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Electrical Maintenance, Testing & Protection Engineer

Holds a B. Sc. in Electrical Power & Machines Engineering and a Diploma in electrical power systems. Has over 16 years experience working in construction, maintenance, operation, commissioning, start-up, testing and protection.

PERSONAL DATA

Nationality : Egyptian
Birth Date : 10/09/1984
Gender : Male
Marital Status : Married
Residence : Mahmoudia

EDUCATION

- : B. Sc. in Electrical Power & Machines Engineering, Tanta University, 2006
- : Diploma in electrical power systems, Faculty of Engineering - KAHR EL-SHEIKH University, 2016-2018

LANGUAGES

Arabic : Native Language
English : Very Good

COMPUTER SKILLS

- : Windows, MS Office, Internet
- : Matlab
- : Electrical programs for simulation, calculation and test as Power-x, EMTDC, Automation Studio, PLC programming as Siemens "logo" and Simatic "step 7" software, Dialux and others

TRAINING COURSES AND CERTIFICATIONS

- : Operation of gas turbine M701F, Mitsubishi Heavy Industrial, El-Atf site, Egypt.
- : Operation of steam turbine, Generator & Condenser, Ansaldo Energia, El-Atf site, Egypt.
- : HRSG operation and maintenance – HRSG controls and instrumentation – HRSG water chemistry and safety – NEM B.U. industrial & utility boilers, Hengelo – Netherlands. And also, this course in El-Atf site, Egypt.
- : CENTUM CS 3000 R3 Fundamentals for operation, Yokogawa Middle East, El-Atf site, Egypt.
- : Maintenance and operation of horizontal pumps & sump pump, Toshiba, El-Atf site, Egypt.

- : Programmable logic controller from Oil and Gas Skills (Jun. 2012).
- : Matlab (Introduction, programming) from Engineering Faculty.
- : Toshiba onshore transformer protection.
- : Batteries & chargers – AUX-2 in Network Training Center.
- : Horizontal pumps & vertical sump pumps system in Toshiba (on-shore training).
- : Classic control & PLC SIEMENS S7-200 & SCADA system in Engineering Association.
- : Electric generator 290 MVA site training, MELCO Co.
- : AREVA MAINTENANCE of Power transformer training.

CHRONOLOGICAL EXPERIENCE RECORD

Dates : From Nov. 2014 till now
Employer : Middle Delta Electricity Production Company
Project : El-Atf Power Station
Job title : Electrical Maintenance, Testing & Protection Engineer

Dates : From Apr. 2013 till Oct. 2014
Employer : SEC Company in Dammam Training Center
Job title : Training Engineer (Electr. Maintenance & Operational Trainer)

Dates : From Mar. 2010 till Mar. 2013
Employer : Middle Delta Electricity Production Company
Project : El-Atf Power Station
Job title : Shift Leader Operation Engineer

Dates : From Mar. 2007 till Jan. 2010
Project : Mahmoudia Power Station
Job title : Shift Operation Engineer

Field of experience : • Worked and dealt with:

- Installation, tests, periodic maintenance and overhaul of the electrical generator of gas turbine manufactured by MHI capacity of 350 MVA and its accessories.
- Installation, tests, periodic maintenance and overhaul of the electrical generator of steam turbine manufactured by ANSALDO ENERGIA capacity of 350 MVA.
- Tests, periodic maintenance and overhaul of electrical main power transformers 220/21KV capacity of 350 MVA, and auxiliary transformers 21/6.6KV capacity of 32 MVA and electrical transformers 6.3KV/400V capacity of 1.5 MVA manufactured by AREVA, 500/15.75KV Capacity of 340MVA. 16.5/500KV POWER TRANSFORMERS.
- Installation and tests of 220KV GIS Switch yard (One and half circuit breaker) manufactured by SIEMENS type SIEMENS 8DN9.
- Installation, tests, and maintenance of the electrical Chargers and

UPS manufactured by GUTOR and made tests needed for batteries (measuring density - internal impedance - charging and discharging – efficiency calculation).

- Installation, tests, and maintenance of electrical motors medium voltage 6.3KV and low voltage 400 V.
- Installation and electrical tests on the Circuit Breakers with 220KV 6.3KV 400V (the open/close time analysis - measuring of contact resistance).
- Installation, tests and periodic maintenance of electrical excitation system with AVR control system for gas and steam turbine type static. Installation, tests and periodic maintenance of switch gear 6.3KV and motor control center (MCC) for 400v rated of the station loads manufactured by Schneider and others distribution panels for low voltage.
- Tests of digital multifunction protection relays type M-3425 installed on generator of gas unit and type MICOM P345 installed on generator of steam unit.
- Tests of digital multifunction protection relays type M-3310 installed on excitation system of generator of gas unit and type MICCOM P141 installed on excitation system of generator of steam unit.
- Tests of digital multifunction protection relays simple and advanced relaying (distance, differential) types 7SA512, 7SA522, 7SA612, 7SD522 and BF 7VK610 and Bay-units' types 7SS522, 7SS523 installed on GIS Switch yard and its circuits manufactured by SIEMENS.
- Tests of digital multifunction protection relays installed on 6.3KV Switch gear types SEPAM (S20, S42, M41, M87).
- Tests of digital multifunction protection relays installed on electrical main power transformers 220/21KV and auxiliary transformers 21/6.6KV manufactured by SIEMENS types 7UT613, 7UT635, 7SJ611 and others non-electrical protective equipment's (Local protection devices) installed on main power transformers.
- Tests of all mechanical protection devices on high rated power transformers.
- Do the major inspection and electrical tests on dry transformers or oiled transformers (oil break, silica gel replacement, oil purifier, tan delta, Dc resistance, Megger) on load and offload tap changer transformers.
- Tests of digital protection relays installed on IPB type SIEMENS 7SJ602. Installation and maintenance and design automatic control circuits by classic control and PLC.
- Gas turbine up to 250MW with different manufactures like (GE, MHI) with different control systems and I have training with MHI Stuff.
- Steam turbine up to 250MW with different manufactures like (GE, Ansaldo) with different control systems and I have training with Ansaldo Stuff.
- Performed all tests for 15.75/500KV power transformers on NUBARIA Power Station 3000MW.
- (HRSG) heat recovery steam generator which the link between the gas turbine and the steam turbine with different pressure levels up to 135 bar and I have offshore training with NEM Company in Netherlands.

- Different types of control system (PLC, DCS, SCADA, MKV, DIASYS, ...).
- Different types of substations (conventional and GIS) and at different voltage level up to 500KV.
- I can deal with black out (emergency trip (shut down) and starting the power station from dead point and I did it several times.
- Electrical Maintenance work:
 - Maintenance for 21KV C.B.
 - Generators. M.H.I (Insulation Resistance Test – Winding Cleaning – hydrogen System – ELCID TEST - TAN DELTA TEST).
 - Maintenance for 15.7KV A.C. Generators. ANSALDO (Insulation Resistance Test – Winding Cleaning – hydrogen System - ...).
 - Maintenance for 500KV, 220KV & 66KV & 11KV C.Bs. and Test Close and Trip Circuits for C.Bs.
 - Maintenance of 11KV, 6.6KV, 380 V Switch gear.
 - Check C.Ts (Turns Ratio, Excitation curve, Resistance) & P.Ts (Turns Ratio – Back To Back Test, ...).
 - Check D.C. Circuits and Carrying out General Maintenance for Batteries (Adjust Electrolyte Level Specific Gravity – Check Voltage / Cell – internal resistance - calculate total efficiency, ...).
 - Check Battery Charger Circuits.
 - Check and Calibrate Excitation System (with Brushes – Brush Less) – (AVR System – Rotating Diodes - ...).
 - Check and Calibrate Synchronizing System.
 - Carrying out Maintenance for Electrical Motors and Check their Power and Control Circuits.
 - Maintenance for Transformers 11/220KV & 220/66/11KV (Turns Ratio Test – Oil Test (Break down test – DGA tests) and oil purifying using machine if necessary – Change Silica Gel – Insulation Resistance Test – DC Resistance - Tan Delta test using CPC100 DEVICE.
 - Check all mechanical protection devices on power transformers (BOKHELES, SUDDEN PRESSURE, PRESSURE RELIEF, PRESSURE RELIEF ON TAP CHANGER).
 - Check cooling blade operation and adjust its setting.
 - Check C.Bs Interlock Control Circuits Contact resistance, timing (opening and closing), sf6 pressure and filling if necessary.
 - Check and commissioning all electrical board (HVAG - CRANES – VENTILATION FANS – PUMPS - SUMP PUMPS - ...).
- Using Instruments:

Use a lot of test and measuring equipment's and devices as:

 - Omicron CMC 256+.
 - CMC 356 primary – secondary injection.
 - CPC 100 multi-function tester.
 - Contact resistance CPM 500.
 - CT Analyzer (omicron).
 - Breaker analyzer system M 1600 (opening and closing time).
 - Winding resistance WR14.
 - Megger (Insulation resistance).
 - Battery Impedance tester BITE2.
 - R00 (DILO) measuring device for sf6 percentage.
 - R001 (DILO) moisture meter for sf6 gas.
 - PAUR oil tester DPA for measuring transformers oil break down

- voltage.
- C.A 6423 CHAUVIN ARNOUX for Ground Resistance.
 - TTR 330 transformer Turns ratio.
 - ODENAT FOR HIGH CURRENT primary injection and others.
 - Protection Duties:
 - Check and Adjust Setting If Necessary of All Digital Protection Relays for:
 - ❖ GAS UNITS Ac Generators M3425 MILCO COMPANY:
 - Differential Protection 87.
 - Over Voltage 59.
 - Earth Fault.
 - Negative Phase Sequence.
 - OVER & under frequency (81).
 - Over Excitation (24).
 - Reverse Power 32.
 - Inadvertent Energizing (50/27).
 - Inverse time over current with voltage control 51V.
 - Field Earth fault 64F.
 - Loss of Field 40F.
 - Breaker Failure 50BF.
 - Neutral over voltage 59N.
 - Third harmonic under voltage 27TN.
 - Out of step 78.
 - For Excitation Transformer:
 - Instantaneous over current at second winding 50W2.
 - Inverse time over current at second winding 51W2.
 - ❖ Main transformers Rating 300MVA, 220/21 KV, YNd1:
 - Cable Differential Relay F871 Siprotect – Siemens.
 - Unit transformer protection F872 Siprotect – Siemens.
 - Differential Protection test (87).
 - Restricted Earth Fault test (87G).
 - Neutral Over Current test (50/51G).
 - Over all differential Relay F873 Siprotect – Siemens.
 - ❖ Auxiliary transformer protection Rating 32MVA, 21/6.3/6.3 KV, Dyn11yn11:
 - Differential Protection test (87).
 - Neutral Over Current test definite stage (50/51G).
 - Neutral Over Current test inverse time stage (50/51G).
 - Over current protection F671 Siprotect – Siemens.
 - ❖ MICOM (P345) ST. Generator protection relay 340 M.V.A:
 - Differential Protection Test (87).
 - Under Frequency (81<).
 - Over Frequency (81>).
 - Over Excitation (24).
 - Over Voltage (59).
 - Under Voltage (27).
 - Reverse Power (32).
 - Dead Machine / Inadvertent Energizing (50/27).
 - Field Failure (Loss of Excitation) (40).
 - Residual Over Voltage (59N - 95%).
 - Stator Earth Fault (64 - 100%).
 - Sensitive Power (low power) (37).
 - Thermal over load (49).

- Under impedance (21).
- Negative phase sequence (46).
- ❖ MICOM (P141) ST. Excitation Transformer protection relay:
 - Phase Over Current Test (50/51).
- ❖ S.C Protection Relay Schneider 6.6KV:
 - SEPAM 20 (S20): Phase over current relay 50/51.
 - SEPAM 40 (S42) Transformer protection relay:
 - Over current relay 50/51.
 - Earth Fault relay 50N/51N.
 - Under voltage relay 27.
 - SEPAM 40 (M41) Motor protection relay:
 - Earth Fault relay 50N/51N.
 - Negative Phase Sequence relay 46.
 - Thermal over Load relay 49.
 - Excessive starting time and locked rotor relay 48/51LR.
 - Under voltage relay 27.
 - Temperatures monitor 38/49T.
 - SEPAM 80 (M87) Motor Protection Relay:
 - Differential protections relay 8 7.
 - Earth Fault relay 50N/51N.
 - Negative Phase Sequence relay 46.
 - Thermal over Load relay 49.
 - Excessive starting time and locked rotor relay 48/51LR.
 - Under voltage relay 27.
 - Temperatures monitor 38/49T.
 - Diesel Generator Differential Relay RMC-131D.
 - Diesel Generator stator earth fault Relay RMC-142D.
 - Diesel Generator stator reverse power Relay RMP-121D.
- ❖ 220KV Protection relays:
 - 7SA612 (F301) main 1 & 2 protection relay SIEMENS.
 - Distance protection.
 - Over current protection.
 - Earth fault over current protection.
 - 220KV B.B PROTECION (CENTRAL UNIT).
 - B.F Protection 7VK610.
 - Bay-units types 7SS522, 7SS523.
- Check All Closing and Tripping Circuits for C.Bs & Apply Test Closing Time, Opening Time and Contact Resistance of Different Voltages CBs (6 - 11 - 66 - 220 - 500KV). Testing of Local protection devices of transformers (Winding Temp, oil Temp - Pressure relief - sudden pressure device - BOCHHOLZ Relay).
- Prepare (MPIS) for maintenance Procedures for maintenance and protection functions.
- Using Omicron 356 for testing of digital multifunction protection relays as: M3425A, M3310A of gas turbine Generator.
- Micom (P345, P141) of Steam turbine.
- Siemens 7UT6131, 7SJS111, 7SA612, 7SD522 *SPRITEC 4*.
- Sepam Series 20, 40, M87 of 6KV Switch Gear.
- Commissioning of:
 - Gas Turbine Generator 250MW (Mitsubishi Electric Corporation) & Digital Generator Protection Relay M-3425, M-3310 for Excitation Transformer.
 - 220KV GIS SIEMENS & Digital Protection Relay (SPERITEC4),

- 220KV Cable between Main Transformer and 220KV G.I.S.
- MAIN transformer 21/220KV and auxiliary transformer 21/6.3KV (AREVA).
 - Medium Voltage Switchgear 6.3KV (SCHNEIDER, RENOX) & Digital Protection Relay (SEPAM 1000).
 - Medium & L.V Motor (EPARA - JABAN).
- Installation for Generators, Transformers, gas turbine, steam turbine, boilers, gas isolator system and related auxiliaries. All aspects of commissioning, start-up for all Electrical equipment (static and dynamic) to be according client contract specification, and manufacture requirement. Understanding of schematic, P&ID drawing, Power, protection and Testing the function of all electrical items.
 - Two major inspections of GAS Turbine units as Electrical Maintenance Engineer.
 - SIEMENS
 - Switchgear type 8DN9-2 Functionality of C.B.
 - Interlocking system.
 - SF6 handling.
 - Partial discharge in gas insulated.
 - Manual operation of Disconnectors & Earthing switch.
 - Handling of the SF6 maintenance machine DILO.
 - Schneider M.V. Primary distribution Equipment knowledge & use L.V. Switchboards.