

# GCC Electrical Testing Laboratory

المفتبر الفليبي لفص المعدات الكهربائية



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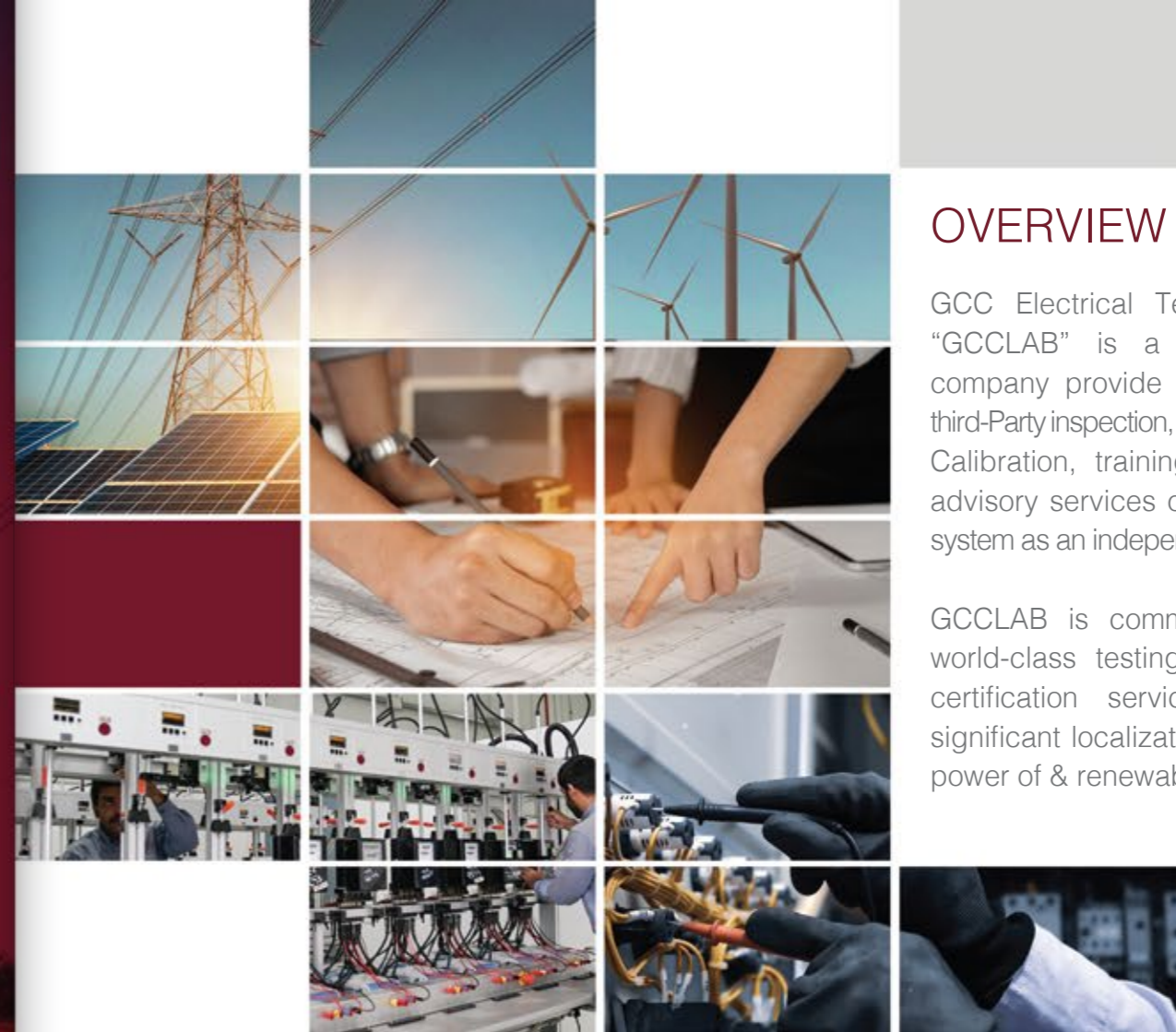


### GCCLAB Services

Work hand in hand with our clients to shape the future of electricity  
through innovative ad-hoc solution.

# GCC Electrical Testing Laboratory

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## OVERVIEW

GCC Electrical Testing Laboratory "GCCLAB" is a semi-government company provide professional local third-Party inspection, Testing, certification, Calibration, training, and Technical advisory services of electrical power system as an independent organization.

GCCLAB is committed to achieve world-class testing, inspection and certification services and enable significant localization industry in the power of & renewable energy sector.

## Our Vision

To achieve unique global leadership in the energy industry through testing, inspection, certification and innovation.



## GCCLAB shareholders



# OUR SERVICES

GCCLAB provides a wide range of services in Inspection, Testing, Consulting, technical Advisory and Engineering Services.



# TECHNICAL, ENGINEERING & CONSULTING SERVICES

GCCLAB thru its engineering arm provide an engineering services support that include but not limited to the project development, Operations and maintenance, asset management, asset performance and management consulting services.

## **Standard Review And Development**

Review client standards & qualifications to enhance the supplier and systems requirement to assure high quality in material, product & systems and deploy the best practices.

## **Generation Connection And Grid Compliance**

Conduct generation grid compliance studies to meet transmission system operator requirements thru system & generator modeling, develop connection guidelines, conduct simulation and reporting the results and grid compliances.

## **Plant Process Assessment And Optimization**

Review new or existing industrial plant process and provide recommendation for process optimization, monitoring tools and KPI improvement.

## **Energy Efficiency And Auditing**

Conduct facility energy auditing & provide energy consumption envelop reports to pinpoint to potential saving in the load profile in addition to ESCO services in terms of retrofiring and energy efficiency improvement.

## **Product Specification Advisory Services**

Provide advisory services in developing client product & system qualification and specification meet the client needs and deploying international and best practices.

## **Power Control Center Consulting Services**

Provide technical advisory services for new control center development project or operating center in terms of center requirement, integration of automation systems, material specification, control center and system operator certification programs, operation procedure review and development, grid code compliance, human performance evaluating.

## **Environment Impact Assessment**

Conduct pre-project studies such as environment impact assessment, site resources and projects feasibility studies to address all potential impacts, matters related to the project to take the appropriate measures.

## **Benchmarking Studies**

Conduct Benchmarking studies to peer organization and top leading in similar industrial in compliance with Client needs and standard Asset Management practices guided by ISO 550001.

## **ISO 550001 Development**

Prepare the organization for ISO 550001 asset management certification by developing staff, process, and procedures toward achieving asset management accreditation.

## **Power System & Protection Studies**

Conduct power system modeling and Studies using different programs such as but not limited to Etap, PSS@E, PSCAD, DIgSILENT and EMTP-RV in addition to protection & relay coordinate studies.





## REAL TIME DIGITAL MODELING & SIMULATION SERVICES

Conduct real time system studies and simulation to test and verify setting, systems requirements, contingencies, protection systems coordination, wide area network integrations and others. GCCLAB thru RTDS facility can deliver the following services but not limited to:

### Control System Testing

- HVDC & FACTS: Simulations and Planning Studies
- Generator Controls: Exciters & AVR, Governors and Synchronous Condensers
- Review and Validate Black Start Plans
- Fault Analysis

### Grid Level Testing

- Integration of Renewables: Traditional RMS simulation not sufficient for high penetration
- Grid Security and Reliability Assessment
- Providing Maximum Testing Efficiency
- Contingency Scenarios Assessment
- Evaluating the interaction of more than one protection device
- Single And Multiple Protective Relay Schemes Testing
- Electro Magnetic Transient (EMT) Studies

### Microgrid And DERs

- Test Multi-level Microgrid Control Protection
- Synchronization
- Load Shedding
- Economic Dispatch

- Power Electronic Converter Modeling
- Renewable Energy Modelling Library, Wind, Solar and Energy Storage

### Protection And Automation Testing

- Conventional Relay Testing
- IEC 61850 Relay Testing
- Remedial Action Scheme Testing
- WAMPAC -Wide Area Protection and Control Testing

### Distribution Mode Capabilities

- Modeling and Studies of Mesh Network up to 1200 nodes
- Distribution Automation Testing
- Renewable Energy (DGs) Integration
- Voltage Profile Simulation and Maintaining
- Hosting Capacity Studies

### Cyber Security

- Simulation of threats and hacking of systems and users and observe the consequences
- Study System Resilience From Security Perspective

# TESTING & INSPECTION SERVICES

GCCLAB thru its ISO 17020 & ISO 17025 accreditation “inspection & Testing body” Conduct third-party inspection services for Factory Acceptance Testing (FAT), Site Inspection Services (SAT), failure investigation, third party critical tasks inspection and witness, asset performance inspection services and advise the client with Testing Plan needed, witness on behalf of the client the testing and pre-commissioning activities and other field services such as but not limited to:

## Equipment Failure Investigation

Perform equipment failure investigation and lab diagnostic testing and analysis that include on-site and lab comprehensive testing services to find the root cause of the malfunction of the equipment and provide a 3rd party engineering report.

## 3rd Party FAT And SAT Inspection Services

Perform wide range of independent third-party inspection services including Quality Assurance and Factory Acceptance Tests. GCCLAB is able to provide FAT and SAT for the following industries.

- Power Generation
- Transformers
- High Voltage Gear
- HV & MV Power Cable
- Renewable Energy
- Oil & Gas
- Pipelines

## Field Testing And Commissioning Activities

GCCLAB offers high quality and efficient testing & commissioning services for power system equipment such as but not limited to:

- Solar PV Testing
- Transformer Testing
- Switchgear Equipment Testing
- Generator Equipment
- DC Systems Testing



## SMART GRID SERVICES

GCCLAB's expertise in smart grids and renewables can help create a reliable grid and a secure supply of renewable resources. GCCLAB has experience working with power sector companies and regulators on policy and grid systems, including renewable energy integration, transmission studies, deployment of digitalization solutions, and demand management policy initiatives. This include but not limited to:

### Smart Solution Specification & Client Requirement

Through GCCLAB technical advisory team, GCCLAB can support utilities & industries to develop solutions, equipment and system specification and qualification based on international experiences and best practices.

### Smart Grid Policy Development

GCCLAB can help in developing guidelines, utility requirements, aligning regulatory codes and standards toward the best practices, perform benchmarking studies with internationally deployed best policies and lessons learned, forecast & model future expectations, and define ultimate targets.

### Smart Meter Testing

Smart Metering Laboratory provides onsite & lab Testing and Technical assessment of Smart Meter performance in addition to the Electromechanical meters through advanced test bench with capability to Perform Accuracy, Functional and special testing requirement, the services include but not limited to:

- Accuracy Test
- Routine & functional Tests
- Register Test
- Voltage Interruption Test
- Starting Current Test
- No Load Condition Test
- Constant Test

### Smart Mobility Solution

Mobility plays a decisive role in economic prosperity. At the same time, it becomes important to make mobility sustainable. GCCLAB can support utilities and industries to remotely monitor site activities, engaged with O&M teams in the field for testing and analysis, smart data and results archiving, and connectivity with subject matter expert to bridge competence gap and keep close monitoring to critical activities



# DIGITALIZATION & ASSET MONITORING SERVICES

## Partial Discharge Services

Support client in conducting online & offline partial discharge (PD) testing and measurement electrical equipment and provide engineering assessment report for the potential of exist or the evolution of PD in the equipment. Moreover, establish a center of PD measurement data concentration for online monitoring & diagnostic thru developed dashboard. GCCLAB can perform the PD to Transformers, Bushings and insulators, Circuit breakers (oil, air, SF6), Metal-clad switchgear, Cables, splices, and terminations, Switches, Bus insulation, Current and potential transformers, Lightning arrester & Gas Insulated Switchgear (GIS)

## Transformer Monitoring & Diagnostic Solutions

Install, testing and commissioning of Monitoring & Diagnostic solutions to power transformers through online permanent installed or portable devices to measure gases such as dissolved gas analysis (DGA), PD, moisture, and others. To remotely monitor and analyze asset performance and detect potential failure before occurrence.

## Asset Performance Management

GCCLAB can support in the development of utility, national system operator and industries in establishing Asset Performance Management solution that will read all asset live performance and develop trending, KPIs, health pattern based on asset data, age, and performance to give a live health condition with expert guidance in interpreting results and defining healthy thresholds.





## ASSET INTEGRITY ASSESSMENT

GCCLAB technical expertise in each type of power equipment provide 3rd party assessment & management program to the performance of the asset. This includes:

- Review O&M regime & programs, practices, design, and health condition, spares strategy program, and replacement program
- Life Profiling & Ranking Based On Risk Identification And Criticality.
- Conduct Root Cause Analysis & Failure Investigation
- Review Historical Record And Pinpoint System Bad Actors.
- Implementation Of Engineering Recommendation And Solution.

### Onsite Testing Services

GCCLAB offers onsite high voltage testing and commissioning services through its specialized mobile testing system. With a wide range of applications including short circuits, cable partial discharge, failure analysis and fault detection.

The mobile testing services includes.

- Transformers High Voltage Test up to 720kV
- GIS High Voltage Test up to 720kV
- XLPE and submarine cable High Voltage Test up to 260kV