

Holds B. Sc. in Electronics & Communication Engineering and M. Sc. and PhD in Electrical Power & Machines Engineering (Automatic Control division). Has over 12 years hands-on experience working as I&C Engineer at Power Plants.

## PERSONAL DATA

Nationality : Egyptian  
Birth Date : Sep. 1987  
Gender : Male  
Marital Status : Single  
Residence : Cairo

## EDUCATION

- : B. Sc. in Electronics & Communication Engineering, Modern Academy for Engineering and Technology, 2009
- : M. Sc. in Electrical Power & Machines Engineering (Automatic Control division), Cairo University, 2016
- : PhD in Electrical Power & Machines Engineering (Automatic Control division), Cairo University, 2022

## LANGUAGES

Arabic : Native Language  
English : Very Good

## COMPUTER SKILLS

- : Windows, MS Office (Word, Excel, Power Point), Internet

## TRAINING COURSES AND CERTIFICATIONS

- : Academic Test of English as a Foreign Language (ATFEL), Cairo University (Feb. 2016) (055/667).
- : ATFEL (Nov. 2022) (Score 520).

## CHRONOLOGICAL EXPERIENCE RECORD

**Dates** : From Mar. 2011 till now  
**Employer** : Cairo Electricity Production Company (CEPC)  
**Project** : Cairo North Combined Power Plant (2 modules x 750MW):  
Consists of two modules combined cycle:

- Mod 1: Mitsubishi Gas turbine model M701F (Two units x 250MW)

"Diasys Netmation with Win NT application" and 1 STEAM TURBINE 250MW (Hitachi with Mark VI control system).

- Mod 2: General Electric 2 GAS TURBINE (2x250MW) the control system is MARK VI – model MS9001FA (Frame 9FA), 1 STEAM TURBINE 250MW (ALSTOM with "CONTROCAD" ALSPA P320 system control system).

**Job title** : Lead I&C Engineer

**Employer** : Cairo North Training Center (Ministry of Electricity and Energy)

**Job title** : Part-time Trainer

**Dates** : From Oct. 2019 till Sep. 2021

**Employer** : Faculty of Engineering – October University

**Job title** : Teaching Assistant

**Dates** : From Nov. 2010 till Mar. 2011

**Employer** : Cairo Electricity Production Company (CEPC)

**Project** : Cairo West Thermal Power Plant 2x350MW

**Job title** : I&C Engineer

- Field of experience** :
- Over 12 years of hands-on experience in Instrumentation and Control Systems Start-up, Commissioning and troubleshooting of large capacity Gas Turbines, HRSG, and Steam turbines & Utilities.
  - Achieve HSE awareness on the job to ensure full buy-in of the HSE policies by all staff which helped to achieve the HSE targets.
  - Capable to handle capital brownfield projects like Upgrading existing Plant Instrumentation and Control Systems.
  - Manage the activities of Installation and commissioning such as continuity check, loop check, and function check for all instrumentation, Control, PLC, DCS, SCADA, HMI, and RTU Systems.
  - Maintenance and calibration for instrumentation devices like (Pressure, Flow, Temperature, and Level) transmitters, analyzers, and Switches for (Rosemount, Yokogawa, Emerson, Endress & Hauser, and Honeywell) types by Hart communicator (375,475) and Druck (DPI 610/615) Series.
  - Maintenance and calibration of (Electrical, Hydraulic, and Pneumatic) valves.
  - Fire alarm, Detection & Firefighting systems (FM200, Jockey, Electrical, Smoke Detectors, Heat Detectors, Deluge Valves skids, Horn, Speaker, Pull Station, ...etc.).
  - Vibration Monitoring System (Bentley Nevada & Seismic).
  - Diverter damper (Manufacture: PARKER, PLC: Siemens SIMATIC S7), operation and control.
  - GE Control Systems: Mark VI, Mark VIe for Gas, Steam Turbines, and HRSG.
  - Alstom control systems: "CONTROCAD" ALSPA P320.
  - Mitsubishi Control system: Diasys Netmation.
  - Gas Compressors, Air compressors (ATLAS COPCO & BOGE Piston-type).
  - Many inspections like major inspections, Combustion inspections, and

Hot Gas Path (HGP) inspections for General Electric (GE) and Mitsubishi (MHI) Gas Turbines.

- Many inspections like major inspections, for Alstom and Hitachi Steam Turbines.
- DEBRIS FILTER and Ball cleaning (Manufacture: Taprogge, PLC: Allen Bradley).
- Trash Rack unit (PLC: Siemens SIMATIC S7).
- Troubleshooting and fault analysis for alarms and events.
- RS view software for operator station and laptop engineering station RS logics 5000 Software.
- Review vendors' documents, maintenance manuals, and spare parts lists.
- Draft Instruments maintenance procedures necessary for Plant operations and participate in CMMS development and implementation.
- Mark VI Control System Cabinets Upgrade to Mark VIe (2x250MW GE F9A Gas turbines):
  - Perform the necessary tests and commissioning such as continuity check, (Cold/Hot loop) check, and function check for all instrumentation, Controls, and PLC connected with GE Mark VIe Control System.
  - Support and guidance to the Construction team to clarify the proper Installation of field Instruments to follow as-built drawings.
  - Review of control philosophy, P&I diagrams, cause & effect diagrams, instruments list, and interconnection drawings.
  - Plan and organize the supervision of the offshore instrumentation survey campaigns to ensure technical compliance of the contractors with the Contract/Frame Agreement.
  - Participate in upgrade commissioning activities, raise I&C punch list items, and warranty claims as appropriate.
  - Follow-up Purchase Orders of instrumentation equipment to ensure timely approval, and conformity of design & participation in technical reviews and FAT with Vendors.
  - The scope of work includes the following:
    - ❖ Removal of old Mark VI control cabinets while keeping field instrument cables.
    - ❖ Installation of New Mark VIe TMR turbine control panel ("UCSA" controllers, I/O modules, IO net Switches...etc.).
    - ❖ Installation of new operator interfaces with HMI/SCADA CIMPLICITY\* (OPS, EWS, HWS... etc.).
    - ❖ Factory Acceptance Test (FAT) for every unit (performance acceptance test for the control system's operation and design).
    - ❖ The test typically covers all major aspects of the control system, including:
      - Operator Interface, Operating Modes, Start Sequence.
      - Stop Sequence, Auxiliary Devices, and Controls.
      - Communications, Alarms, and Trips.
- GE gas turbines conversion from DLN2 to DLN2.6+ (2x250MW GE Gas turbines):
  - Responsible for all major Inspection work for turbine and auxiliary systems.
  - Manpower planning and utilization, target-focused work planning and execution, and maintaining quality-oriented workmanship to

- complete the project on time.
- Study of PID, Instrument data sheets for all field instruments i.e., analyzers, DCS, PLC, Transmitters, flow elements, ...etc.
- Prepare scope of work, cost estimates, budgets, and technical dossiers for instrumentation activities.
- Carry out preliminary and basic facilities engineering studies/designs in-house.
- Report to Engineering Manager regularly with a daily report and when decisions impacting I&C activities must be taken.
- The scope of work includes the following:
  - ❖ Installation of Combustion Dynamics Monitoring (CDM) system:
    - Dynamic pressure probes installation.
    - Cables work.
    - New panel installation.
    - Commissioning.
    - Logic modification.
  - ❖ Modification for False Start Drain (FSD) system.
  - ❖ Installation of new gas fuel skid (SRV, D5, PM1, PM2, PM3 lines):
    - Removal of old skid.
    - Install the new skid.
    - Cable work.
    - Piping work.
    - Control work (Logic modification).
    - Commissioning.
  - ❖ Hazardous gas protection system modification (Infra-Red Aspirated Gas Detection System):
    - IR sensors installation.
    - Cables work.
    - New panel installation.
    - Commissioning.
    - Logic modification.
  - ❖ Install Humidity system:
    - Inlet filter sensors and TC's installation.
    - Cables work.
    - New panel installation.
    - Commissioning.
    - Logic modification.
  - ❖ Install Gas fuel nozzle pressure ratio transmitters (GN) system:
    - GN transmitters installation.
    - Cables work.
    - New panel installation.
    - Commissioning.
    - Logic modification.
  - ❖ Replacement of Gas chromatograph system:
    - Removal of old unit.
    - Install the new unit.
    - Calibration gas and gas carrier.
    - Cable work.
    - Commissioning.
  - ❖ Install new pressure switches on ventilation fans and compressor bleed valves.
  - ❖ Modification for purge air system.

- ❖ Install new atomizing air heat exchanger instrumentations.
- ❖ Install new ignition exciter assembly on the exterior of the turbine compartment.
- ❖ Modify Logic and CIMPLICITY to be compatible with new systems.
- Upgrade and reliability enhancement for MITSUBISHI (MHI) gas turbines (JICA):
  - Review of control philosophy, P&I diagrams, cause & effect diagrams, instruments list, and flow chart.
  - Carry out preliminary and basic facilities engineering studies/designs in-house.
  - Coordinate preparation of instrument design deliverables for ongoing flow lines hook up and HRSG system.
  - Participate in commissioning activities, raise I&C punch list items, and warranty claims as appropriate.
  - Ensure that sub-contractors comply at all times with safety rules, taking actions as required in case of disregard.
  - Responsible for all major Inspection work for turbine and auxiliary systems.
  - The scope of work includes the following:
    - ❖ Replacement of network equipment.
    - ❖ Upgrade of CPU card.
    - ❖ Combustion Load Signal Output (CLCSO) Upgrade:
      - Logic modification.
      - Control panel modification.
      - Cable work.
    - ❖ Installation of Transmitters Gas manifold pressure:
      - Transmitter installation.
      - Cable work.
      - Pipe work.
    - ❖ Installation of Transmitters for ambient pressure:
      - New panel installation.
      - Cable work.
      - Pipe work.
    - ❖ Advanced Combustion Pressure Fluctuation Monitoring (A-CPFM) upgrade.
    - ❖ CPFM and Acceleration sensors modification:
      - Sensitivity logic.
      - Sensor Amplifiers.
    - ❖ Replacement of Control system deterioration parts.
    - ❖ Fuel Gas Calorie Meter and Pressure Regulator:
      - Civil work.
      - Pipes work (Gas Sampling & Exhaust Line).
      - Cables work.
      - I&C and DDC work (Logic modification).
      - Commissioning.
    - ❖ Gas Flow Meter:
      - Pipes work.
      - Downstream pipe spools.
      - Pressure transmitter for turbine meter.
      - Flow computer.
      - Modbus installation.

- Cables work.
- Commissioning.
- Control work.
- ❖ Gas Chromatograph:
  - Removal of old unit.
  - Install the new unit.
  - Calibration gas and gas carrier.
  - Cable work.
  - Commissioning.
- ❖ CO2 Firefighting system control panel, detectors for Gas Turbine and Gas Compressors:
  - Removal of old panel.
  - Install the new panel.
  - Cable work.
  - Commissioning.
  - Control work.
  - Piping work.
  - Replacement of deterioration field instruments.
- Repair the burned steam turbine (ALSTOM) (Accident):
  - Check and inspect all field instrumentations devices (transmitters, valves, speed & vibration sensors, ...etc.), cables, and controls for the turbine, condenser, and other steam auxiliary systems such as:
    - ❖ Trash Rack unit (PLC Siemens SIMATIC S7).
    - ❖ DEBRIS FILTER, manufacturer is Taprogge (Allen Bradley PLC).
    - ❖ Ball cleaning, manufacturer is Taprogge (Allen Bradley PLC).
  - Perform the necessary tests and commissioning such as continuity check, (Cold/Hot loop) check, and function check for all instrumentation, Controls, and PLC connected with "CONTROCAD" ALSPA P320 control system.
  - Achieve HSE awareness on the job to ensure full buy-in of the HSE policies by all staff which helped to achieve the HSE targets.
  - Prepare requisitions for damaged field instruments material procurement and perform technical bid evaluation.
  - Responsible for all major Inspection work for Alstom turbine and auxiliary systems like gland steam condenser, hydraulic system, condenser system, ...etc.
  - Manpower planning and utilization, target-focused work planning and execution, and maintaining quality-oriented workmanship to complete the inspection in time.
  - Support and guidance to the construction technicians to clarify the proper Installation of field Instruments to follow as per built drawings.
- Skills:
  - Deep understanding of Industrial Measure & Control Instruments concepts.
  - Deep understanding of the Electronic & Communication Concepts.
  - Good knowledge of Electric Power & Power Plant systems.
  - Good knowledge of Siemens / Allen Bradley & Bentley Nevada control systems.

### **Courses Executed as a Trainer:**

- Industrial Instrumentation and Automation (principle and calibration).
- Process control.
- Gas turbine operation and maintenance.
- Steam turbine operation and maintenance.
- PLC.
- Mark 6 and MARK 6e (for GE turbine units).
- Control valves calibration, ...etc.

### **Published Research Articles:**

- Control of Multi Area Power System Based on Evolutionary Techniques. LAP LAMBERT Academic Publishing, Düsseldorf, Germany, Dec. 2017.
- Chapter (2): Frequency and Voltage Control of Multi Area Power System via Novel Particle Swarm Optimization Techniques (Book: Particle Swarm Optimization (PSO): advances in Research and Applications). Nova Science Publishers, New York, USA, Jan. 2017.
- Automatic Voltage Generation Control for Two area Power System Including GRC non-linearity based on Particle Swarm Optimization (Indonesian Journal of Electrical Engineering and Computer Science), Indonesia, Feb. 2016.
- Control of Single Area Power System Based on Evolutionary Computation Techniques (17th International Middle-East Power System Conference (MEPCON'15), IEEE, 2015.