead Engineer.
- Manages the Engineering team and is responsible for technical reviews against project requirements.
- Assists the Project Manager with the activity planning of the engineering phases.
- May, on occasions, temporarily act as a substitute of the Project Manager.
- Reports to the Project Manager.

Project Controller

- Is responsible for overall financial administration & reporting of the project.
- Liaises with Legal & other departments for contracts administration.
- Prepares invoices as per the agreed payment milestones and informs Project Manager of overdue payments.
- Prepares & controls the project cost schedule in close cooperation with the Project Manager.
- Reports to the Project Manager.

Project Planner/Scheduler

- Is responsible to maintain and track the Project Schedule throughout the project lifecycle.
- Expedites the Project Team to ensure prompt delivery of project deliverables and response to required/scheduled actions/activities.
- Reports to the Project Manager.

For this Project these functions are responsibility of Project Manager.

Document Controller

- Is responsible for acceptance, registration and distribution/transmission of all incoming/outgoing project documentation from and to CONTRACTOR.
- Verifies document quality compliance on all documents.
- Maintains the Document Register, Technical Query Register and Transmittal Register.
- Is responsible for expediting timely delivery of document deliverables as per Document Schedule and raises flags to notify delays for both CONTRACTOR design input and MAC deliverables.
- Is responsible for archiving of the project files.
- Reports to the Project Manager.

QHSE Advisor

- Audits the project against quality and QHSE standards of Yokogawa.
- Supports the QC Engineer.
- Executes Customer Satisfaction Surveys.
- Reports to the Yokogawa Quality Manager.

Lead System Engineer (DCS, Safety, HW, NW&S)

- Acts as technical spokesman with regards to specialism.
- Manages System Engineers/Application Engineers within their specialism on project level.
- Is responsible for technical reviews against project requirements during the engineering phase.
- Selects and prepares material order instructions.
- Guards against any deviations to specifications.
- Reports to the MAC Project Manager.

Safety consultant (SA&C)

- Is responsible for performing safety assessments on the project to assure that the system is fully compliant with the Safety Requirements Specification (SRS) and in accordance with the IEC requirements.
- Is authorized to sign and issue a Declaration of Conformance (DoC(FS)) Certificate for the system as delivered to the Customer after safety validation.
- Advises the project team on safety aspects.
- Reviews/approves the Safety Validation Plan including the reliability and availability safety calculations.

8.3 ROLES & RESPONSIBILITIES BETWEEN COMPANY, CONTRACTOR AND MAC

The Roles and Responsibilities between COMPANY, CONTRACTOR and MAC are detailed in the RASCI Matrix as per contract. The RASCI Matrix template shall be reviewed during the Kick-off meeting and will be issued as separate document. It focusses on the project activities that require (or may require) MAC participation.

9 COMMUNICATIONS MANAGEMENT

9.1 PROJECT CORRESPONDENCE

Formal correspondence between CONTRACTOR and MAC shall be between CONTRACTOR's Lead Procurement and MAC's Project Manager or their authorised assigned delegate.

Table 4 below and Project Communication Matrix provides the contact persons with their contact details.

Functions	Names & Contact details
Project Manager	Sonia Corradi sonia.corradi@yokogawa.com +39 344 2705851
Lead Project Engineer	Alessandro Berra alessandro.berra@yokogawa.com +39 348 7640235
HW Engineer	Alessandro Giorgetti alessandro.giorgetti@yokogawa.com +39 347 3511111
Sales	Giuliano Piliero giuliano.piliero@yokogawa.com +39 335 1289352 Rosario Di Pasquale rosario.dipasquale@yokogawa.com +39 345 7311118

Table 4: Correspondence Matrix

Contractual related emails from CONTRACTOR to MAC are to be sent TO the PM and CC the LE.

Contractual related emails from MAC to CONTRACTOR are to be sent TO the LP and CC the LE.

Any telephone conversations related to contractual requirements shall be confirmed by e-mail.

In the absence of the default sender, the following persons may send official email:

- MAC Lead Project Engineer (on behalf of the Project Manager).
- Other CONTRACTOR Procurement representative (on behalf of the CONTRACTOR Lead Procurement).

9.2 PROGRESS REPORTS

A Monthly Progress Report will be submitted by MAC in accordance to an agreed Monthly Progress Report template. All project aspects like cost, schedule, quality, change, risk and organisation will be covered.

Template and cut-off dates for the Monthly Progress Reports are to be defined during the Kick-Off Meeting with the CONTRACTOR.

9.3 MEETINGS

9.3.1 Progress Meetings

Progress review meetings will be held at either Yokogawa office or CONTRACTOR office at an agreed interval in the presence of the MAC Project Manager and Lead Project Engineer (or his authorized delegate), and the CONTRACTOR Procurement Lead and Control Systems and Instrumentation Lead Engineer. Preference is to have a COMPANY engineer or equal representative to attend these meetings as well.

In the monthly progress review meetings the following topics will be discussed:

- Monthly progress report
- Actions from previous meetings
- Look ahead and related actions to be undertaken

In case the project schedule requires progress review meetings to occur with a higher frequency video/telephone conferencing can be facilitated.

Internal progress meetings will be held at a frequency dictated by the schedule of the project, typically weekly. Progress meetings with suppliers for subcontracted scope are held via video/teleconferencing at intervals required by the schedule. All Action are recorded in the Action Tracker or equivalent.

9.3.2 Technical Meetings

Technical meetings may be initiated either by MAC or CONTRACTOR as deemed necessary. These meetings will be conducted through conference or face-to-face (at either Yokogawa or CONTRACTOR office).

Technical meetings to discuss the interface between the Control & Safety Systems and each of the package equipment vendors shall be hosted by the CONTRACTOR. These meetings will be conducted preferably face-to-face in the presence of the CONTRACTOR, Package Vendor and MAC.

9.3.3 Other (one-off) meetings

The following one-off meetings will be conducted during the project:

- Kick-Off Meeting
- Pre-Inspection Meeting

An internal and external Project Closeout meeting will be held to ensure that the project has a clearly defined end and to arrange an organized hand-over of responsibility to the group(s) who will use, support and sustain the project deliverables.

9.3.4 Minutes of meeting

Minutes of meetings of above mentioned meetings shall be created by MAC and signed by the MAC Project Manager (or his authorized delegate) and the CONTRACTOR Procurement Lead (or his authorized delegate). Distribution of signed minutes of meetings will occur via Document Control within <5> working days (latest). Actions shall be captured in a (separate) Actions tracker or equivalent.

9.4 PROJECT DOCUMENTATION

The SUPPLIER MASTER INFORMATION REGISTER (SMIR) details the YOKOGAWA deliverables. It specifies amongst others document numbering, revision control, acceptance status, comments receipt date by customer/contractor etc. between MAC and CONTRACTOR.

9.4.1 Specifications Documents

(Mainly) During the detailed design and implementation phase, MAC and the CONTRACTOR will exchange (document) deliverables. MAC will use the CONTRACTOR deliverables to base their design on; the CONTRACTOR will review and approve MAC deliverables to arrive at the desired ICSS design.

In order to meet the project schedule, MAC requires the CONTRACTOR (specification) deliverables at pre-defined dates. These dates are clearly mentioned in the Project Schedule.

A Document Register is maintained by the Document Controller listing all (exchange) documents and their status.

9.4.2 Technical Queries

In the course of the design and implementation phase, MAC may issue technical queries in case of:

- Inconsistency between CONTRACTOR design deliverables.
- Need for additional information, not captured in CONTRACTOR design deliverables.
- Raising technical question which might have commercial or schedule impact.
- Any deviation from project specification or COMPANY standards.

Technical queries will be raised via Document Control and will have a unique identifier.

A Technical Query Register is maintained listing all technical queries and their status.

Conclusion of a technical query may lead to design and scope changes. Appraisal of the subsequent change to determine price and schedule impact will be mutually agreed between MAC and the CONTRACTOR.

10 RISK MANAGEMENT

10.1 PLAN RISK MANAGEMENT

Throughout the project life cycle a Risk and Opportunity Register is maintained for the project identifying risks and opportunities in terms of HSE (People), Cost, Schedule, Reputation and Quality. At every phase gate the register is reviewed and updated by MAC project team. The Risk and Opportunity Register template foresees in definition of probability and impact.

10.2 RISK IDENTIFICATION & CONTROL

The identification of risks/opportunities is not limited to scheduled reviews at the time of phase gates. Also during regular (internal) progress meetings or other events new risks/opportunities may be identified.

Upon identification of a new risk/opportunity it will be added to the register and discussed in the team for qualitative and quantitative analysis. The risk level will be defined on the basis of the probability and the impact. Cost and schedule impact are calculated using the PERT technique.

Risk mitigation actions will be defined and assigned to an action owner and captured in the register as well for follow-up. Outstanding risks and opportunities and the mitigation actions will be regularly reviewed during (internal) progress meetings.

The Top Risks and Opportunities will be included in the Monthly Progress Report.

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A1.1 APPENDIX: CONTRACTOR DELIVERABLES

General:

- User Requirement Specification (elements of URS can be found below)

ICSS:

- I/O list / Instrument index – including field cable allocation, power requirements, I/O type, etc. (refer to the Data Exchange document if applicable)
- Range, Alarm and Trip Settings (RATS) lists.
- Third Party Interface definitions (data mapping, type, protocol, etc.)
- Control and Equipment Room Layouts
- P&IDs
- Process Control / Safety Narratives, unambiguously describing the logic requirements
- Cause & Effects and Logic diagrams/descriptions
- Functional Block Diagrams for special and complicated control loops
- Equipment Package Interface Block Diagrams
- Sequence Descriptions
- Fail Safe conditions
- Identification of the relevant safety loops, evaluating their SIL levels and checking the impact of the logic associated with them.
- Utilities Schedule (power, grounding, HVAC, ambient temperature, etc)
- Field wiring and termination diagrams
- Safety Requirements Specification
- HMI Requirements Specification
- Plant Operating Philosophy
- Alarm Philosophy
- Black start requirements
- Trending & Reporting Requirements
- Override Philosophy
- I/O Segregation philosophy
- Hazardous area requirements and classifications
- Network/Plant security requirements specification

- Hardware requirements specification
- User Groups & User access philosophy
- Testing Requirements Specification
- Instrument Philosophies and Specifications
- Instrument Purchase Requisitions
- Instrument Project Standards (application of)
- COMPANY specific practices, engineering standards and other applicable codes and standards
- Expediting the delivery of communication / interface data for DCS of (3rd party) equipment packages *
- Inspection and Acceptance Test of the DCS/IPS scope including (witnessing) integrated equipment package interfaces *

** MAC will be responsible for- and perform the necessary interface tests with 3rd party or package unit suppliers. However, since MAC will have no contractual relationship – and as such will have no leverage on 3rd party or package unit suppliers – CONTRACTOR's involvement and close cooperation with respect to delivering the necessary design input, managing the 3rd party suppliers and testing the interfaces will be required to facilitate efficient and effective integration of 3rd party interfaces.*

All information provided to MAC shall carry an 'Approved for Construction', 'As-Built', or similar status and shall be consistent, complete and unambiguous.

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