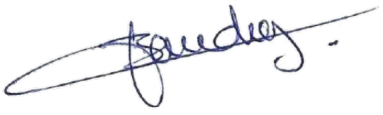
Annex 06 Owner´s Requirements

la Vendimia Solar Installation



INDEX

1. INTRODUCTION

This document aims to define the minimum requirements for the detailed engineering, manufacturing, material supply, testing, packaging, delivery, assembly, installation and commissioning of the photovoltaic power plant “La Vendimia” in Chile (“The Facilities”).

As general, the scope of works is for a Turnkey Full EPC of a Solar Photovoltaic Plant, falling underthe PMGD category, including PV-Plant + Interconnection to the distribution grid.

Table below presents a summary of the Project:

Description	Information
Country:	Chile
Region:	CAUQUENES (MAULE REGIÓN)
Project Name:	**LA VENDIMIA**
Project Design Life	**25 years of Design Life**
Leased Area [Ha]:	20.8
UTM WGS 84 coordinates EAST:	See Annex 2
UTM WGS 84 coordinates NORTH:	See Annex 2
Altitude [m asl]:	350
Peak Power:	10.49 MWp
Maximum AC Active Power at POI:	9 MWac
Tracker / Racking system type:	Horizontal Single Axis Tracking
PV-Module Type:	c-Si / bifacial
Minimum PV-Module peak Power:	650 Wp
PV-Module minimum warranty requirements:	Trina Solar Co. Ltd. Limited Warranty – Document PS-M-0135 Rev. O dated June 1 2020
POI power factor requirements:	As per Annex 05 – CONNECTION OFFER

This document provides the main characteristics of the equipment’s and systems to be used in thePV plant. While it identifies the basic requirements of the Works under the scope of the EPC Contractor, it should be understood that the scope of work is not limited to that described in this document and is inclusive of all works required to engineer, construct and successfully commission and interconnect the Facilities to the local grid in accordance with Trina Solar’s performance and design requirements, and with all applicable codes, regulations, local gridrequirements and industry accepted standards and good practices.

The Facilities shall be designed to have a minimum 25 years useful life, considering the site specific conditions and expected operating conditions of the Facilities.

As detailed engineering is part of the EPC scope, the development design provided in Annex 08 is preliminary and for reference only. It is open for changes by the EPC Contractor, as long as these changes either imply improving or maintaining the same design quality. In any cases, Performance Warranty presented in Annex 18 shall be maintained.

2. DEFINITIONS

DEFINITIONS	
OWNER	Any person or company or designated representative by that has theproperty rights over the Facilities.
EPC CONTRACTOR = CONTRACTOR	Any person or company that directly or indirectly designs, performs engineering, obtains, installs, builds, tests and puts the owner's facilities into service.
SUBCONTRACTOR	Any person or company (other than the contractor or its affiliates) that perform some of the work on behalf of the contractor and / or supplying hardware project directly or indirectly to the contractor and its affiliates in connection with the operation of the construction site.
MANUFACTURER	Any person or company that is directly or indirectly responsible for theproduction of the required materials
SUPPLIER	Any person or company that is directly or indirectly responsible for theproduction of the required materials
DESIGN LIFE	The time when an element is expected to perform without repair. It means the O&M costs must remain the same year to year over that same time period.
OEM	OEM = Original Equipment Manufacturer

3. LEGISLATION AND CODES

The EPC contractor shall be fully responsible for ensuring compliance with local codes and regulations, as well as industry good practices. In particular, the following standards should complywith:

- NORMA TÉCNICA DE CONEXIÓN Y OPERACIÓN DE PMGD EN INSTALACIONES DE MEDIA TENSIÓN
- NCh 431-2010
- NCh 432-2010 Diseño estructural - cargas de viento
- NCh Elec 4/48
- NCh 433 or NCh 2369, as applicable
- NCH National Standards Area C and F
- All local applicable standards

In addition with all international standards referred to in this document.

4. GENERAL REQUIREMENTS

The Work and Facility shall be designed, engineered, procured, constructed and delivered as "Turn-key".

The Work shall meet all the applicable prefecture, municipal, provincial, regional, national, and international codes, regulations, and standards, which may be amended, replaced, or supplemented from time to time, and which may be required by any governing authorities having jurisdiction (AHJ). A partial list of relevant standards, codes, and regulations are provided in Appendix A.

Where codes do not govern specific features of the equipment or system, equipment manufacturer specifications, industry standards and best practice shall apply.

Where local codes or ordinances will have an impact on the design, the EPC Contractor shall address these with the local authorities having jurisdiction, prior to completion.

The Facility shall be designed to have a minimum design life of 25-years, considering the site specific conditions and expected operating conditions of the Facility; at any time during the performance of the Work, Owner reserves the right to request documentation to demonstrate the validity of the design life period.

Any part of the Facility that does not meet the minimum design life shall be clearly identified and the required maintenance regime shall be included in the Operations and Maintenance Manuals provided by the EPC Contractor; components forming the Plant shall be selected to minimize corrective maintenance events.

The EPC Contractor shall provide engineering drawings and reports signed, stamped, certified and/or sealed by a Professional Engineer, who is registered with the authority having jurisdiction, when required by applicable codes and/or regulations and/or as requested by the authorities, and with the appropriate engineering discipline of Geotechnical, Civil, Structural, Mechanical or Electrical;

The EPC Contractor shall be responsible for the overall management of the Work;

EPC Contractor shall be responsible for all the required permits and associated fees related to the Facility and as defined in Annex 04.

If there are any requirements or specifications that appear to be in conflict, the more stringent shall apply.

4.1. LANGUAGE

All documentation regarding design, manufacturing, inspections, quality control, operation and maintenance shall be delivered in English and/or in the local language of the country where the project is located.

4.2. SCOPE OF WORKS

As general, the scope of works is for a Turnkey Full EPC of a Solar Photovoltaic Plant, falling underthe PMGD category, including PV-Plant + Interconnection to the distribution grid.

The Scope of Works shall include, although not be limited to:

- Engineering of the Facilities
- Procurement of all equipment and materials required for the construction and entry inoperation of the Facilities
- Electro-mechanical assembly of all Facilities' components
- Civil Works, including, but not limited to: Internal Roads, Access Road, Clearing and Site Preparation, Trenches, Fences, Dunes, Tree and rocks removal (limited to the constructionarea and if required), Demolition works (if required), Foundations and Drainage System
- Removal and cleaning of any material, waste or debris that may exist on the site and interfere with the performance of the Works, both on the surface and buried, to the exception of any Unforeseeable Site Conditions. The Owner must be informed 5 days in advance of the commence of the cleaning activities and its personnel has the right to be present during the waste removal and site cleaning activities, unless the cleaning activities have been performed prior signature of this contract and NTP was given. In case the cleaning activities are to be performed prior signature of this contract and issuance of NTP, Trina will do their best to inform Matrix in order to allow their staff to be present during the execution of the works.
- Any hazardous or dangerous elements present in the site shall be signed and protected before personnel or machinery enters the site. This includes holes, wells, trenches, ditches, and any other elements that might imply a hazard. In the event that during the construction works of the plant any of these elements or any other previously existing infrastructure is damaged, it must be restored to its original state by the constructor.
- All project engineering Interconnections integration between PV-Plant up and including POI
- All project document control
- Monitoring and control system
- Security system and security during the performance of the works
- O&M Building
- Warehouse building
- Temporaries facilities buildings during construction, for EPC Contractor & Owner
- Earthing and Lightning Rods systems
- Testing, Commissioning of the Facilities to ensure achieving Commercial Operation
- Internet (main and back up) lines as well as all necessary construction work to bring wiredinternet service to the plant
- Logistic to site management plan and all necessary work outside the plant to allow transporttrucks access to site
- Project Management
- Permitting related to the construction phase and required for the entry in operation of theProject
- Health & Safety Management
- Quality Management and Document Control
- Environmental & Social Management as required for carrying out the construction of the PVplant, in compliance with project's permits, to the exception of any volunteer commitment not directly related to the scope of the EPC contractor
- Bonds, Insurances and warranties
- Local authorities meeting and coordination as required
- Equipment's or systems design life calculations
- All (PV Plant + Interconnection) O&M manual and training for owner/operator
- All necessary engineering studies for permitting and entry in operation, such as: Grid Impact Study,

Harmonic Study, Grounding Study, Electromagnetic Study, Lightning StrikesRisk Assessment, PV-Panel reflection impact in the sky to meet local requirements, etc.

- Sounds suppression barriers (if necessary according to approved project's permits)
- Excavation, concrete pouring in first and second level and all civil works needed
- Supply of all cables, fiber optic cables, metallic structures, circuit breakers, disconnector switches, surge arrester, power transformer, rigid busbar, voltage and current transformers,medium voltage cabins, medium voltage cable, concrete, sand and gravel, perimetral fence,warning elements, aviation signaling, lightning protection, underground duct bank and concrete channel, underground flexible pipes, stockbridge or similar elements, fittings, fixations elements, bolts, nuts, washers, insulators string, connectors and clamps, terminal connection kit, operation platforms, SCADA and measurement system, high conductivity grease and all auxiliary elements needed for a full completion of the project, as applicable
- Reinforcement, repair and maintenance of public or private roads affected during the development of the contract In particular, the contractor is reminded that any damage caused both to the work area and to the temporary access road shall be repaired and paid for by the contractor involved
- Pre-commissioning, commissioning and start-up works for a complete energization
- Factory acceptance test certificates for main equipment
- Spare parts supply for 2 year considering minimum 99% availability
- Structure to install the AC Combiner Boxes (if applicable) and Inverters
- Waste and storage structure container (As required PAS140)
- Waste container/structure for dangerous materials (As required PAS142)
- Drainage system (if required)
- Drainage work outside the plant required by DGA (if applicable)
- All engineering work, basic – for construction & As-Builts
- All required demolition work required inside plant
- All big object removal and site clearing
- Supply and Installation of all required Individual and collective protection devices, e.g.: Safety Kit for MV-Station & Buildings, Road signage, Mechanical Interlocks, Safety locks, Safety stickers, etc.
- Any required Low Voltage overhead lines to cross internals water channels or rivers
- Reception of equipment at site
- When required, design and construction of permanent bathrooms and sewerage as indicated in PAS permit

4.3. EQUIPMENT AND SYSTEMS DESIGN

The Project shall be designed for a design life continuous performance of its intended function under normal operating conditions at the Project's site assuming adequate maintenance will be performed and taking into account the local environmental and site conditions, including but not limited to, temperature, soil, flooding, dust, irradiation, grid conditions and altitude.

The EPC Contractor shall assess the area available at the Project site for development andinstallation of the Facilities and design the same in such way that the capacity measured at the Point of Interconnection ("POI") shall not exceed the Maximum AC Active Power defined in Annex 05 and fulfill all local grid code, local standards and utility requirements at any time.

The Project shall be designed so as to ensure that it can be decommissioned whilst not resulting in harm to the environment.

Grid Code Compliance shall be a requirement for commissioning and achieving Provisional Acceptance as described in the contract, and the Facilities shall comply with all applicable laws and will be fit in all respects for its intended purpose.

The Facilities' buildings shall be designed and constructed to withstand, without damage, all applicable environmental conditions as defined by applicable building codes for the Project site.

The systems shall be designed, using bifacial high quality c-Si PV modules from Tier-1 OEM as the basis for electricity generation.

The system shall be designed, transported, stored, and installed or constructed in compliance withall component manufacturer installation guidelines ensuring that all warranties and guarantees are maintained intact.

All structural elements must be designed in accordance with local applicable codes.

All electrical equipment shall meet international and local specific requirements, as they apply.

All materials and equipment shall be new with a quality reasonably expected in the international manufacturing and construction industries, free from defects and deficiencies of any kind. The works, equipment and any warranted component parts shall utilize proven technology that has beenoperated commercially at other locations and which will be capable of being insured either on the insurance market or by the EPC Contractor

The works shall be performed with all the skills and care to be expected from adequately qualified and experienced contractor and subcontractors with specific experience in performing the works and services required of a similar size, type, nature and complexity to the works.

All equipment installed outdoor at the Facilities must comply with UV protection and at least IP55 certification rated & designed for the maximum ambient temperature of the plant. Only MV-Station can have a lower IP rating of IP54.

All equipment should present a temperature rating design or calculation, especially the electrical panels installing outdoors and panels with high power concentration.

All engineering Works & design shall be individually and collectively certified by an adequate qualified independent engineer as compliant with local laws and regulations (i.e. Certificates of Compliance).

OEM recommendations are mandatory to comply with.

All selected equipment & parts must be designed for the application where is going to be installed,and size for the design life of the project. The EPC Contractor shall be able to present, upon request, manufacturer documentation that confirmed equipment is designed for the application & required design life.

In general, the EPC Contractor shall warrant that it shall use the state-of-the-art and most efficient technology in the performance of the Works and in respect of all Equipment, Contractor's Equipment, Major Components, Consumables, and all other materials and supplies utilized in connection with the Works.

5. SCOPE OF ENGINEERING

The EPC Contractor shall be responsible for all engineering and design activities related to the Project, including the related Interconnection.

The detailed engineering shall comply with the requirements of the applicable codes, standards, regulations and general specifications, and with the technical requirements contained in this Contract and Annexes.

In addition, it shall seek to achieve a high quality installation aiming to minimize downtimes.Scope of

detailed engineering includes:

- All Project Document Control, for all parts of the project: PV-Plant, elevation and interconnection Substations as well as interconnection Line and POI substation arrangement as applicable.
- All project Engineering Integration, including: Substations, Overhead Line, Inverters, PPC, Scada, CCTV, Weather Stations etc.

6. SCOPE OF SUPPLY

The EPC Contractor will be responsible for all the supply and assembly for the realization of the project. This includes everything related to the supply and assembly of the photovoltaic plant, interconnection and O&M spare parts.

In addition to the main equipment (modules, mounting system, inverters, MV stations, CCTV, Weather Stations, SCADA, PPC, etc), scope of supply shall include all equipment, materials and

accessories, including but not limited to: cable, cables protections, fasteners, glands, electrical boxes, accessories, foundation, etc.

6.1. PV MODULES

While there are several PV module technologies that the EPC Contractor may supply, the PV modules shall meet, as a minimum requirements, warranty standards provided in Annex 12. In addition, the PV modules shall be selected among the Approved Manufacturers list provided in Annex 10.

Bifacial PV modules should be used. Modules of experimental or beta type are not allowed.

The photovoltaic modules must have a maximum positive power tolerance of + 5W. Negative tolerances are not acceptable.

The manufacturer must present the following information during tender process:

- Number of bypass / bypass diodes (optional)
- Nominal Operating Cell Temperature (NOCT)
- Maximum Power / Peak (Pmax)
- Open circuit voltage (Voc)
- Maximum power voltage (Vmpp)
- Short-circuit current (Isc)
- Current in maximum power (Impp)
- Temperature coefficients
- I-V curves at the following irradiation levels; 1000, 800, 600, 400 and 200 W / m2
- PAN file for PVSyst

Specific Requirements for PV-Modules:

- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- PV-Module should be framed minimum 35mm (1.38 inches) Anodized Aluminium Alloy
- Junction Box IP 68 rated
- Connector shall be supplied with sealing cap
- PID Type PID Free, providing a Potential Induced Degradation (PID) free tests performed by reputable third party laboratories for the Module Type.
- Performance warranty. Linear performance warranty. From the 2nd year to the 25th year as a minimum.
- Output Power warranty. The pv-module manufacturer should present a table with the exact power value per year that is going to be valid (pass/fail criteria) when the customer check themodule STC power in a certified laboratory. The laboratory STC power measurement uncertainties, accuracy, precision or error cannot be considered in the pass/fail criteria.
- PV-Module classification. Modules should be sorted by its Impp in at least 4 groups and labelled. Intervals should be agreed and approved by the Trinasolar Owners Engineering. Each shipping container should contain only one power and current with the exception of theshipment in the final 5 MW when different current bins are allowed in the same container, butseparated at pallet level.
- TIER 1 Category only.
- FAT (Factory Acceptance Test). The factory-leaving acceptance criteria of the module manufacturer shall be provided prior to any modules being dispatched from the point of manufacture
- Module Handling Procedure. A module handling plan covering all aspects of packing, transportation, reception on site, storage, and installation shall be in place

- Flash Test. The PV modules shall be flash tested at the factory of manufacture and these reports, data, and images (as applicable) are to be handed over to customer for acceptance prior to shipping of the modules.
- Snail tracks free and free of defects such as bubbles, delamination, EVA discoloration, burn marks, among others
- The photovoltaic modules have to be, including but not limited to, under the certifications ISO9001, ISO 14001, IEC 61215, IEC 61730, UL 1703 and PV Cycle (or equivalent in each country)
- The proposal should also refer to other certifications (ex: heavy snow and ice charge, extremewinds, hail test, ammonia test, and salt corrosion tests) where appropriate
- The quality system of the manufacturer of photovoltaic modules must be certified according to ISO 9001, by an internationally recognized certification authority
- IEC61215/IEC61730/IEC61701/IEC62716/UL61730
- ISO14064: Greenhouse Gases Emissions Verification
- ISO45001: Occupational Health and Safety Management System

EPC Contractor shall provide Owner with the following information for each module installed in electronic format (excel file):

- Serial Number of each module
- Factory-measured module power, voltage and current data.
- Full flash test capacity.
- Copies of Quality Assurance and Quality Control documentation and/or data related to themodule supplied by the Module Manufacturer.
- PV modules are to be supplied from any of the following suppliers (or any other approved bythe Owner): Trina Solar or bankable Tier 1 module manufacturer.

6.2. MODULES MOUNTING SYSTEM

The mounting structures shall be selected among the Approved Manufacturers list provided in Annex 10.

EPC Contractor should consider 1 axis tracker as PV-Module Mounting System.

The PV module mounting system and foundations shall be designed to suite the specific geotechnical characteristics of the Project site. Pull-out tests will be carried out during the engineering phase to ensure suitable mounting structure foundation design.

Minimum requirements:

- The structure must be according to EN-ISO 146 in a quality level of 8.8, for the useful designlife of the PV plant.
- The supporting structures must be compatible with the photovoltaic modules and must be approved by the module manufacturer previously.
- The minimum distance between the lowest part of the module and the ground, in any positionor movement is 0.5 meters minimum.
- Compliance with all the specifications and materials.
- Protection against corrosion and galvanic coupling.
- Environmental category considered should be according UNE EN ISO 14173.
- Design and certified to all and latest IEC standards specific for PV Mounting system (Trackers)
- Design for free of corrosion for during design life period.

- Equipotential bonding washer for module electrical continuity between structure and moduleframe is included, for example WEEB clamp type. PV-Module should be mounted and bondedto ground according manufacture installation manual and be certified for use with tracking system to UL-2703, UL-3703.
- All required structural and civil engineering (stamped by local engineer if required) should be considered
- All local standards and required certification are mandatory to be complied.
- The structure must be designed to withstand the specific mechanical and chemical conditionsof the site, for continuous operation, without any degradation of the material and without needof repair during the lifetime.
- The mounting bracket structure must have an appropriate permanent labels for quick identification during O&M

During construction of racking, Contractor shall mark all bolted connections of racking structureafter connections are tightened to torque value specified by racking manufacturer or Engineer ofRecord.

In case modules with different powers are installed, the EPC Contractor must be categorized by power in addition to maintaining a record through a mapping that reflects the exact location of themodule, maintaining traceability with the drawings.

6.3. INVERTERS

The inverters shall be of the pure sine wave, commercial grade. In addition, the inverters shall be selected among the Approved Manufacturers list provided in Annex 10.

The materials and equipment used shall be designed, manufactured and tested in accordance with the following data:

- Service: Continuous
- Installation: Outdoor (only the Data Logger will be indoor)
- Minimum protection grade: IP 54 for outdoor equipment
    - Minimum Corrosion protection Level: C3, according to ISO 12944Equipment shall be

designed for site maximum ambient temperatures.

The equipment to be supplied under this specification should be designed for the design life period, considering normal maintenance and corrosion, erosion and wear and tear of material.

The Supplier should define, where appropriate, the frequency and duration of main and intermediate stoppages for scheduled maintenance and indicate what is necessary to keep the equipment operating.

Inverter will be made by reputable manufacturers and will be suitable for 1500 Vdc.

The selected equipment shall be adequate for the climatic conditions of site working at full load.

The power factor value shall be adjustable from 0.8 lag to 0.8 lead and work continuously in 1, if it is necessary. Also, the inverters shall permit to change the and regulate the power factor, reactive/active power, start, stop, ratio ramp up and ramp down from the control system of the plant.

Inverter should be able to inject reactive power during night time.

The inverter will be able to communicate with the same standard communications protocol that has been chosen for the overall plant communication and control system. If the inverter needs an intermediate gateway to comply with this protocol, its installation, configuration and tests will be included in the scope of the Supplier.

At least, the following protections will be available:

Designation	
Unbalance voltage protection (%)	AC Overcurrent protection
Phase angle offset protection	PV-array String Fault Monitoring
10 minutes overvoltage protection (V)	DC-Reverse-polarity protection
10 minutes overvoltage protection (ms)	Anti-islanding protection
Level-N overvoltage protection (V/ms)	Input-side disconnect device
Level-N under voltage protection (V/ms)	Surge arrester in DC and AC side (Type I +II)

Overall Efficiency of the inverter shall include the inverter and all its auxiliaries (such as the cooling system), Output Sinus Filter, Power Factor Correction and Harmonic Filter (if any of the is applicable)

Inverter System efficiency calculations shall be in accordance with the latest international and restrictive standards.

Curve of efficiency is required for partial loads from 50% to 100% for the temperature ranges of the project.

The efficiency values shall be confirmed by the supplier at 100%, 75%, 50% and 25% of the load.

Inverters shall include the communication protocol indicated in the data sheet. The inverters shall connect to tablet or mobile display screen and visualize/modify all the parameters through USB data cable or Bluetooth module.

The Data Logger will provide monitoring and management of the PV power system. It will converge ports, converts protocols, collect and store data, and centrally monitor and maintain devices in thePV power system. The supplier is responsible for providing the adequate fittings to fix the Data Logger.

Inverter Manufacturer is responsible for designing, assembling and Factory Testing of all their equipment's (MV-Station, Inverters, Control System) according to: Local Utility Standards, Local Grid Code Requirements, Local Electrical Standards, Local Civil Standards, Local Safety Standardsand with all applicable codes in the country.

The complete inverter solution (MV-Station, Inverters, Control System), will meet all the requirements of the Local Electric Grid Code, as: Minimum Response Time, Voltage Control, PowerFactor Control, Reactive Power Control, Reactive Compensation at Night Time, The active power ramp rate, Frequency deviation response, Fault Ride Through, Voltage Ride Through, Dynamic Reactive Current Injection, Low/High Frequency Ride Through , Response Time and Error of Dynamic Reactive Current Injection, and any other requirement required by the Local Grid Code.

Inverter Manufacturer must submit FAT reports of all equipment prior delivery, in *.pdf format.For

Central Inverters, DC current measurement is required in each DC Inputs.

INVERTER POWER CONTROL FEATURES

- Active power curtailment included
- Active power ramp rate constraint included
- Reactive power close-loop control included
- Power factor close-loop control included
- Frequency Ride Through (FRT) capability included

- Voltage Ride Through (VRT) capability included
- Over frequency active power response included
- Reactive power injection for VRT included
- STATCOM mode: Reactive injection at night included. The inverter should be able to work inreactive power mode during the night (night time reactive power operation mode). The inverter should be able to automatically change from night time reactive power operation mode to day time operation mode without any local or remote intervention.

INVERTER MINIMUM RESPONSE TIME

- Maximum of 20 regulation loops per second, under any circumstance (Dynamic, Static, etc)
- Maximum scanning and refreshment speed of 1 second under any circumstance (Dynamic,Static, etc)
- Maximum delays time under any circumstance (Dynamic, Static, etc), as follow:
- Dedicated Power Line Comunication (MBUS) is mandatory.
- Transmission line delay (from data logger to all the inverters) should be less than 30 ms
- Wider transmission bandwidth should be much over the inverter IGBT switching frequency (9 kHz ~ 18 khz) to avoid interference from AC grid power. The bandwitch should be adjustable according to site conditions to improve the transmission quality.
- Baud Rate should be over 100 kbps.
- Support up to 40 modes/inverters per Data Logger
- Easy to maintenance, each inverter communication problem should not affect others inverters connected to the same data logger
- Power Line Communication (MBUS) should be third-party certificated.

INVERTER + PPC MINIMUM REQUIREMENTS

- UPS Backup system for backup. Minimum backup time is 2 hours.
- The minimum data storage capacity in the plant is one year.
- Rack to install all PPC devices
    - PPC must include a Working Station (Display, keyboard etc)

INVERTER OPTIONAL CHARACTERISTICS THAT MUST BE INCLUDED

The inverter must include all optional characteristics, as:

- USB Key
- Compatible DC connectors for incoming cables
- Mounting clamps
- Portable display (if there is any)
- String monitoring software 2 years license (if there is any)
- O&M or monitoring application license, 2 years license (if there is any)
- 24/7 Remote & local technical service for O&M for 2 years.

6.4. MV-STATION

GENERAL CHARACTERISTICS

The Transformation Center considered must have the following characteristics:

- Nominal Power: According Inverters Power Curve
- MV Insulation: 10% above nominal continuous operation voltage
    - Maximum voltage in continuous operation: Vn*110%

MV SWITCHGEARS

- MV switchgears, SF6. Equipped with Key interlock as kirk-key or Ronin-key or equivalent
- MV switchgear medium voltage protection relay should be able to communicate by Modbusand send data to scada as: Voltage, Current, Trips, Local mode

- Transformer Zone. Equipped with key interlock as kirk-key or Ronin-key or equivalent
- Electrical switch interlocking
- Mechanical switch interlocking with manual mechanisms
- Integrated leakage testing of the panels
- Breaker with motor capable of remote operations
- IAC AFLR Type or equivalent solution
- Vacuum circuit-breaker (only for V-panels)
- Two-position load break puffer switch
- Earthing switch with single spring operating mechanism
- Switch position indication for load break switches and earthing switches
- Single spring operating mechanism on cable switches
- Two-position mechanism with auto-reclosing duty for vacuum circuit-breaker
- Cable bushings with integrated voltage
- Operating handle
- Lifting lugs for easy handling
- Manometer for SF6 pressure
    - Local/Remote signal integrated to SCADA

LV PANELS

The cabin will be composed of the following elements:

- Breakers
- Breakers must meet the short circuit level considering “infinite bar” on transformer MV bars
- Measurement and control equipment
- Surge arrester Type 1 + 2
- Key interlock as kirk-key or Ronin-key or equivalent
- Auxiliary services transformer power switch and UPS batteries
- Vcc power supply
- UPS with a minimum of 2 hours in operation for all control, CCTV and measurement devices connected to the stations
- Temperature control system with ventilation
- Moisture and condensation system (Condensation meter + Temperature sensor + Heateretc)
- Bender type insulation meter for systems with floating neutral
    - Pilot lights for voltage presence at inputs and outputs of the panel

LV/MV TRANSFORMER

The transformation center will be composed of a power transformer with the following characteristics:

- Efficiency according latest version of EN 50588-1
- Transformer should be calculated for minimum of 7 hours at 100% capacity, 2 hours at 75%, and 2 hours at 50% every day for the design life period of the project. These are the minimumvalues, EPC Contractor is responsible to make their calculation to demonstrate transformer will support loading curve during project design live period.

  Transformer mandatory accessories

- Gas accumulation alarm: 1 pcs
- Flow of oil trip: 2 pcs
- Oil temperature alarm: 1 pcs
- Oil temperature trip: 2 pcs
- Oil temperature signal: 1 pcs
- Pressure relief trip: 2 pcs
- High oil level alarm: 1 pcs
- Low oil level alarm: 1 pcs

- In addition, the MV Stations shall be selected among the Approved Manufacturers listprovided in Annex 07.

ADDITIONAL CHARACTERISTICS FOR MV-STATIONS

- The transformer and the building must be of type C3 minimum (degree of atmospheric protection)
- MV station that connect directly to substation must be CCV Type, the rest (downstream)could be DV type
- Include repainting kit for possible defects during transport.
- The transformer connection and LV board is mandatory in bars (cables are not accepted)
- LV cable entries must include hardware to secure the cable terminals that come from theinverter.
- LV input terminals or bars must be sized to withstand the nominal current at 90° C in permanent mode (100% rating)
- Proof of sizing of bars must be delivered
- Thermal analysis of the solution and dimensioning of the building's cooling system, LVframe and MV cell cubicle must be delivered.
- Dry transformer is not accepted, must be outdoor oil type
- Must include oil collection tank and oil filters. Oil tank could be built outside the station.
- The signals of the transformer devices must reach a terminal box that is already pre-wiredby the transformer manufacturer.
- All transformer devices must include “duplicate” signals, some for cell tripping and othersfor integration into the SCADA.
- The transformer must include a voltage arrester in the MV side.
- MV-Station will be prepared/designed to work at 10% above of the Nominal Medium Voltagein continuous permanent conditions.
- All Transformer and MV-RMU must be prewired to an Input Card (signal concentration unit),that will allow integration by ETHERNET cable

6.5. CABLES

All cables should come with a letter from the manufacturer indicating the design life, considering the installation conditions (depend on each cable), for example: Outdoor with direct sun light in continuous operation for string cables, Direct Buried or Direct, Buried in water saturated soil, etc.

String DC Cables

- Must be designed for the application
- String cables must meet IEC 62930 or an equivalent standard that must be specific for PV applications and valid for the plant local requirements.
- Insulation should be 1.5/1.5 kVdc minimum (Phase to ground insulation must be 1,5kVdc)
- Cable should have minimum 2 layers, 1 for insulation and 1 for jacket.
- Is local code allow it, preferably EPC contractor should use black color cables for stringcabling
- Typical sizes are: 6 mm2 & 10 mm2

DC Cables for combiner boxes to Central Inverter

- Must be designed for the application
- Insulation should be 1.5/1.5 kVdc minimum (Phase to ground insulation must be 1,5kVdc)
- Suitable, tested and warrantied for direct buried
- Cable should have minimum 2 layers, 1 for insulation and 1 for jacket.
- Is local code allow it, preferably EPC contractor should use black coloured cables for stringcabling
- Typical sizes are: 150 mm2, 185 mm2 & 240 mm2 & 300 mm2

AC Cables for string inverters

- Must be designed for the application
- Insulation should be at least 0.6/1.0 kVac

- Suitable, tested and warrantied for direct buried
- Cable should have minimum 2 layers, 1 for insulation and 1 for jacket.
- If local code allow it, preferably EPC contractor should use black coloured cables for stringcabling
- Typical sizes are: 150 mm2, 185 mm2 & 240 mm2 & 300 mm2

MV Cables for combiner boxes to Central Inverter

- Must be designed for the application
- Insulation should be minimum 10% above nominal operation voltage
- Suitable, tested and warrantied for direct buried
- Should have radial and longitudinal protection against water penetration
- Typical sizes are above 150 mm2.

Fiber optic & communication cable

- Must be designed for the application
- Suitable, tested and warrantied for direct buried
- Armoured cable or equivalent solution rodent protection
- All power, control and instrumentation cables shall be flame retardant, according to IEC 60332-3, IEC 60754 and IEC 60331.
- Design requirement for fiber optic circuits is redundant. This is achieved through a ring configuration. With this configuration, there are two possible data communication paths toreach each MV-Station.
- Fiber optic should be design for 50% spare fibers
- Copper type communication cables should be double shielded

6.6. IN-FIELD EQUIPMENT ENCLOSURES

- Enclosures are to be designed to withstand the site specific environmental conditions forthe lifetime of the Facility.
- The minimum warranty shall be 5 years.
- Enclosures are to be UV rated or protected from exposure to the sun.
- Enclosures are to have a minimum IP rating of at least IP54.
- Enclosures shall employ ventilation lugs to prevent condensation build-up.
- Enclosure should have anti condensation valves.
- Enclosure should have drain valves.
- Enclosures are to have surge protection installed on the power and communication circuits in accordance with the Lightning Protection System design.
- Enclosure doors shall be hinged and lockable with a standard electric cabinet key.
- Enclosure should be lockable by external lock
- Outdoor enclosure should have a mini roof to reduce sun light heating
- All panel must have a Heat/temperature calculation report and all components should be able to work at the expected temperature inside the cabinet. Heat calculation must considersun light heating.

6.7. GROUNDING

Grounding designs are to comply with relevant codes taking into account the results of the Geotechnical Study such as the ground resistivity tests and any other tests required.

Grounding cables are to be copper if bare and green & yellow if insulated.

The works shall provide for a fully protected robust grounding system. The design shall adhere tothe engineering standards appropriate for the project**.**

6.8. ELECTRICAL PROTECTION

Disconnects (fuses, isolators, circuit breakers, etc.) shall be coordinated (internally and externally with regards to the Project facility) and designed based on fault current ratings of components.

A suitable load break switch dis-connector must be installed at the inverters DC input. The switch will be readily and easily accessible.

In case Combiner Boxes are installed, suitable load break switch dis-connectors must be installedat each combiner box to enable isolation at the sub-array level. The switch should be installed in such a way to be operated from the outside of the combiner box and that the enclosure maintains all specifications detailed herein

The switch disconnector installed on the DC side shall have the following features:

- The switch must isolate all live conductors (typically double pole to isolate PV arraypositive and negative conductors)
- The switch must be rated for DC operation at the system maximums for voltage andcurrent as calculated.

The switch must be labelled as 'PV array DC isolator', with the ON and OFF positions clearly marked. Switch enclosures should also be labelled with 'Danger - contains live parts during daylight'.

All labels must be clear, easily visible, constructed and affixed so as to last and remain legible for the entire lifetime of the Project.

Protection systems shall disconnect the Project to minimize damage from faults. Main and backupor dual protection schemes shall be installed using modern protection relays.

6.9. WEATHER STATION

The weather stations shall be spread out across the Project site in a way that irradiance monitoringis performed in the most representative manner of the full PV plant.

The weather stations shall be connected to the Project Supervisory Control and Data Acquisition (SCADA) system.

2 weather stations should be installed, 1 Main Weather station and 1 Secondary weather station:

Main weather station

- 1x horizontal pyranometer (ISO 9060 spectrally flat Class A)
- 1x ambient temperature sensor
- 1x wind director sensor
- 1x anemometer (wind speed and direction sensor)
- 1x precipitation sensor
- Datalogger
    - Solar panel 60W for self-consumptionSecondary Weather station:
- 2x plane of array pyranometer (ISO 9060 spectrally flat Class A)
- 2x module temperature sensor
- Soiling Sensor. Atersa or similar cells for soiling measuring

A soiling measurement device will allow monitoring of soiling factor as per IEC 61724.

All above sensor must be calibrated by a certified calibration body.

Weather station will be adequately grounded.

6.10. CONTROL SYSTEM

The contractor will supply equipment or services meeting the following minimum specifications:

- Remote control system development in the customer center system, monitoring the following elements:

- Substation main components
- Inverters
- AC counters as inverters
- DC counters as inverters
- Remote inputs / outputs
- Transformer protection system
- Weather stations
- Calibrated cells independent of weather stations
- Followers / Trackers
- Device active power control of the plant.

The system should include monitoring screens, variables, alarms, reports, user settings and permissions. Users should be able to access the system using a standard interface and is based on Java and HTML5 browser.

Screens to develop:

- General screen plant
- General screen counters AC
- General screen counters DC
- General screen INVERTERS
- General screen Trackers
- Screen view of each transformer
- Screen weather stations and cells Calibrated
- Screen transformer protection system
- Screen view substation
- PPC screen view
- SLD display medium voltage
- Charts and graphics display
- Reports display counters production
- Screen plant performance reports (PR)
- Events linked to the production system
- Alarm management via email

Reports to be generated (at least):

- Meter Production Report: should reflect the energy generated by each meter for the selected time period. The sum of the AC meters, the value of the MT meter, calculating transformation and transport losses will be included.
- Report PR (Performance Ratio): this report reflect the PR for each AC meter for the selected time period, the PR for the sum meter AC in each line, report PR referenced tothe measured MT and a global PR of ground referenced to the sum meter MT.
- Availability report: show the calculation of the availability of each inverter and follower.The calculation should be based on the number of hours that said inverter, or follower inverter has been operating in a particular time period.

All reports must include in their head: date and time of the system, data start and end of the selected time range. Likewise, it includes a brief description of each report.

Alarms to be generated (at least):

- Alarms generated by the monitored elements.
- Alarms calculated (zero production strings open circuit, deviations in the inclination of followers, position of the followers with strong winds, misfields meteorological towers, failure sensors of the meteorological towers by comparison with reference values , network control, high temperature equipment, production below average ...).
- Alarms generated by communication failures.

The preferred supplier for the control of power plant is Green Power Monitor.

It is proposed the implementation of a system that allows to achieve the reduction of operating and management costs by developing the following aspects:

- Improvement in the maintenance of the installation, surveillance systems, preventive, predictive and corrective maintenance.
- Automated prediction system. Decrease penalties for production deviations.
- Global plant control system. Decreases the cost of operation.
- Automated management system. Reduces the costs of the management processes(billing, accounting, taxation, etc)
- With the monitoring system that is proposed, we achieve:
- Reduction of installation costs.
- Improvement of the installation efficiency.
- Decrease in operating costs.

In the O&M building will be located a Rack in which the Server will be included, Swith of interconnection of Fiber optic with the plant FV, UPS with (designed for 1 hour) and the router thatwill connect to the router of access to Internet (in the contractor scope).

The system must include the Energy Meter, Reconector, Breaker reading at POI.The Control

System shall be Green Power Monitoring or Meteocontrol

In order to optimize the cost and performance of the photovoltaic solar plant, the monitoring system that is proposed consists of the following:

- Work to establish Internet service to the plant. Service contract to be signed by TrinaSolar.
- Weather Station (having all sensors calibrated).
- Monitoring of electrical parameters of each Smart String Inverter.
- Data-Logger Team (supplied by Trina Solar).
- Reading of Energy Meter and Reconnector at POI.
- Supervisor of protections and systems. Equipment that monitors the status of lowvoltage and medium voltage protections.

The Control system incorporates the control system of the Facility and the interface with the grid operator. Facility operation points (for power factor, of voltage level) shall be remotely set-up by the grid operator through the RTU communication system. The control system of the Facility shall incorporate the control processes to maintain the appropriate settings during operation, by remote control of the inverters and MV switchgear equipment.

The time for the whole system shall be done with a GPS to avoid any time lag. The connection between the different devices (inverters, network analyzers, weather station, etc.) and the Server will be made by the contractor through the local network of the installation, using switches to group equipment.). The devices to local network will be interconnected forming a virtual fiber optic ring.The transition of the field buses (eg Modbus RS-485) to the local network (Ethernet TCP / IP) will bedone through a suitable gateway (protocol converter). The connection between the Server and the

external database is made over the Internet. Therefore, a permanent connection to the Internet is required at the control center.

The different equipment that make up the solar plant (inverters, analyzers, weather station, strings monitors, etc.) use different types of networks and industrial field buses (Modbus, Profibus,DeviceNet, etc.) and communication protocols (RS-232, RS-485, RS-422, etc). By installing the appropriate gateways and switches, a local network is configured in the plant to work with a standard protocol (Ethernet under TCP / IP). In terms of field buses, an open protocol and RS-485 or similar (shielded to the pair and the whole) will be used at the physical level, since it is the mostwidespread solution in instrumentation. The buses must incorporate signal amplifiers and gateways to other media (Ethernet cable or fiber optic).

Each device in the network must have assigned a fixed and univocal IP within the same range, so that the Server can access any device at any time. The Server must have a permanent connection to the Internet, through an ADSL or satellite router, depending on the availability of the service at the plant's location. A redundant additional connection can be included (for example, by 3G or GSM modem), to guarantee the continuity of the data transfer in case of failure of the main connection.

The Server acts as a master in the local network and the devices as slaves. This means that the Server requests a value from a record to a specific team and it responds with the requested data. However, if an alarm or fault occurs, the slave unit immediately sends a message to the master PC.

The information can be consulted at anytime and anywhere through the website, from any device (computer, mobile, etc.). The web platform has been developed in PHP with some Flash plugins.

6.11. GRID CONNECTION

The facility interconnection shall be capable of exporting the full contracted capacity and reactive power as may be required within the limitations of the grid code.

The interconnection shall be designed in accordance with all relevant codes and shall comply with the distribution company requirements and project’s permits.

The facility shall be grid code compliant under all normal operating conditions and under the rangeof conditions specified by the local Grid Code.

The EPC Contractor will be responsible for all engineering coordination of the facilities interconnection.

6.12. SECURITY & CCTV

SECURITY

As priority fence must meet requirements described in the permits

A security fence should be installed around the entire perimeter of the Project site with the following characteristics, as minimum:

- Should be design for corrosion free for design life period
- Fencing must be cyclonic mesh wire cloth hot dip galvanized gauge # 10.5 with rhombic opening 63 x 63 mm with tolerance of + - 3mm.
- Tubular hot galvanized (inside and outside) diameter 1 7/8 " with foil gauge # 18 and totallength of 2.40 m.
- Tubes and support structures must be compatible with access doors and gates.
- Setting maximum height: according to customer specifications.
- Passageways for small fauna to 100 m.
- Compliance with all materials and specifications.

- Protected against corrosion and galvanic coupling throughout the warranty period.
- The screws should be cadmium (electrolytic protection).
- Environmental classification EN ISO 14173.
- Concrete foundation with each of the posts and corner fencing.
    - Horizontal retained and tensioners are used for high corner posts.Fence gates should allow trucks and heavy machinery access.

CCTV

Outdoor rated thermal security cameras and receiver with recordable capabilities shall be installedto provide surveillance of the Facility for remote monitoring of the Facility from the control room. Thermal cameras shall be installed along the whole perimeter of the Facility such that no “blind spots” exist. This video surveillance system shall employ cameras controlled by the hardware andsoftware platform located in the control building. Security related panels shall be located in the control building. Domos shall be positioned at entrances to ensure that the complete entrance areacan be monitored. Access Control shall be installed at the main entrance of the Facility. Ethernet FO cable in underground conduit shall be installed from the camera to the control room. The systemshall incorporate a fence enclosing the entire perimeter of the Facility. All the devices of the securitysystem shall be supplied by the auxiliary system.

Post location should not generate shadows on PV-Panel. Shadows on PV-modules should be reduced as the minimum possible.

The plant's security system should be design to cover the entire fence area, without any blind spot and, the fulfillment of the following items:

- The system will consist of thermal vision and night vision cameras.
- The system should be prepare to work with a "ACR” (Alarms Central Receptor)
- The system should be able to storage all CCTV data (videos, alarms, events, etc.) in the plant servers for minimum 31 days.
- The system should include "Outdoor UPS Cabinets" for cameras energy back up system. UPSsystem sized to provide backup power for up to 2 hours in case of a power failure.
- The system should able to be integrated with the Plant Control system, CCTV System statusand alarms should be able to be read using MODBUS protocol by ETHERENET TCP-IP Cable.
- Outside O&M building, the following camera must be installed, Exterior type Wifi FULL HDSafire VINOLO or equivalent
- Door status detector should be installed in all buildings
- Inside O&M buildings volumetric detectors & motion detectors should be installed
- Inside O&M building a camera should be installed to watch all sensitive equipment’s
- The Security System shall include alarm capability; the system must have the capability of sending security alarms by email to the remote centralized control room or 3rd party monitoring company.
- The IR sensor should allow 100 m of night time viewing capability.
- Perimeter will be equipped with IP thermal cameras with its associated video analyzer to complete the CCTV system for video analysis. Thermal cameras shall be installed along the whole perimeter of the PV Plant such that no “blind spots” exist.
- Furthermore, CCTV should have dome cameras, for an overview of the PV system. This systemwill be associated with the CCTV system in order to monitor alarms with these cameras.

The intelligent perimeter security is based on having a vision and capture of images (video) at all times and of the entire perimeter of the enclosure. Not only does it allow real-time intrusion detection, but it also detects the intruder before accessing the premises, generating a warning. Thisis achieved by processing and analyzing all the videos generated by each and every one of the cameras.

The security system of the devices described below, all of them integrated into a single system that aims to achieve reliable and robust protection.

The system should be capable to be integrated in the Control System and possibility of alarm reading trough communications protocols as MODBUS

RECORDERS

32-channel recorders DAHUA-157 / NVR4832 or similar. They have the following characteristics:

- Fully stable LINUX embedded operating system
- H.264 video encoding and G.711 audio
- Two-way PC / DVR audio conversation
- Simultaneous playback of 16 channels in real time
- Includes remote control and USB mouse
- Remote keyboard control (Joystick) via TCP / IP or RS485
- Independent configurable video sensor per camera
- Multi-language display configuration menu
- Dome control in RS485 multiprotocol
- USB ports for external devices
- Software and hardware watchdog
- Watermark to preserve the integrity of videos
- User access to cameras in local and / or remote mode
- Several IP cameras can be updated from the NVR at the same time
- Masking areas, video loss alarm and camera concealment
- Vision, configuration and remote control by TCP / IP with client program and Internet Explorer browser (compatible with Firefox and Chrome browsers)
- Sending emails with attached photo in alarm
- Sending to FTP scheduled or on alarm
- Alarm sending, and connection to video surveillance receiver
- Display on Symbian, Blackberry, Windows Mobile, Android and iPhone smartphones
- Fixed / dynamic IP via Dyndns, NoIP, DDNS Evolution, etc.

SUPPORT FOR SEGURITY STAFF

In case of detection of an incident, the system notifies the security guard. This allows a quick preventive action.

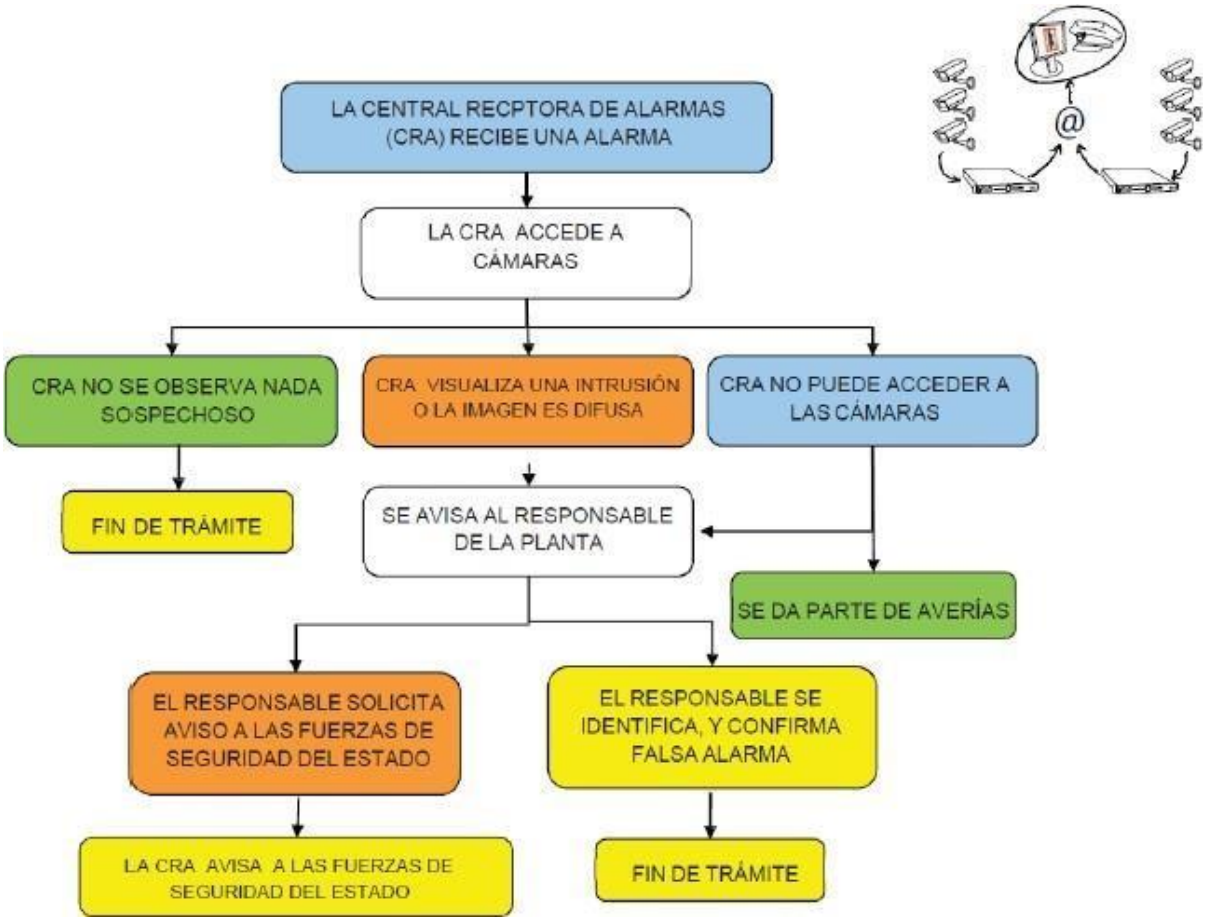
Supervision from an alarm receiving station (CRA)

If the plant does not have security guards, alerts are sent to the Alarm Receiving Center, via Internet connection.

If there is a detection, the system sends an alarm to the CRA and this alerts the operator, who activates the security protocol. In case of intrusion, the CRA can remotely activate deterrent measures (sirens, lights, etc.).

The video analysis systems of the plant have integrated verification systems. This allows the CRAto filter out "false alarms", and thus not unnecessarily disturb the customer.

The treatment of an alarm received thanks to a video system is carried out according to the following scheme:



6.13. OVERHEAD LINES

The scope of this section is to provide minimum requirements for major AC Overhead collection system components as they shall be supplied by the EPC contractor.

Contractor shall ensure that the collection system complies with all requirements of any governing authorities having jurisdiction.

The following are the minimum requirements for OH Line:

Power cables: shall consists of a solid or stranded steel core surrounded by strands of aluminium. The aluminium shall has a shiny surface which a low emissivity for heat radiation anda low absorption of sunlight. The steel core shall be galvanized steel with 5-10% of zinc. The aluminium alloy and temper used for wires shall be greater than 99.5%, guaranteeing a maximum

working temperature of 75 ºC without deformation. The cable used by the contractor shall comply with all requirements indicated in the project.

Fiber optic cables: The optical fiber cable shall be built with the purpose of grounding and atmospheric discharges in aerial installation, the working temperature shall be between -40 ºC and 70 ºC without suffering deformations, it shall have a central dielectric element, with a wire to block water penetrations, the optical fibers will be of single mode type with independent tubes foreach 8 fibers at most, the protection tube will be built in aluminum, finally the cable will be covered by steel wires covered with aluminum. The cable used by the contractor shall comply with all requirements indicated in the project.

Conversion box OPGW-FO: The converter box shall be made of aluminium alloy with high mechanical resistance and strong corrosion resistance, suitable for outdoor installation, it shall include the necessary fixings for mounting on the tower, the cable entry shall always be from the bottom and by means of cable glands, the size shall be suitable for connecting all the fibres according to the project indications. The box used by the contractor shall comply with all requirements indicated in the project.

Fittings: The fittings shall be made of hot-dip galvanized steel, with high mechanical resistance and strong corrosion resistance, suitable for outdoor installation, with enough mechanical resistance. The fittings used by the contractor shall comply with all requirements indicated in theproject.

Insulator string: The insulator chains shall be formed by glass or composite insulators, offeringthe highest mechanical resistance and leakage line, with high mechanical resistance and strong corrosion resistance, suitable for outdoor installation, they shall have a profile that favours the self-cleaning of the insulator. The insulators used by the contractor shall comply with all requirements indicated in the project.

6.14. CIVIL ENGINEERING AND CONSTRUCTION REQUIREMENTS

The scope of this section is to provide is to state the civil engineering design requirements. Civil design should be according project design life period.
The civil engineering design shall be conducted or directly supervised by a professional engineer licensed by the local government or organization where the Site is located.

CIVIL DESIGN CRITERIA:

- EPC Contractor shall adhere with all planning permissions and land lease agreements, when applicable.
- Design shall be adequate to install and operate the Facility based for its intended use.
- Design shall include a site preparation plan.
- Graded areas, where required, shall be smoothed and compacted, and shall be in accordance with tracker supplier's specifications and tolerances.
- Hydrological survey and drainage system shall define the requirements for the protection of electrical equipment against flooding and road and other PV structures against erosion; See further requirements below.
- Maximum surface slope for PV array areas shall be in accordance with tracker supplier's specifications and tolerances.
- Final grade adjacent to equipment and buildings shall be at least 150mm below the finishedtop slab or bottom of structure as applicable and shall be sloped away from the slab, equipment, or building at a minimum of 2% slope.

- Roads shall be designed to comply with all applicable emergency and fire regulations, including width, turning radii, and road structural sections.
- Roads accessing the entire site for equipment delivery, installation, construction and O&Mwork.
- All underground utilities (conduits, cables, duct bank, etc.), shall have adequate protectionto prevent damage at all road and path crossings.
- Contractor shall perform a road condition survey of the existing Access Road before and after construction. If damage is found along the Access Road between the
- Cable trenches ground compaction minimum value should be 90%
- For cable trenches, as minimum requirement Direct buried conductors or cables shall be installed so that they run adjacent to each other and do not cross over each other and witha layer of 6 mm (nominal) screened sand or screened earth at least 75 mm deep both aboveand below the conductors. screened earth of 1mm (screening mesh Nº10-20 0.85-2.0 mm)
- For cable trenches, backfill containing large rock, paving materials, cinders, large or sharplyangular substances, or corrosive material shall not be placed in an excavation where such materials may damage cables, raceways, or other substructures, prevent adequate compaction of fill, or contribute to corrosion of cables, raceways, or other substructures.
- Trenches close to mounting (tracker or racking) structure should be validate it by mountingstructure manufacture to ensure do not affect piles/foundation structural integrity.

DRAINAGE DESIGN CRITERIA:

- Topography: The Contractor shall carry out an internal topographical survey (i.e; within the Project site boundaries) both before and after earthworks are performed, in order to design the internal drainage system.
- Topography: In case there are significant water bodies in the vicinity of the Project site, the Contractor shall carry out an external topographical survey (i.e. outside of the Project site boundaries), both upstream and downstream, in order to perform hydrological modeling with sufficient precision, in the event that the hydrological study of floods indicates a high risk of flooding and there are bodies of water with a significant contribution of water in the vicinity of the project
- Hydrology: It is important that the main river basins should be correctly identified in the hydrological study.
- Hydrology: flooding zones shall be modeled with software such as HEC RAS and represented in a figure that shall include the water height and velocity across the Project site, in the case that the hydrological flood study indicates a high risk of flooding
- Hydrology: the detailed engineering shall consider the results of the hydrological study and should include measures to mitigate the flooding risk. The appropriateness of the suggested measures shall be confirmed by modeling the behavior of the drainage system and calculating the associated water flow.
- For the design of the drainage system, it will be necessary to previously have a hydrological study of the area. A study of flooding with a return period of 50 years which is being carried out by Trina should be considered for the design and construction of the drainage system to ensure a useful life of the project of 25 years.

INSPECTION AND TESTING

- The Engineer of Record, or their representative, shall perform inspection and testing for allstages of the civil construction work to verify compliance of the work with the law and requirements of the Authority having jurisdiction, the recommendations from geotechnicalreport, topography report and/or manufacture's specifications.
- All the field and laboratory testing shall be prepared and achieved in a manner readily available to the job site. Reports shall indicate the date and time when the work was conducted and testing completed, and the Owner's Inspector name and signature.
- Any nonconforming conditions detected which are by the Contractor shall be documentedin a written report submitted to the Owner for disposition.

7. EQUIPMENT WARRANTIES REQUIREMENTS

According to Annex 12.

8. SPARE PARTS

According to Annex 13.

9. QUALITY

Contractor shall be responsible for and prepare a Quality Assurance Plan in accordance with the provisions set out in this Contract, its Annexes, the Applicable Law and Applicable Permits. The Quality Assurance Plan and Manual shall apply to the entirety of the Works and shall be Project specific.

10. COMMISSIONING

The Contractor shall undertake, at its responsibility and cost, all pre-commissioning, Cold and Hot Commissioning activities, and any other tests necessary to demonstrate the quality and reliability of the Project conforming to the Project Documents, the Contract, the applicable norms, and any applicable national and international law and standard, as well as the Grid Operator requirements.

Commissioning and testing of the Works is under responsibility of the Contractor and any cost or expenses incurred in carrying out the commissioning and testing shall be borne by the Contractor unless otherwise stated in the Contract or agreed between the Parties.

The Contractor's commissioning tests procedures shall comply with the requirements provided in Annex 15.

11. PERFORMANCE RATIO

EPC Contractor warrants that the Actual Performance Ratio will meet or exceed the Guaranteed Performance Ratio as per their definition in Annex 18, for both the Provisional, Intermediate (1 year following Provisional Acceptance) and Final (2 years following Provisional Acceptance) Acceptance Performance Tests (altogether the "Performance Guarantee Tests"). Procedure for calculating Performance Ratio is provided in Annex 16.

12. PERMITS SCOPE

The EPC Contractor shall be familiar with all relevant local permit requirements and shall be responsible for obtaining all permits necessary for the Works, besides those obtained by the Project Company (the "Owner's Permits", as provided in Annex 04). The Contractor shall be responsible for obtainging and maintain all the Contractor's Permits, as defined in Annex 04. The Contractor shall work in accordance with the legal requirements and all applicable laws and codes. The Contractor shall adhere to all applicable utility requirements, standard practice, laws and regulations, including labour standards.

The Contractor's design should comply with all Owner's Permits provided in Annex 04.

13. PROJECT DOCUMENTATION

The EPC Contractor shall prepare all required documentation and manuals according to Annex 09.