



Rey Suguran Armas

1.0 Permanent Address:

- Lot15 Block 100 Las Palmas Subd, Caypombo, Santa Maria Bulacan Philippines 3022
- Tel No. +63 9610913173
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2.0 Personal Data

- Age: 51
- Date of Birth: Oct. 16, 1972
- Gender: Male
- Civil Status: Married
- Height: 160cm
- Weight: 65lbs
- Religion: Roman Catholic
- Nationality: Filipino

- Passport No: P3059209B
- Issued At: P.E Abu Dhabi
- Expiry date: Oct. 02, 2029

Years of Experience

Local (Phil) : 7 years
Abroad : 19 years
Total : 26 years

3.0 Education:

- Cebu State College of Science and Technology
- Bachelor of Science in Industrial Technology
- Major in: Electrical Technology
- Year : 1990 – 1994
- GPA : 1.72 (0-4)

4.0 Computer Background

- Ms Office
- Ms Word
- Ms Excel
- MS Power Point
- Auto cad 2007
- Dumpy Level

5.0 Training / Seminar

- Basic Instrumentation
- Permit Receiver Course
- Basic Safety Course
- CBT- Identifying hazard
- CBT-Emergency Response
- CBT-H₂S
- Basic First Aide
- Fiber Optic Understanding
- Cathodic Protection
- QMS-9001-2008

6.0 Language

- English
- Tagalog

Position 1 **Qa /Qc Inspector E&I**

(10 years of Experience)

2 **E&I Supervisor**

(5 years of Experience)

Professional Summary and Skills:

A **Qa/ Qc Supervisor of Electrical and Instrumentation Works for over 10 years** and an **E&I Supervisor of 5 years**, a **Shift Supervisor for Commissioning, Operation and Maintenance Work including Automation Scada system for 5 years** and A **Foreman of E&I for more than 5 years** in a Reputable Institution and an expert EPC company.

My career has been built upon Experience and Expertise gained In Electrical and Instrumentation Works, Automation and Scada System from the following Construction, Commissioning, Functional, Operation and Maintenance project until Hand Over in:

- **Solar photovoltaic and Renewable energy** (Solarace1 /NGCP- Philippines)
- **Sewage Water / Reverse Osmosis** (DEWA)(Saudi-MOWE)
- **Oil and Gas Industry**(ENOC)(QATAR-Shell)
- **Refinery** (ADNOC)(SAUDI ARAMCO)
- **Petrochemical Plant** (PVC-PR11 - Philippines)
- **Cement Plant** (Hi –Cement -Philippines)
- **Power Plants** (NPC-Philippines)

With Strong Hand on Exposure in All Quality Related Documents like; ITP, Method of Statement, Project Requirements, Tracking Matrix, Work Pack, Sub System, Inspection Summary, etc. Familiar of some Electrical International Standards like: BS , IEEE, NEMA, IEC, NEC, ASTM, ASME, NFPA and International Society of Automation Standards (ISA) Review, Understand and Implement Project Specification, Guidelines, Project installation standards and notes, Drawings. Material inspection (approval and receiving), to make sure that the suppliers and material being use are in approve list and standard.

Ensure that Quality Procedure, are being followed and implemented in site installation including testing and always in full compliance with the client's requirements and in accordance with applicable standards with the Safety Rules and Codes.

Generates Request for Inspection (RFI), Conduct and Witness with the Third Party.

Preparation of files Log sheets, summary of Inspection records, Tracking and monitor of Test equipment / tools calibration records and availability with expiry dates, Equipment/ Instrument calibration records, to maintain proper flow of work as per Inspection and Test procedure list. Generates memo (SIR, SOR, NCR) when discrepancies occur, any deviation to Quality Procedure, Specification, Guidelines, Standards or installation against design criteria Generates punch list /snags item

Possess proven ability in E&I Equipment Installation, Functional and Testing Corrective action with Excellent problem Identification and Root cause analysis skills Strong Team Player and Has Expertise in team Leadership and management

Carrier Objective

I am looking for a good position in the field of Electrical control system and Instrumentation automation process in a prestigious company where my previous skills and Expertise can be put with unto efficient use. I possess an effective-organizational skill with the ability to supervise /Lead a team and develop the final output resulting to Job being done and Where it can enhance my professional capabilities and ability to a better future.

Hands on Exposure and Experience with Quality Implementation:

1. Electrical Discipline: Installation and Testing of Transformers, Switch Gears, MCC, LCC, Sub Station, RMU, Switching Station, Field, High Voltage cables, Wire and Cables, Hi PoT test (DC /VLF), Megger, Continuity, HVAC, Battery Banks, Capacitor Banks, Converter, Inverter, Charger, Generators, NER, Speed Drive, Schematic, Single Line and Connection Diagram, Motor solo run, Cathodic Protection, Fire Protection /Alarm and Suppression, Lighting, Earthing System, Heat and Steam Tracing, MOV, AVR, Protection Panel, LOTO., CT, VT, DS, ES, SA, ACSR Cable Cable Installation, Cable tray, supports, Conduit piping, Stub up, PV, Combiner Box, MC4,

2. Instrumentation Discipline : Instrument Installation, Equipments, Transmitters, sensors, Detectors, Device, valve, gauge, Indicators, Transducers, inline or Stand alone, Analog, Digital signals, Sequencer, Cable Laying, Glanding-Termination/ Testing, Impulse /SS Tubing, Calibration, Functional, Loop Checking, Commissioning, O&M, PLC, DCS, ESD, Field-Bus, FDAS, Analyzers, Continuous Emission Monitoring system (CEMS) Fire and Gas, Telecommunication, PAGA, CCTV system, MCM, MCS, etc. Fiber Optic Splicing, Termination & Testing. FAT, SAT.

3. Commissioning, Operation and Maintenance:

Local and Remote, Manual and Automatic including Scada Operation and Configuration of Sewage Treatment Plant and Reverse Osmosis

4. ShutDown: Before to Start the task for shut down activities we comply the company, safety procedure and standard in accordance with OSHA Secure work permit, **Apply for Lockout Tag Out** on the specific equipment and Obtain Approval from Operation and Maintenance department.

With Full Training, Execution, Witness and Inspect Fiber Optic cable Activities, Cable pulling, Splicing, Termination, Testing using Fusion Splicer, OTDR, Light tester, Power Source & Lightsource with Wave length 1310 /1550, Calculation of Span Loss, Splicing Loss, Connection loss etc.

Professional Working Experience:

Position : **Electrical Supervisor**
Company : **Global Electric Power Development Corp. (Philippines)**
Project : **120MW Solar Photovoltaic Renewable Energy (Solarace1 / NGCP- Philippines)**
Period : December 30 2020 up to July 21, 2023
Reason of Leaving : Project Completion

Duties and Responsibilities:

IT is my full responsibility of a workplace to be as Neath, clean, Safe to meet the project target ahead in good, Safety with Good Productivity and Best Quality. To gain positive feedback and meet costumers Expectation & Satisfaction. Convey and Give Instruction, Information to Foreman, Charge-man discuss scope of work, some procedures, gate pass or clearance, schedules, Safety matters, targets, manpower requirements, Test equipments, forms, tools and materials including benefit if any. Arrange and Gather usefull Approve documents for Installation activities like Location / As built drawings, Lay out drawing, Single line diagram, Equipment Installation details, Test forms connection details, Cable list Equipment details/ index, vendors print and distribute to area foreman/ charge-man. Direct Coordinate with the client representatives in the area for proper work flow such as As per site condition status, variation and others,,later, give positive feedback to the management for change before site execution. Coordinate with Designated project Engineer for proper scheduling, status, strategies, change order (if any), feedback, document updates and any work related. Submit manpower list/ requirements and its allocation with work plan, proposal, estimation, target, assessment plan and week look ahead plan..Conduct daily dialog, assembly toolbox before work to convey instruction/ information from management and address immediately any issue or concern from the manpower on the ground, daily monitoring routine in the area of responsibility and maintain Good Coordination, Cooperation and Communication between with work force to ensure daily site required items if any deviation or rectification will address accordingly without delay., Attend Coordination meeting once a week with (Daily/Weekly)Progress report and status which include topic of manpower, materials, transportation, work quality, bill of materials, scope of work, project requirements, required documents, time frame, strategies and target dates

- Maintain Data record, value, readings, feedback and Equipment Status Log Sheet for future reference.(During commissioning stage) Monitoring, Recording and observation of the Apparent, Real and Reactive power generated for the grid using the Net Metering program in NGCP (National Grid Corporation of the Philippines). Coming from The On-Grid 69kV 120 MW Solar photovoltaic power plant in Solarace 1. An Ayala Company Energy Corporation (ACEN). Monitoring of Real /True power , Reactive power and Apparent power, Supply Voltage, Control unit, Protection panels and Switching station to maintain smooth Operation for Costumer's satisfaction.
- **Installation, Testing and Commissioning of 120MW Solar Photovoltaic Renewable Energy system** in 120 Hectares land at Alaminos Laguna Philippines including Solar Panel, DC Charger, DC/AC Inverter, Auxiliary Combiner Box (ACB), Battery Banks, Splicing box, Fuses, Back up Generator, Air Insulated Switch gear and accessories (AIS), Air Circuit Breaker, Transformer, String Cable and Connector, MC4(Multi-contact /male -female), PV cable, Gantry Erection, Static Wire, 69kV ACSR / ThaL cable, XLPE cable, Switching Station, PCB, Surge Arrestor (SA), Lightning Arrester, Current Transformer(CT), Combined Instrument Transformer (CIT), Capacitive voltage Transformer(CVT), Disconnecting Switch (DS) and Earthing Switch (ES), Power Distribution , Bus/Line Differential Panel (TLM), Annunciator panel, MCSB, RTU/BSU, BCU, DC and AC panel, Communication Panel with receiver and Patch panel,
- Power and Control cable Installation, Termination and Testing including internal / Interface wiring, Data and communication cables for CIT, CT, VT, DS, ES, PCB going to MCSB, Line / Differential Protection panels, Ac –DC panel, BCU, RTU, Cable supports Organizers.

Position : **Qa/Qc Supervisor E&I**
Company : **Danway Electrical and Mechanical Engineering (DIP 2 Dubai UAE)**
Project → **40 MIGD Sewage Water treatment / Reverse Osmosis (Jebel Ali Power Station, DEWA Dubai UAE)**
January 2020 up to August 2020
→ **Emirates National Oil Company Expansion Project (ENOC)(Jafza - Jebel Ali free Zone Authority, Dubai UAE)**
Nov 05 2018 to January 2020
→ **Ruwais Refinery West Unit Restoration Project (RRW-UR)(Takreer / Adnoc Western Region Ruwais, UAE)**
December 2017 up to November 05, 2018
→ **Carbon Black and Delayed Coker (CBDC) – Ruwais Refinery-(Takreer / Adnoc Western Region Ruwais, UAE)**
February 2014 up to December 2017
→ **Ruwais Refinery Expansion (RRE)Project (Takreer / Adnoc Western Region Ruwais, UAE)**
January 21, 2011 – February 2014
Reason of Leaving : Project Completion

Task: Assist my Lead Qa/Qc Team Leader in Preparation of the following:

Method of Statements every activity, Inspection and Test Procedure (ITP) and Task Risk Assessments (TRA,
Material Submittal and Approval of all material to be use for Electrical and Instrument Erection in general.

Material inspection (approval and receiving), to make sure that the suppliers and material being use are in approve list and standard.

Review, Understand and Implement Project Specification, E&I Guidelines, Project installation standards and notes, Drawings, Method of Statements, and All related documents. Including BOQ, Scope of Work and Variation

With proven ability to ensure that Project target date and Budget as mandated are being catch up. Observe Health and Safety Management system (OHSAS 18001:2007) & Environment implementation (HSE) and Ensure that the team will understand and Trained of Safety codes and standards with Zero LTI & LTA target. Follow and adhere to the OH&S Management System Manual as per client's safety standards.

Ensure that Quality Procedure, are being followed and implemented in site installation including testing and always in full compliance with the client's requirements and in accordance with applicable standards with the Safety Rules and Codes.

Generates Request for Inspection (RFI), Conduct and Witness together with the Third Party.

Preparation of files Log sheets, summary of Inspection records, Tracking and monitor of Test equipment / tools calibration records and availability with expiry dates, Equipment/ Instrument calibration records, to maintain proper flow of work as per Inspection and Test procedure Generates Memo (SIR, SOR, NCR) Site Observation, Non Conformance Report when discrepancies occur, any deviation to Quality Procedure, Specification, Guidelines, Standards or installation against design criteria Generates punch list /snags item

Duties and Responsibilities:

Generates Request for Inspection (RFI), by sequence as per ITP with all necessary documents as per Description, Installation Inspection, Verification / Witness Testing / Functional for the following Items together with the Third Party Inspector and EPC

Electrical and Instrumentation (Greenfield / Brownfield) - : PDH, DHT, SHT, LPG, MDEA De Ethanizer, Sulfur recovery unit (SRU) Tail Gas system, LPG –Liquid Petroleum Gas, LPG caustic treatment, LPG contactor unit, AMINE regenerator, SWS, Amine treatment and FUEL Gas Contactor, Steam generation, Power generation, Cooling tower, Condensate Feed and Effluent Treatment Sewage Treatment Plant and Reverse Osmosis

- **Material Approval and Receiving** (prior to installation)
- **Verification of Documentation** (Electrical / Instrumentation drawing) like; Location drawings, Cable Route plan, P&ID, ILD, Hook Up, Connection Details, Installation drawing and details, Block diagram, ensure that the documents (all) are latest and having stamp., Recorded from DC.
- Installation area survey (as per approved location and installation drawing).. and **Mock up** for All installation when start.
- **Inspection Installation for the following Equipment:**, Protection Panel and Components, Main Board/ Panel, relay, Main control cubicle, LCC, Switchgear, Power Transformer, CT, Neutral Ground resistor, NER, Motor, LCS, ECS, Battery, UPS, Bus duct, Bus Bar, Breaker, Bushing, Capacitor banks, Variable speed drives, Back up Generator set, Fuse box, Interface panel, junction box, Power Distribution board etc. Installation Inspection and **Witness Bolt Tightening** with torque value required. **Instrumentation** : Marshalling cabinets, MOV control system (MCS), Machinery Condition Monitoring system (MCMS), Instrumentation and Electrical Controller (IEC), Control room Desk and monitors, Fiber Optic control monitoring system and accessories, Rotating machine protection system cabinet (RMPS), PLC system, Marshalling cabinets, EBC FBC, PAP, FF Field Bus and PC panels at Rack room, AC DC panel, IRP, IEC, TDAS, FDAS, Receiver & Rack, Consoles, Scada system, Desk, DCS, ESD, and FieldBus cabinet including accessories and Functional testing. Junction boxes, Local panels Hand switches
- **Test Equipment Inspection** for all measurement equipments to be use at site (calibration status / third party calibration approval –if necessary)
- **Visual Installation Inspection of Wire ways**, underground Stub up, Duct banks, block out, conduit, PVC, raceway, cable tray, cable ladder., Cable trench Lay out, route, excavation size, FDT, elevation, fine bedding sand and Back filling with procedure
- **Witness MCC component test**, CT test, voltage test, interlock test, earth lock test, Bus bar check, torque, HV, MV & LV Hi pot testing of equipment. Observe and Monitored during SAT activities.
- Cable Testing (IR and Continuity test) on the drum after material receiving and before cable laying.
- **Inspection Cable Laying, Installation** (expose and underground), (continuity and IR test after cable installation), Cable glanding (Continuity and IR test after cable glanding), Cable Termination Visual inspection_ Bolt tightening with torque value required. **inspection, Verify Cable glanding and Termination** (Plug in type and lugs type) at Substation area and transformer **Jointing and Splicing** of 6.6kV, 11kV, 33kV, 76kV, 220kV High Voltage cable XLPE (Crossed-Link Polyethylene) and CVLA (Copper PVC Lead Armor) using Raychem and 3M kits, including Low voltage cable (3C & 4C) and others. **Witness; Cable Continuity and Meggering**, (Injection value as per design criteria and Project specification) **Instrumentation Visual Inspection Cable Installation, Glanding and Termination including Witness Continuity and Insulation resistance test** for both Primary , secondary and branch_ IS, Non IS, UTP, STP Cat, Telecom cables, Fire Detection system, Fire and Gas system, Paging and Public address system, Interconnecting cables, IRP and all instrumentation cables. (Injection value as per Design criteria and project Specification)
- **Hi Potential Testing** (Hi pot) for 33kV, 76kV, 220kV XLPE High voltage cables from Transformer, Switch gear, Sub Station
- **Earthing system** Installation verification, connection and testing. Lightning system installation and testing
- Lighting and Small power installation including Testing; street light, building, indoor /outdoor etc.
- **Installation and Testing of AIS (Air Insulated Switchgear) GIS (gas Insulated Switchgear**, High / Medium/ Low voltage **switch gear** consists of switching and protecting devices such as switches, fuses, isolators, circuit breakers, protective relays, control panels, lightning arrestors, current transformers, potential transformers, auto re closures, and various associated equipment and Power Distribution, Panel installation, relay protection system, voltage protection, Line protection Board, Power Transformer Protection board, Current protection Board, ATS, AVR, VSD system including rectifiers. **Installation and Commissioning of: Chillers./ HVAC system and accessories**. Power, Control, Inter-trip Cable Installation, Glanding – termination & Testing HVAC: controller, sensor, the controlled device, and the source of energy, such as electrical or pneumatic. Including special sensors monitor & measure variables like, winding temperature, humidity, Oil Level/ pressure, flow etc. **Installation, Verification and Testing of Bus Duct**.
- **Installation Inspection, Verification and Witness Transformer** activities, oil filling and filtration including Winding resistance test, tap check, RTCC and OLTC functional, DPR test, CT and vector test VT group, Breakdown voltage and ratio test, magnetic balance and magnetization current, Impedance test, Polarization index. Electrical equipment Functional testing and **Transformers, GIS, Switchgear (Power, Distribution Step down)** Visual inspection and witness of functional for the protections; vibration, oil temperature, oil high / low pressure, oil level, gauge, valves, indicators
- **Motor Solo run** (for motor and control) closely monitoring the Rotation, Speed, Noise, vibration, temperature from NDE & DE, start and running ampere and voltage. Earth fault and Polarization index (PI).
- **Installation and testing of Telecommunication system and apparatus/ Paging system and apparatus (PAGA)/ Audio/Video Public Address system/ Camera, DVR, CCTV system** , Alarm system, Access control with other integration
- **Inspection Verify Installation, witness Calibration and Loop checking of Primary Parameter Instruments** and Functional testing (Pressure, PDT, DPT, Flow, Level & temperature transmitters) SKIN, RTD and Thermocouple sensor in both inline, and Stand alone, Fieldbus / Hart Communication protocols..(Hart) **Secondary instruments** and Gauges includes testing /calibration (PI, TI, LI, FI, PS, FS, LS, TS, PISH, TE Injectors, multi meters. **Verify Installation and Witness Functional testing of inline instruments**; VT /VE, VXT/VXE, VYT/VYE, ZT/ZE) Vibration transmitters with sensors, Speed transmitters/sensors, Proximate transmitters/sensors, Temperature sensors, probes for Booster / Air blower pumps including Burner Flame scanner and Ignition controller., control valves, FV, LV, PV, TV, PSV, PCV, EFV, on off valves
- Installation verification of the following; PG, TG, LG, FG and witness Calibration includes Mechanical process test.
- **Inspection, Verify Installation of Analyzer and Witness Functional testing** with **Continuous Emission Monitoring system** (CEMS including accessories (SO₂, pH, H₂S, H₂, O₂, SO_x, NO_x, VOC, TOC including Small bore Tubing and Leak testing. sample prove, sample in or out
- **Visual inspection /Installation of SS / Impulse tubing**, Bundle tube Installation and **Witness Leak test using Procedures**, P&ID, Hook Up drawing, Down steam Up steam **Steam tracing** Installation as required (freezing area)
- Installation Inspection and Witnessing of Functional test with client and Vendor for **Deluge suppression system and apparatus and Fire Alarm system and apparatus, Fire and Gas system** and including Wiring, Glanding Termination and Cable Testing.
- **Inspection and Verification: Electrical Heat Tracing** Installation and accessories with Functional Testing.
- **Cathodic protection** accessories and Apparatus installation and Functional test. **Earthing Installation verification, connection and testing**.
- **Witness Instrument Loop checking** FOR ALL mentioned above Instrument and Devices from field going to Satellite Instrument Shelter (SIS) controller (PC), Human Machine Interface (HMI), Witness /Monitoring for command of IO, AI/AO, DI/DO, input output signal/ Feedback (Analog/Digital) by Hart Communication & Field bus protocol (segment) ,sequencer in PLC /Scada, DCS & ESD system...**Blue folder** with complete necessary Documents.
- **Fiber Optic cable** Installation Inspection, **Witness Splicing, Termination & Testing**, OTDR, light test, Power & Light source Span, Splice, Loses.
- **Functional Testing of Panel, Marshalling cabinets, PLC, DCS, ESD, MCMS, FDAS, Tdas, Server etc.** internal accessories and Verification
- **Witness Site Acceptance test (SAT)** of Panels (FAT) w/ necessary document
- **Dossier Document final arrangement** (Box compiling) together with client, with all in **Sub system** -proper checklist, Data sheet, Hook up, Testing results, Test package and Tie In Document preparation. **Work pack** arrangement.(folder)
- **ShutDown activity**: Secure work permit, **Apply for Lockout Tag Out** on the specific equipment and Obtain Approval from Operation and Maintenance department

Position : **E&I Supervisor**
Company : **Samchang Enterprises Inc.** (Seoul South Korea)
Project : **Pearl – GTL (Shell- Gas To Liquid) / FGP-Feed Gas Preparation** – Qatar Shell /Ras Laffan Industrial City, Doha, Qatar
Period : September 2008 up to September 2010
Reason of Leaving : Project Completion

Duties and responsibilities

As A Supervisor in my area, IT is my full responsibility to have a SAFE and clean Workplace to meet the project target ahead in good, Safety with Good Productivity and Best Quality.

Direct Coordinate with the client representatives in the area for proper work flow such as As per site condition status, variation and others.... later, give positive feedback to the management for change before site execution.

Convey and Give Instruction, Information to Foreman, Charge-man discuss scope of work, some procedures, gate pass or clearance, schedules, Safety matters, targets, manpower requirements, Test equipments, forms, tools and materials including benefit if any..

As an Electrical Instrument supervisor my tasks related to the overseeing of electricians.

With proven ability to ensure that Project target date and Budget as mandated are being catch up.

Observe Health and Safety Management system and HSE policies

With Planning ability on assigned Area of responsibility or projects, Wise in Preparation method, analyze, Look ahead strategy, estimate what will be required to complete, and supervise workforce as they work, offering guidance as needed., maintain records and files and prepare reports, assign appropriate personnel with check and balance

Supervision of Electrical and Instrumentation activities in assigned areas: Transformer and Switch Gear, Dehydration mercaptan removal (DMR), Acid Gas Recovery (AGR), Liquefied petroleum gas(LPG), liquefied natural gas (LNG-methane), sulfur recovery unit(SRU).

Task:

- Switch Gear and accessories Installation in Electrical room, Power Distribution, Cable laying, Glanding and Termination.
- Transformer and accessories installation and testing including Winding resistance test, Tapchecking, RTCC functional, OLTC functional, DPR test, CT test, Vector Group (VT) test, Break Down Voltage & Voltage Ratio test, Magnetic balance, magnetization Current, Impedance test and Oil filtration records. Cable installation, Gland and Termination for Intertripping, control and signal.
- Installation & Inspection: junction box, control station, Stanchions, conduit, Stub up, Cable tray /ladder, Perforated tray and support.
- Instrument transmitters (pressure, level, flow and temperature), sensors, detectors, switches and Accessories installation using check list, installation details, location drawings, P&ID, project specification & guidelines. Specially with hazardous Area Classification.
- Instrument Cable Installation (Power, signal & Control) for Home run and Secondary (Analog/ Digital). Glanding and termination as per standard from panels/ cabinets up to transmitters, indicators, elements. I&C cables, using check list and connection diagram
- Assign to Monitor Instrument Calibration e.i. bench calibration , Witnessing for field instruments injection / simulation or Feedback signals (Flow, Pressure, Level and Temperature transmitters) Using the HART(highway addressable remote transducers) and FBT-6 fieldbus monitor unit to simulate, inject value, signals, frequency, noise and fieldBus parameters etc. control valves, pneumatic, electronics.. Metso, rotork, Flowserve, valtek, yokogawa, honey wheel and for instruments like sensors, transducers (I/P), positioners Rtd, thermocouples ..Bench / Field calibration using Hart communicator, pressure calibrator, temperature calibrator, process calibrator Multifunction calibrator and FieldBus Calibration using Segment protector., Gauge Calibration.
- Final checking and Witnessing activity during commissioning and start up.. i.e.. testing and loop checking field instruments/ equipment, signals, feedbacks, actuations of valves, close and opening, set points, fire and gas detections. records all results to match submitted documents in Slug catchers, Stabilization condensate, chilled waters, Dehydration mercaptan removal (DMR), Acid Gas Recovery (AGR), Liquefied petroleum gas(LPG), liquefied natural gas (LNG-methane), sulfur recovery unit(SRU).
- Installation of panel, segment protectors for Foundation Fieldbus system, TDAS, MDF, RDAS, FDAS and patch panel.
- Witnessing of Setting and connections for DCS and IPS system, controllers, converters, sequencers, AI/AO, DI/DO at Far (Field Auxiliary Room) buildings., communications, patch panels, fiber optic cables..
- Impulse /SS tubing for Pressure, Flow And Level Transmitters, Control valves including Leak Testing using instrument Hook up drawing Location drawing, P&ID, ISO drawing and Data Sheets.
- Cable and Wire Installation for power, control & signal of.. Orion electrical and instrumentation.. Magnetic level indicator and transmitters, Control valves, Indicators, Transducers, sensors, detectors (mli), Neles pneumatic cylinder actuator, double diaphragm pneumatic actuator, Metso cryogenic valve ,spring diaphragm proximate, Coriolis transmitters, vortex and Analyzers.
- Installation and testing of Telecommunication/ Paging system (PAGA)/ Audio/vIdeo Public Address system/ Camera, DVR, CCTV system , Alarm system, Access control with other integration and accessories. Installation and Functional Test E.i. Camera, Speaker, Sounder, Telephone Both, Local station, automatic Door Lock (ADL) Auto card reader (AAR) etc. Wire, cables, Coax, cat5/6, Unshielded Twisted pair, STP, Fiber Optic cable, patch cord, Telecommunication rack, Receiver, Server Cabinet,
- Installation **Deluge suppression system** and **Fire Alarm system**, linear heat detector , Solenoid valve, limit switch, multi tune alarm horn, red strobe beacon, manual station break glass, multispectrum IR flame detector, Smoke & Flame detector, Fire siren, alarm bell and remote repeater (tray, conduit, cables, cable testing, Device testing, signalling, Installation, Glanding-termination of cables.
- Installation of **Fire and gas system** including apparatus; H₂S gas Detector, Hydrocarbon, Motion, Junction Box, Wires and Cables.
- Supervise the Installation team for **Analyzer Shelters and accessories** like; Octane Shelter, Methane Shelter, Gas chromatograph , Sample Probe, Sampling point, fire and gas, h₂s service, headers, nitrogen, hydrogen, air, flare, spent, sampling cabinet, Sensors, detectors, Cylinders, pH analyzer, gas recovery system, Bundle Tubes, including Signal cables and Small bore Tubing and Leak Testing.
- **Fiber Optic cable Installation, Splicing, Termination, Witness Testing, OTDR, light test, Power & Light source Span, Splice, Loses**
- Cathodic Protection system Installation (CORROSION) and Functional test with Vendor Representatives for Rebar, Tank Bottom, Pipe lines and Vessels corrosion protection.. Anode Ribbon Mesh, Cathodes, MM0, ICCP, Conductor bar, Steel Signal and cables, Negative Signals, Reference Electrode, Rectifier, ATB, Test points etc. Includes Testing as per commissioning Procedures and Testing Specification.
- Functional testing of field instruments and in Far building with Honey wheel representatives with check list and Methodology, procedures, Witnessing for feedback signals, simulations, AI/AO, DI/DO record values, Rectify if required
- Arrange loop folders for final inspection and equipment, Blue plastic folder, RFI cover, Loop test sign off form, Instrument Index, accepted Installation ITR, P&ID, ILD, Hook up, Data Sheets, calibration report, accepted Instrument tubing installation and leak test, cable test results, Instrument Loop check list, Alarm and trip setting sheet and all necessary documents prior for inspection.

Position : **Shift Supervisor**
Company : **Civil Works Company L.L.C (Dammam KSA 31462)**
Project → **Reverse Osmosis Control system Replacement- Operation and Maintenance**
(Ministry of Water and Electricity-Central Region. Riyadh, KSA) (April 2007 up to April 2008)
→ **Sewage Treatment Plant –Construction and Commissioning**
(Ministry of Water and Electricity-Central Region. Riyadh, KSA) (April 2003 up to April 2007)
Reason of Leaving : Project Completion

Duties and Responsibilities: Supervision for Construction and Commissioning works Including Operation and Maintenance 'til finalization and Hand Over of the said Projects

I was trained for Scada Operation and Commands including Diagnostic if a little Error or discrepancy may occur during our Shift time using Reference Data Editor, Data logic trigger and Little logic program.. Including Scada Client Builder Start up, ,(SQL, DDE, MDOS, Wonder ware, etc.) License renewal, Plc diagnostics, System diagnostics, SPC (statistic process & control), macros, query, reports, trench...set points, values, parameters etc. Trained to Adjustment of process dosing and strokes to maintain output into operating range.. tuning up controllers, adjust PID settings and variables, tune the loop, programming controls, tuning and linking from Plc to Scada system..

Supervisor for the night shift, it was my duty to supervise and lead them from the front. (operators and technicians) to perform our objectives and take full responsibilities in front of my superiors/ engineers all activities during shift time.

I was trained to take water or sample analysis every section during our shift. (pH,(present Hydrogen) TDS, (Total Dissolve solid) Calcium, Magnesium, Alkaline hardness, Chlorine hardness, Silica, Aluminium hardness, Iron, Silt Density checking and Conductivity. **With full access to calculate and coordinate to Pre treatment Division** (Plant Operator-Saudia) of some existing chemical dosing such as Polymer, Lime, Soda, Sulfuric Acid and its Chlorination system w/cgoing to feed into Sewage treatment plant and Reverse Osmosis..

Hands on experience of executing Water Analysis for STP & R.O. feed such as Calcium hardness, Total hardness, Magnesium hardness, Alkaline hardness, Chlorine hardness, Silica, Aluminum hardness, Iron, Silt Density Index checking, Conductivity and TDS checking and analysis..i.e. Water analysis. Calculation of **Chemical dosing** for Reverse Osmosis process such as Sodium hex metaphosphate (anti scalant dosing), Sulfuric acid dosing, Chlorine gas dosing, Carbonate and De carbonate dosing..(Sodium Aluminate).. Salt reject and Salt passage through every stage and every vessel or filter. (membranes), sand & micro filters..

- **Installation of Air Insulated Switchgear and accessories** consists of switching and protecting devices such as switches, fuses, isolators, circuit breakers, protective relays, control panels, lightning arrestors, current transformers, potential transformers, auto reclosures, and various associated equipment. Power Distribution Board, Ring main unit (RMU), MCC, LCC, LCS, PLC, Automation Panel, Desk and Monitors, Data Receiver and transmitter panel, Aerators, Clarifiers, Filters, Screw, Sludge Silos, motors, Pumps and its controllers.
- Lay out Cable, Glanding –Termination of power, control, and signal cables for motors (Aerators, Inlet, & Intermediate screws) Booster pumps, controllers, LCS, valves, solenoids, MOV motorized valves, limit switches, Proximate switch, etc..) ..Earthing Installation & Test
- Installation of programmable logic controller (PLC),CPU, MIMIC, sequencers, RIO heads and accessories,.. relays.. including wiring and cable termination.. to and from Remote Terminal Unit (RTU), Human Machine Interface (HMI), Scada Control units, (CPU, Monitors etc.) and Lay out communication cables for PLC Modbus Link to Computer, connect to and from TCP/IP/Ethernet networking..
- Installation, Perform Instrument Calibration and Configuration for selected Parameters measuring devices such as ABB and Endress + Hauser, ABB magnetic flow meters, Electrical and Instrumentation Apparatus, sensors i.e. pH Analyzers and sensors, ORP transmitters w/ sensors, pION analyzers, Flow transmitters, Flow meters, Pressure transmitters, PDT transmitters, Level transmitters, Gauge, Temperature, RTD, Thermocouples, Conductivity analyzer, Switches, Indicators using its button and Hart Communicator (Calibrator) Including Panel Settings..., **Instrument and control cables Installation** for all of it.. Including Analog and Digital cables from Plc Panel to Common Display panels and Block Display panels
- Hands on experience in installation and configuration of some field instruments such as proximate sensors, ultrasonic sensors, dissolve oxygen meters, flow and level transmitters, ultrasonic transmitters using threshold, distance, volumes, values, and height.. (Endress Hauser, ABB, Rosemount). Installation of Analyzer system and accessories, like: pH, SDI, ORP., CO2 Chlorine analyzer, Hydrocarbon, Turbidity and Conductivity analyzers includes functional testing and monitor / take records / sample during operation. Installation of Silt Density Index (SDI) Analyzer components including tubing and testing..
- Stainless tubing/ Impulse tubing for Pressure transmitters, (PDT and DP type) includingsmall bore for transducers, Chlorine and chemical dosing, stroke controls, Control valves (I/P (Pressure control, Flow control Level control).., including analyzers..
- Assemble and installation of motor control circuit for Booster pumps, Topax Chlorine Analyzer, C700 Control valve, Gas Detector and sensors, Automatic Change over valve for Chlorine system..Wiring, Cable Installation Glanding- Termination, Tubing Hook up.
- Monitor and Observed visually the accumulation the Process in Aerator, Sewage Inlet, Level and Flow, Clarifiers, Sludge screw, Conveyors and Silos. **Observation, Monitoring of accumulation** from Feed Parameters, indicators, Values,..i.e. R.O. Feed pH, ORP, Conductivity, Feed water temperature, Feed pressure and Equipment protection system including Silt Density Index..(SDI) etc
- **Hands on experience of Handling Scada Operation System in Sewage Treatment Plant and Reverse Osmosis** such as principles, procedures, sequence of operation with some parameters to be observe, Values, Dosing to be reduce and Add.
- **Scada and Electrical Control Operation**... responsible of adjustments and acquisition to process required set points for Dissolved oxygen in Aeration tanks, levels and flow needed from Return Sludge, desired waste volume to Centre fudge and Belt press, monitor and control volume of Sewage from Inlet Screw Pumps works flow and adjust or maintain quality of Sludge, Limit mixed liquid and solid sludge (M.L.S.S.) from Return sludge and alter specially during peak time.. Plant overview, System Diagnosis, Plc Diagnostics, Reports, Queries,Tables, Scada System are Operated via Automatic and Manual operation.
- **Troubleshoot and checking of Electrical equipment, Instrumentation & control** using appropriate hand tools/ testing equipment for all faulty controls and signals that's give inaccurate or un precise feed from actual to indicators and Scada monitor repair and replacing contactors, breakers, relays. using wiring, schematic diagram and termination schedules. **Repair or Replacing** circuit breakers, contactors, instantaneous relays variable speed controls, Membranes, MOV, Control Valves, Soft starters and its components.
- Develop skills in performing Operation and maintenance work during finalization period.
- **Corrective Maintenance:** perform fault finding, troubleshooting, electrical and instrument equipment /controls using appropriate test equipment and hand tools., interpret and analyze using electrical and schematic drawings.. **Repair and or Replacing faulty Apparatus**
- **Preventive Maintenance:** As normal routine, check and monitor abnormal apt, behavior, performances of equipment.. Emphasize corrective and preventive maintenance during shift time. Checking mechanism its running conditions, protection systems and lubrication period...Our aim are maintain good, normal and safe operation for both operator and equipment.
- **Predictive maintenance** by data analysis to identify operational anomalies and potential equipment defects enabling timely repairs before failures occur. It aims to minimize maintenance frequency, avoiding unplanned outages and unnecessary preventive maintenance costs.

Position : **Foreman E&I**
Company : **Mc Connell Dowell Ltd.** (Auckland, New Zealand)
Project : **Saudi Aramco – E.R. Control System Replacement** (Central Region, Riyadh, KSA)
 (Changing Control from Pneumatic into Automation Control System)
Period : November 1998 up to July 2001
Reason of Leaving : Project Completion

Duties and Responsibilities:

As Group in charge, I lead my team from the front I am responsible for Manpower distribution to gain productive and effective team work to Install and perform the following Task:

- Control system Installation for Yokogawa Distributed Control System (DCS) and Emergency Shut Down system (ESD) Allen bradley's Programmable Logic Controllers, accessories, sequencers, modules at Process Interface Buildings (5buildings) Installation of Marshalling cabinets, PLC panels, control room desks, Receiver Rack, Intel's central processors and monitors..
- Lay out Telecommunication from Process Interface Buildings (PIB) to Central Control Room (CCR) and instrument cables going to Field Junction Boxes with cable schedule and route drawing. Secondary Cable installation from Junction Boxes up to Instrument Location. Termination of these cables using connection drawings and cable schedule.
- Instrument Calibration e.i. bench calibration for some instruments like Control Valves, Gauge and transmitters (flow, pressure, level, Temperature) Rtd, thermocouples using Hart communicator, multimeters, pressure ,temperature, process calibrator and Multifunction.
- Commissioning works...Perform Functional testing of field switches, sensors, Indicators, transducers (I/P), positioners and transmitters(flow, pressure, level, Temperature), Rtd, thermocouples., **Instrument Transmitters Installation** (Pressure, Flow, Level & temperature)
- Team leader for rectification Excavation works.. Road cross, Duck banks and Trenching with check list using the existing underground electrical and mechanical location, installation drawings. and **Punch list Group**...for all field installation that are installed against design criteria, Lay out and Installation i.e. Inspection Punch, MC, Safety, Walkthrough punch etc. Specially Hazardous area Classification noted.
- **Fiber Optic cable installation** 2c/4c/6c/12c/24c from PIB Patch panel to Central Control station Server rack Room.. Installation of accessories such as Data Logger, IP converter and Ethernet hob, utp converter..patch panel, receiver,
- Team leader for night shift to carry out cable termination in several months., electrical equipment, motor, motorize equipment, LCS, Control panel, sub stations relay panels, junction boxes, and instrumentation; in Process interface Room. Marshaling cabinets for analog / digital cables, Rotating motor Protection System, Motor Control monitoring, IRP(Interposing panel) and Relay Panel.
- Installation team for **Analyzer Shelters and Apparatus** like; Octane Shelter, Methane Shelter, Gas chromatograph , Sample Probe, Sampling point, fire and gas, h2s service, headers, nitrogen, hydrogen, air, flare, spent, sampling cabinet, Sensors, detectors, Cylinders, pH analyzer, gas recovery system, Bundle Tubes, including Signal cables and Small bore Tubing and Leak Testing.
- Impulse tubing /SS tube Installation as per hook up drawing and process inside taping points, for transmitters,(Pressure, Flow, Level, PDT, DPT), Control valves, On off valves including small bore for all Analyzer installation and I/P transducers...As per hock up drawing.Installation of oliver valves, isolation and equalizing valves Swagelok, Parker and alco fittings. 2way,3 way, 5way.
- Cable tray installations in different route and locations from ground level to pipe racks, Conduit piping, rigid steel, Emt, Imc, for control cables, power cables, instrument cables and signal cables of some above Instrument and Electrical installation both indoor and outdoor..
- Passed the Saudi Aramco qualifiers certificate for Installation, Permit Receiving and Fire fighting
- Recipient of Best Safety employee for 3000 manhour.

Position : **Foreman E&I**
Company : **Alltech Contractor Inc.**(Quezon City, Philippines)
Project : **PRII PVC Petrochemical plant Expansion** (Batangas Il mariveles, Bataan, Philippines)
Period : April 1997 to September 1998

Duties and responsibilities:

The Plant Process of Polyvinyl chloride (PVC) includes full integration with Chlor-Alkali (CA), Ethylene Dichloride (EDC) and Vinyl Chloride Monomer (VCM) facility

As Electrical and Instrumentation Foreman in the Area of **Polymer, Polyethylene and Propylene** my main Duty as follows:

From the Front: Working Foreman

- Conduct Daily Tool box meeting, Discuss, Safety, Clean and safe Work area, Maintain, Cooperation, Coordination and Communication.
- A Team Leader of Loop checking team, Preparation of Loop folder, perform pre loop checking. For 3 months, Observation and monitor records, list of instruments, performance of valves, actuations, feedback signals, input / output values, High and Low alarm, Pneumatic input / output, opening and closing respond, behavior during Loop check and commissioning period. monitor Air Leakage if any
- Cable Installation, Glanding-Termination, continuity and IR testing of **Electrical and control cables** for motors, LCS, Looping cables from LV Switchgear, IRP panel, Power supply for inline instruments, Heaters, etc. from LCC going to Controllers, Junction boxes. **Fire and gas, Fire Alarm and Communication cables** Primary from Electrical room, Control room and Process Interface Building going to Telecom and Fire Alarm building, and secondary from F&G, FA /Coms junction box to Smoke, Heat detectors, Strobe, Buzzer, Alarm Bell, Break glass, Sensor, switches, Telephone booth, Sounder, Speaker, beacon, H2S gas detector, Flame, Hydrocarbon, Horn.
- **Instrumentation cables** (IP) from Junction boxes going to Transmitters (pressure, level flow, temperature) sensors, detectors, switches, indicators, other device. Secondary cable Glanding-Termination and testing (Continuity, IR test). for 6months from Instrument Junction Box to Apparatus, instruments. Fire & Gas, Fire Alarm and Telecom devices / Apparatus and JB.
- Installation of LCS, Cable tray and support, Stub up, Conduit/ pvc pipes.. Earthing / Grounding cable installation for motors, LCS.
- Installation of Switchgear, Distribution, Marshalling cabinets, Relay panels and accessories, PLC and accessories inside SIS building.
- Installation of Instrumentation Apparatus, Device like Pressure, flow, level, and temperature transmitters, PDT , DP type, Capillary type, RTD, flow meters, switches, valves, sensors, transducers, thermocouples... Installation of Process Analyzers Shelters with accessories including Cylinders, Sample probe, Sampling Box and sampling point connection such as Octane, Methane, ethane, LPG, Gas chromatograph.as per P&ID, Hook up, Data sheet and Location drawing..Bundle Tube installation going to Sampling /taping point..With Hazardous area Zone & Classification
- Instrument calibration using Deed weight, Drack, Pressure calibrator, Current injector, Multifunction, HART / Field communicator (Highway Addressable Remote Transducer Protocol..Fiber optical cable installation to transmit and receive signals
- Impulse /SS tubing, STPT pipes and copper tubes, Pressure, PDT and DP type transmitters, Flow transmitters and Level transmitters, positioners data encoders, actuator type valves, solenoid including small bores for I/P transducer, Analyzer equipment, ...as per hook up...Perform leak testing for all impulse tubing as per Equipment data record

Position : **Foreman E&I**
Company : **Alltech Contractor Inc.** (Quezon City Philippines)
Project : **Hi Cement Rehabilitation and Expansion Project** (Norzagaray Bulacan, Philippines)
Period : June 1996 up to April 1997
Reason of Leaving : Project Completion

Cement Plant area like Pre heaters, Rotary Kiln, Bag house, Crasher, Silos & Bulk

From the Front: Working Foreman. A Team Leader of commissioning team to perform dry run and test run (motor solo run) for all Electrical motor and Controller installation, monitor NDE & DE vibration, temperature and Speed (Rotation)RMPS, Polarity index, Winding resistance, IR including Starting & running current / voltage

- **Mechanical Electrical and Plumbing** installation including Instrumentation works.
- Replacement of Motors and mechanism including Alignment and rotation, fitting of mechanical pipes, water lines
- Alignment of Raw mill, Drive motor, Open & close motor service in Pre Heater and its Control system
- Installation of Mechanical Piping, PVC and Rigid water lines for Sanction and Discharge system with Drain.
- Assist of Sub-contractor Installation of Elevator and mechanism with control unit.
- Installation of Fire Protection system, Steel piping, Sprinkler, Carbon steel pipe, bending, Threading. including apparatus, Heat Detectors, Fire Protection Control panel, Smoke detector, Ionization and Flame detector
- Water Supply line Installation, For Fire Hydrant, Service water and Potable water supply to the Buildings.
- Troubleshooting, Repair, Installation & Replacement of Electrical /Instrument Equipment and Devices,, Air Main circuit Breaker, Contactors, Relays, Belt conveyors, Bearings, Protection mechanism.GE,siemens, allen Bradley, Fox borro, Rosemount fisher Mitsubishi...relays, circuit breakers, Local Station, , speed drives, manual and remote.Repair / Replacement of Instrument equipment and apparatus like; transmitters, device, Proximity switches, Motion sensors, heat detectors sensors, gauge, RTD, valves switches, Ignition system, Spark.. Changing Pneumatic control to Electro- Automation system, Data Logger, Grapics.
- Control Replacement of Belt and Steel conveyor (Main breaker, contactors, relay, wiring, fuse, Timer and Protection relays in Pre Heater, Ball mill and bag House, includes replacement of Proximate sensors, speed and Limit switches.
- Replacement of Power supply and Control cables from Control Unit to Field junction boxes and motors, Local control station going through Pipe racks and Trench for long run. and in conduit, perforated tray for all branches cables
- Cable termination for High Voltage cables up to 13.5kv, for HV and Medium voltage switch gear and motors
- Lighting and cable installation at Stairway of Pre Heater area, Raw mill and Bag House unit,
- Installation of fiber optical cables including Splicing and termination to and from Patch Panel, Splicing kit, media converted/ data logger., Installation of communication cables including UTP types. Conduit Installation for power and control of Motor, LCS, signals of transmitters, solenoid valves, control valves, limit switches, Sensors, Detectors, Devices, RTD,
- Cathodic protection system and accessories installations, anode and cathode including wiring and termination..
- Earthing cable Lay out and accessories installation, Testing Plant Earth, Common Earth and Instrument Earth (fall of potential).
- **Switchgear Parts replacements**, switches, fuses, isolators, circuit breakers, protective relays, control panels, lightning arrestors, current transformers, potential transformers, auto reclosures, and various associated equipment
- Electrical maintenance work, preventive and corrective principles using appropriate test equipment and hand tools with schematic and wiring diagram... Repair and replace electrical protections with calculation of FLA value.

Position : **Electrical / Instrumentation A**
Company : **Alltech Contractor Inc.** (Quezon City Philippines)
Project : **Batangas Coal Fired Thermal Power Plant (B-CFTPP)** (San Rafael Calaca, Batangas, Philippines)
Period : January 1995 up to December 1995
 : **Bataan-Combined Cycle Power Plant (B-CCPP)** (Limay, Bataan, Philippines)
 : April 1994 up to December 1994
Reason of Leaving : Project Completion

Duties and Responsibilities:

- Electrical, Instrumentation, TeleCommunication, PAGA, Fire Alarm and Fire and Gas system
- Installation of electrical and instrument apparatus including accessories at Steam turbine, Gas turbine., Boiler area, Sea water intake, Chlorination area, Sewage treatment area. like Transmitters, (pressure, DP/PDT, Flow, Level and Temperature) Limit Switches, Indicators, Transducers, Control Valves, gauges, motor controller, vibration sensors, temperature sensors, rotation sensors ,proximate sensors etc...Cable Laying and Cable glanding- termination for some Power, control & Instrument cables from Field Junction Boxes to motor controllers, transmitters, RTD, thermocouples, solenoid valves and limit switches. etc.
- Installation of Switch Gear, Power Distribution, Interposing panel PLC, Mashalling cabinet, RMPS panel, MCM, Mimic Board, Server Panel
- Impulse tubing using stainless steel and STPT pipe for some transmitters, transducers positioner...including copper tubes
Member of the Instrument calibration using Deed weight, Drack, Pressure calibrator, Current injector, HART / Field communicator (HART Protocol..Transmitters, RTD, Thermocouple, Control valves and Gauges. (7 to 10 instruments /day)
- Fire Protection system and accessories, Telecommunication, PAGA system, Fire & Gas installations like; explosion proof type., fire alarmssystem, telephone Booth, Audio Sounder, Intercom Plant siren, Horn, Speaker, Beacon bell, buzzer, fire protection control panels, smoke detectors, heat detectors, Linear Heat detectors, flame detectors, Gas detectors, H2S detectors with Hazardous area Classification.
- Cathodic protection system and accessories installations, for Rebar, Tank Bottom, Pipe lines and Vessels corrosion protection.. Anode Ribbon Mesh, Cathodes, MMO, ICCP, Conductor bar, Steel Signal and cables, Negative Signals, Reference Electrode, Rectifier, ATB, Test points etc. anode and cathode including wiring and termination. Including Fiber Optic Cable Installation (Indoor and Outdoor)
- Conduit Installation, Rigid metal conduits, Extra metallic tubes, Intermediate metal conduits, PVC, flexible pipes etc. for motor power supply and control ,lightings and Instrumentation installations..Cable tray and Supports, Stub up installation. Field Junction Boxes,
- Lighting system installations, self-stand wall mount, structural mount, column mounted, ceiling mounted (installation type as per typical drawing) including perimeters, photo cell, ballast type, timer type, starter, including wirings and termination. Lightning system installations, arrester, disconnection links, equipment and panel groundings, perimeters, rod with resistivity calculation and computations
- Cable pulling for control and power supply Homerun...upside pipe racks, inside cable trench, in conduit, in cable tray, under Substation (cellar),Sea water intake, Sewage treatment area, Boiler area and tank area..Lay out of Earthing cable layout in Switch yard area, Cellar, including accessories like, earth bar, rod,inspection pit, earth pod, bush etc., connection and Testing using Earth tester