



*25 years of power
packed performance*

TRANSMISSION & DISTRIBUTION SERVICES

L&T-Sargent & Lundy Limited



6th Floor, East Block -1, Gate No. 1, L&T Knowledge City
NH 8, Between Ajwa- Waghodia Crossing
Vadodara-390019, Gujarat, INDIA
Tel: +91 265 245 6000 /6001 Fax: +91 265 245 6300
Email: Ltsl@Lntsnl.com Website: www.Lntsnl.com

L&T-SARGENT & LUNDY LIMITED

Over 25 years of global power industry experience

Operating from Vadodara in India

Professional strength > 450

>29,000 MW of Gas Power Projects experience

>35,000 MW of Coal Power Projects experience

>25,000 MW of Renewable Projects experience



L&T-SARGENT & LUNDY LIMITED

L&T-Sargent & Lundy Limited is a joint venture between Larsen & Toubro, India and Sargent & Lundy L.L.C., USA. Established in 1995, it provides consultancy and engineering design services in the field of Power and affiliated sectors. With a professional staff consisting about 450 engineers and designers, it has grown from strength to strength in gathering extensive experience in the power plant engineering and consulting assignments. The company's value system is guided by the Vision and Mission statements which are an integral part of its work culture and ethos.



VISION

To become a leading integrated engineering solutions provider in the global power sector, continuously creating value for our stakeholders

MISSION

- Be responsive to customer needs, delivering optimal solutions and value added services
- Ensure sustainable growth and professional excellence using state-of-the art technology, process-driven approaches, eco-friendly solutions and IT enabled tools
- Foster a culture of mutual trust, respect, teamwork, continuous learning, innovation, challenge and employee empowerment to provide a growth oriented workplace
- Adhere to fair, transparent and ethical practices in interactions with all stakeholders, in keeping the tenets of good corporate citizenship
- Remain flexible and agile, continually adapting to the changing business Environment

PROFESSIONAL STRENGTH

L&T-S&L has presently an overall strength about 450 professionals dedicated to consultancy services in the field of Power Plant engineering and Power Sector in general, based at Vadodara, Gujarat, India. Our professionals have extensive experience in successful delivery of various prestigious power projects. Our strength is further enhanced with the application of state of the art software as well as various in-house developed software's deployed for engineering projects.



CAPABILITIES

Capitalizing on its strength in core engineering services related to power projects, which include basic and detail engineering services, review engineering, site support services, L&T-S&L has extended its service portfolio to include Transmission & Distribution Services for Utilities, IPPs and private power companies.

L&T-S&L offers T&D engineering services in the following areas:

- Substation Engineering
- Transmission Line Engineering
- Electrical Analytical Studies

The services in the above mentioned areas include the following:-

- Detail Engineering Services
- Owners Engineering Services
- Lenders Independent Engineering
- Preparation Of Specifications
- Technical Due Diligence
- Proposal Engineering Support





SOFTWARES DEPLOYED

PLS-CADD &
PLS Tower

ETAP
System Studies

AUTOGRID PRO
Grounding Studies

Micro station
/ AUTOCAD
Layouts & SLD's

PSCAD & EMTP
Insulation
Coordination
Studies &
Ferro-resonance
Analysis

Dialux
Lighting
Calculations

Staad Pro
SAFE, ETABS

Bentley
Architecture
AECOsim

SUBSTATION ENGINEERING SERVICES

Electrical

- Main Single line Diagram
- Equipment Layout
- Grounding, Shielding Protection & Lighting
- Raceway design
- Procurement Support
- Vendor drawing Review
- Cable Interconnection schedule

Protection and Automation Systems

- Relay and Metering Diagram
- Protection Logic Diagrams
- Interlock /Inter trip Logic Diagrams
- CT/VT Adequacy Check calculations
- Preparation of SAS, SOE, TFR and DSM Point list
- Relay Setting Calculations

Civil, Structural and Architectural

- Site Development Plan and infrastructure detail drawings
- Civil and Structural Drawings for GIS building, Control Building
- Towers, Gantries, Equipment support structures and foundations
- Architectural Designs/Drawings for buildings
- Drainage and Plumbing
- Vendor Drawing review

Mechanical

- HVAC System
 - Capacity Calculation
 - Detail Ducting design
 - Air Flow & Control Schematic
- Fire Fighting System
 - Calculation and design of Fire protection system
 - Piping design and network analysis
 - Hydrant and spray system piping layout

PROJECT REFERENCES

PROJECT NAME	CLIENT	TYPES OF SERVICES
132/33 kV Transmission line and Substations, Yemen	CONSOLIDATED CONSULTANT GROUP, Jordan	Design Review Services
Shoibah SWCC-2 380kV Substation Project and Expansion of Existing Modon BSP & S-IWPP Substation, Saudi Arabia	SSEM / Saudi Designers Engineering Consultants	Detail Engineering Services
400kV GIS and 66kV AIS Substation for 2x660MW NTPC Khargone Project, India	Larsen & Toubro Limited, India	Detail Engineering Services
Extension of existing 132kV AIS Switchyard for Y3DC project, Oman	L&T-Hydrocarbon / PDO, Oman	Detail Engineering Services
66/11 kV Switchyard , India	Bhilosa Industries Pvt. Ltd, India	Detail Engineering Services
132/33/0.433kV Substation Package, Talaipalli , India	Larsen & Toubro Limited, EAIC - Control & Automation BU , India	Detail Engineering Services
Airport Housing Substation project, Saudi Arabia	AJEC, Saudi Arabia	Detail Engineering Services
380kV/132kV substation with underground cables for New Duba Green Power plant, Saudi Arabia	AJEC, Saudi Arabia	Detail Engineering Services
220 kV Substation and Transformer packages for BIPL Naroli CP site, India	Bhilosa Industries Pvt. Ltd, India	Detail Engineering Services
400kV AIS Switchyard of 2x660 MW Shree Singaji TPP (Stage-II), Madhya Pradesh, India	Larsen & Toubro Limited, India	Detail Engineering Services
380/110/13.8kV GIS Al-Waha BSP, Saudi Arabia	Al-Toukhi/AJEC, Saudi Arabia	Detail Engineering Services
380/132/33/13.8 kV GIS New Aziziyah BSP, Saudi Arabia	SSEM/AJEC, Saudi Arabia	Detail Engineering Services

PROJECT REFERENCES

PROJECT NAME	CLIENT	TYPES OF SERVICES
380/132/33kV GIS Riyadh Metro BSP , Saudi Arabia	Al-Toukhi/AJEC, Saudi Arabia	Detail Engineering Services
230/ 132/33 kV GIS Mekele & 230kV Dallol AIS Substation, Ethiopia	L&T Construction (PT&D), India	Detail Engineering Services
220kV GIS Al Nahdah Substation Project, Egypt	L&T Construction (PT&D), India	Proposal Engineering Services
SG Merah and SG Maaw Substation, Egypt	L&T Construction (PT&D), India	Proposal Engineering Services
500/220/66/11kV Zagazig Substation, Egypt	L&T Construction (PT&D), India	Proposal Engineering Services
400/220/33kV Outdoor AIS Substation, Mozambique (2 nos)	L&T Construction (PT&D), India	Proposal Engineering Services
220/132/33 kV AIS Substation, Tunisia (18 nos)	L&T Construction (PT&D), India	Proposal Engineering Services
220/66/22kV Substation of Canal Sugar Co., Egypt	L&T Construction (PT&D), India	Proposal Engineering Services
Mobile Substation Project in Ethiopia	L&T Construction (PT&D), India	Proposal Engineering Services
18 Nos. 220/132/33 kV AIS Substation, Tunisia	L&T Construction (PT&D), India	Proposal Engineering Services
500/220/66/22 kV El-Eqtsadiya GIS Substation, Egypt	L&T Construction (PT&D), India	Proposal Engineering Services
500/220/22kV West Dameita GIS Substation, Egypt	L&T Construction (PT&D), India	Proposal Engineering Services
500/220/66/11 kV El-Hamawdiya GIS substation, Egypt	L&T Construction (PT&D), India	Proposal Engineering Services

PROJECT REFERENCES

PROJECT NAME	CLIENT	TYPES OF SERVICES
400kV GIS Extension work for 500MW Sabiya-2 Open Cycle Project, Kuwait	Alghanim International, Kuwait	Review Engineering Services
66KV AIS Substation, India	Mother Dairy, India	Review of calculations, SLDs, protections, Vendor drawings, Schematics
400kV AIS Switchyard of 2x660MW Chhabra Super Thermal Power Plant, Rajasthan, India	Larsen & Toubro Limited / Rajasthan Rajya Vidyut Utpadan Nigam Ltd. , India	Review Engineering Services
765kV AIS Switchyard for 2x660 MW Lanco Vidharbha Thermal power plant, India	Lanco Infratech Limited, India	Review of calculations, SLDs, protections, Vendor drawings, Schematics
400kV & 220kV Switchyard for 2x600 MW Malwa Thermal Power plant, India	Madhya Pradesh Power Generating Company, India	Review of calculations, SLDs, protections, Vendor drawings, Schematics
765kV & 400kV AIS Switchyard of 2x600 MW Anpara "C" Thermal Power Plant, India	Lanco Infratech Limited, India	Owner's Engineering Services
400kV AIS Switchyard of 2x300 MW Lanco Amarkantak Thermal Power Plant , India	Lanco Amarkantak Power, India	Review Engineering Services
220kV AIS Switchyard of 50 MW Liquid Fuel Based CCPP, Pipavav, India	Gujarat Cement Works, India	Vendor drawing review
400KV AIS Switchyard of 2x700 MW Rajpura Thermal Power Plant, India	Larsen & Toubro Limited / Nabha Power, India	Vendor drawing review

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380/132/33kV GIS Al-Jilah BSP, Saudi Arabia	Al-Toukhi/AJEC, Saudi Arabia	Detail Engineering Services
380/132/33/13.8kV GIS Al-Kharj BSP, Saudi Arabia	SSEM/AJEC, Saudi Arabia	Detail Engineering Services
380/132/13.8kV GIS As-Safa BSP, Saudi Arabia	SSEM/AJEC, Saudi Arabia	Detail Engineering Services
380/132/13.8kV GIS Sultanah BSP, Saudi Arabia	SSEM/AJEC, Saudi Arabia	Detail Engineering Services
33kV GIS of 2x45 MW IPCL Co-generation Power Plant, India	L&T/ IOCL, Panipat, India	Detail Engineering Services
245kV GIS extension of 1x700 MW Thermal power station, Thailand	DOOSAN, Korea	Detail Engineering Services
33kV/220kV Switchyard for Solar PV Plant Plant, India	AMP Energy Green Four Pvt. Ltd	Preparation of Technical Specifications
400kV & 230kV GIS Substations for NPCIL KKNPP 3 & 4, India	NPCIL, India	Owner's Engineering Services
132 KV Switchyard and Substation, India	Gujarat State Fertilizers & Chemicals Ltd., India	Owner's Engineering Services
400kV GIS for 750MW Sabiya-3 Combined Cycle Project, Kuwait (incl. HVAC and Fire Protection system)	Alghanim International, Kuwait	Review Engineering Services
400kV GIS modification work for 250MW Sabiya-1 Combined Cycle Conversion Project, Kuwait	Alghanim International, Kuwait	Detail Engineering Services

PROJECT REFERENCES

PROJECT NAME	CLIENT	TYPES OF SERVICES
220kV AIS Switchyard of 375 MW Dhuvaran Combined Cycle Power plant for GSECL, India	Larsen & Toubro Limited ,India	Vendor drawing review
400kV AIS Switchyard of 2x600 MW DB Power Thermal Power Station, India	Larsen & Toubro Limited, India	Vendor drawing review
400kV AIS switchyard of 2x150 MW Thermal power plant at Krishnapattnam for Thermax, India	Thermax, India	Vendor drawing review
400kV AIS Switchyard of 2x383.8 MW GMR Rajahmundry Energy Combined Cycle Power plant, India	Larsen & Toubro Limited, India	Vendor drawing review
400kV AIS Switchyard of 445 MW Konaseema Combined Cycle Power plant, India	Larsen & Toubro Limited, India	Vendor drawing review
400kV AIS Switchyard of 388.5 MW Vemagiri Combined Cycle Power plant, India	Larsen & Toubro Limited, India	Vendor drawing review



TRANSMISSION LINE SERVICES

Transmission Line Routing
And Design

Profiling Using Software
With Integrated Terrain
Modeling

Sag Tension Calculations

Tower Spotting

Structural Design Of
Latticed Towers, Poles And
Frames

Line Gantries

Foundation Design

Stringing Chart And
Drafting Functions

Conductor Sizing And
Selection

Transmission Line
Hardware Estimation

Procurement Support

Tower Testing

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
Kharghar Vikroli Transmission Pvt. Ltd. (Adani Transmission Gp.)	Lender's Engineering Services for 74 CKm 400 kV D/C Kharghar Vikroli Transmission Pvt. Ltd. assets , Maharashtra, India
WRSS XXI (A) Transco Limited (Adani Transmission Gp.)	Lender's Engineering Services for 293 CKm 765 kV D/C and 400 kV D/C WRSS XXI (A) Transco Limited assets, Gujarat, India
Lakadia Banaskantha Transco Limited (Adani Transmission Gp.)	Lender's Engineering Services for 352 CKm 765 kV D/c Lakadia Banaskantha Transco Limited assets, Gujarat, India
North Karanpura Transco Limited (Adani Transmission Gp.)	Lender's Engineering Services for 300 CKm 400 kV D/C North Karanpura Transco Limited assets, Jharkhand & Bihar, India
HVDC Project (Adani Transmission Gp.)	Lender's Engineering Services for 80 CKm 320 kV D/C HVDC Project assets, Maharashtra, India
Warora Kurnool Transmission Limited (Adani Transmission Limited) / State Bank of India	Lender's engineering services for Warora-Kurnool Transmission Ltd. (WKTL) assets, India
NRSS XXXVI Transmission Limited, India	Lender's Engineering for 400 kV Double Circuit 167.4 km long Transmission line, India
Warora-Kurnool Transmission Limited, India	Lender's Engineering for 765kV Transmission project of Essel Group, India
North Karanpura Tranco Ltd. , India/ICICI Bank	Lender's Engineering for Development of transmission lines for NKTL, India
State Bank of India, India	Lender's Engineering for 400kV Multi Circuit Line & 400kV DC line Transmission Projects of KPTCL, Karnataka, India

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
India Grid Trust, India	Technical Due Diligence & OE Services for NERSS II Project in Assam & Arunachal Pradesh, India
India Grid Trust, India	Technical Due Diligence for (Parbati Koldam Transmission Company Limited) PKTCL Inter-State Transmission System, India
CLP India Private Limited, India	Technical due diligence for 400kV double circuit tower modified design, India
CLP India Private Limited, India	Technical Due Diligence for 400kV Transmission Lines & Substation, India
L&T/NTPC, India	Detail Engineering for 11kV Transmission line for 2X660MW Khargone STPP, India
NPCIL, India	Owner's Engineering for 220kV Transmission line, India
Sprng Energy, India	Owner's Engineering for Wind Power Projects, India : i) 33kV Transmission lines for Khageshree, Gujarat ii) 33kV Transmission lines for Mulanur, Tamil Nadu iii) 220kV & 33kV Transmission lines for Kod, Madhya Pradesh
Jindal Investimentos S.A., Mozambique	Owner's Engineering Specification for 220kV transmission line for 1x150 MW Chirodzi Thermal Power Project, Mozambique
L&T, India / NWPGL, Bangladesh	Review Engineering of 230kV & 132kV transmission lines at Bheramara CCPP, Bangladesh.

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
L&T, India / BPDB, Bangladesh	Review of 230kV single circuit transmission line route & gantry design within Power Plant boundary for Sikalbaha Power Plant, Bangladesh.
L&T/ NTPC, India	Turnkey Specification of 66kV transmission line for 2x660MW NTPC Khargone Power Project, India
L&T/ MPPGCL, India	Preparation of Specification for 11kV, Overhead line to Raw water Intake area for Malwa Phase-II Power Project.
Delaney Colorado River Transmission LLC (DCRT) through S&L, Chicago	Consultancy Services for 500kV Tower testing, India
Alghanim International, Kuwait	Proposal Engineering for 220kV Transmission Lines for Albagair Project, Sudan
L&T, India	Proposal Engineering for 330kV D/C Transmission line, Zambia
L&T/NTPC, India	Proposal Engineering support for 220kV & 132kV Transmission Lines for Patrattu Project, India
L&T/NTPC, India	Proposal Engineering support for 400kV Transmission Line for Telangana BOP , India
SEPCO III, Indonesia	Proposal Engineering support for 500kV Transmission Line for a project, Indonesia
L&T/ NTPC, India	Turnkey Specification of 66kV transmission line for 2x660MW NTPC Khargone Power Project, India



ELECTRICAL ANALYTICAL STUDIES

Load Flow Study

Reactive Power
Compensation
Study

Short Circuit Study

Motor Starting
Study

Protection Relay
Setting &
Coordination Study

Harmonic Analysis

Transient Stability
Study

Insulation
Coordination Study

Ferro Resonance
Study

Neutral Grounding
Reactor Sizing

Arc Flash Study

Load Shedding
Study

Review of
Generator
Protection Settings

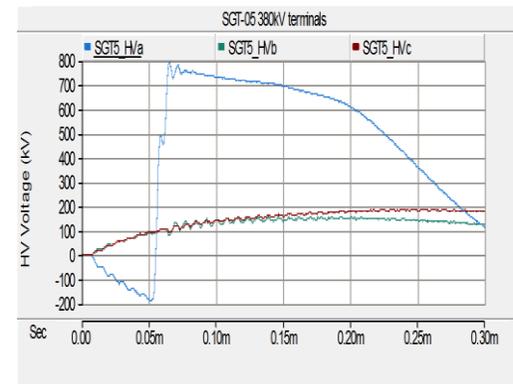
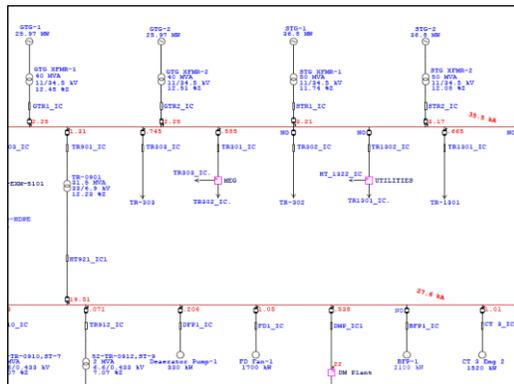
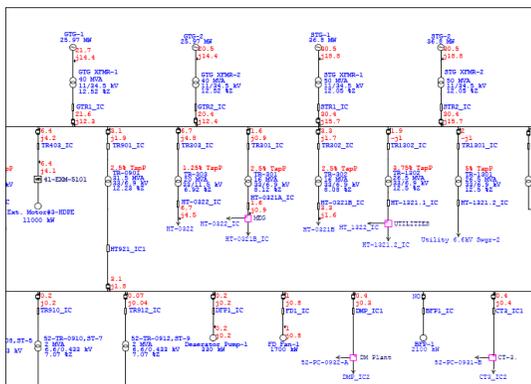
Grid Integration for
RE Plants

Dynamic Analysis

Sub-Synchronous
Resonance (SSR)

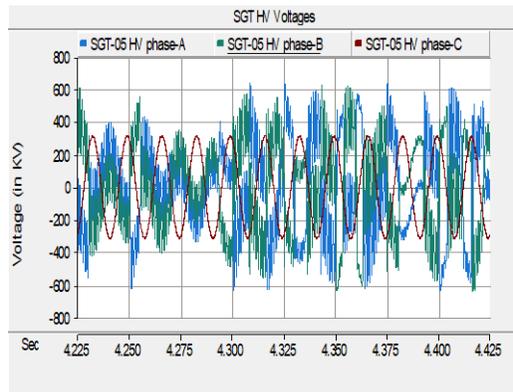
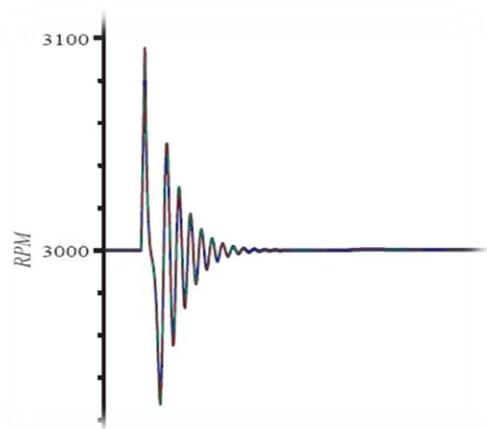
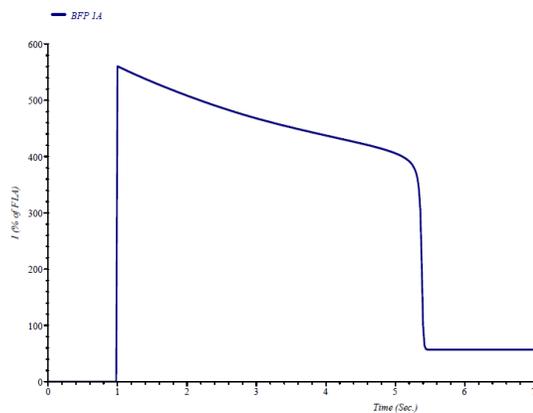
Sub-Synchronous
Torsional
Interactions (SSTi)

SERVICES OFFERED



MOTOR STARTING ANALYSIS

Motor Current



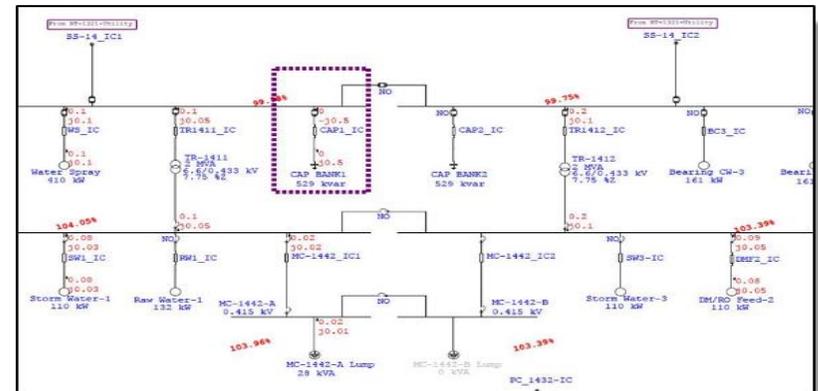
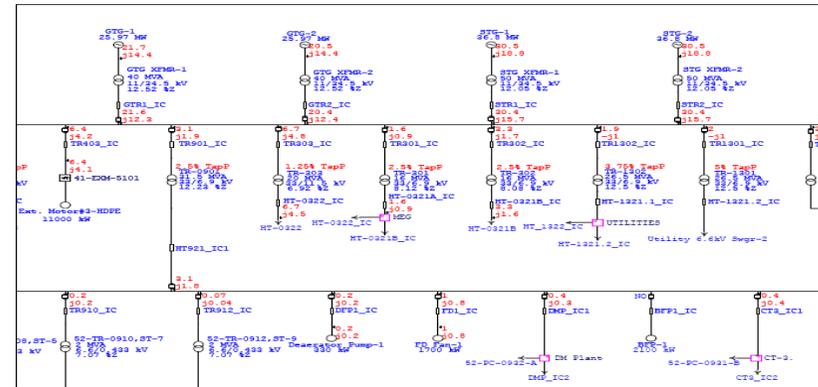
SERVICES OFFERED

Load flow calculations

- For full determination of voltage, active, reactive power, power factor and transformer control requirements as well as the verification of equipment ratings in the event of outages and faults in a power system

Reactive power compensation study

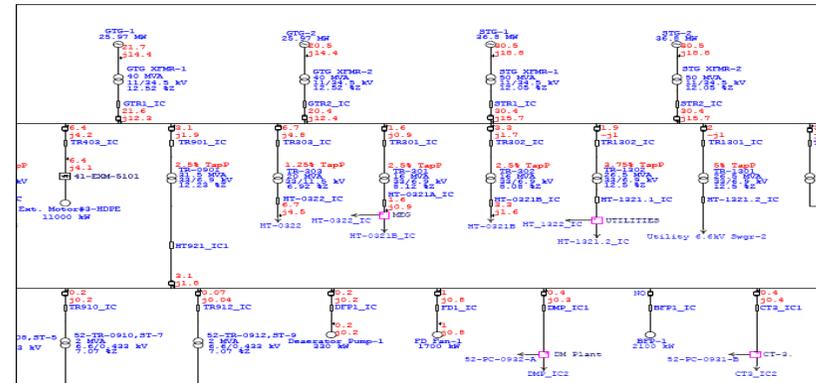
- To improve power factor of the power system by suitably placing capacitor banks or other type of reactive power compensation device.



SERVICES OFFERED

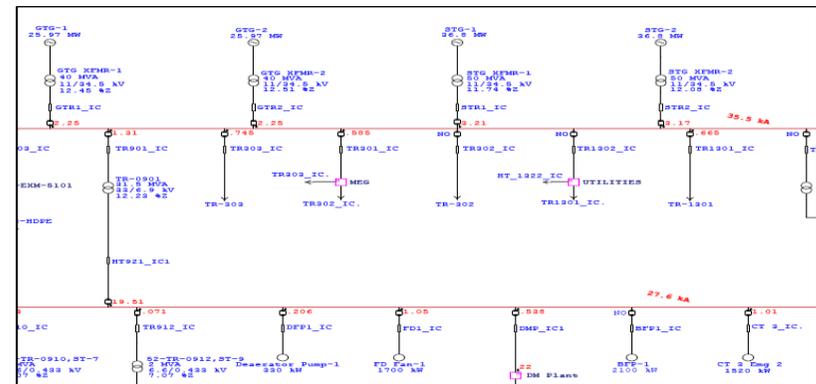
Load flow Study

- Load flow study is the steady state solution of the power system network. This study determines the voltage profile, power flow, power factor, Transformer tap control requirements and verification of equipment ratings in the event of outages / faults in power system



Short Circuit Study

- These studies are performed to determine the magnitude of currents flowing throughout the system for various types of faults at different locations. This information is used to select / verify equipment short circuit ratings and system earthing requirements. The same is also used in protection relay setting calculation.



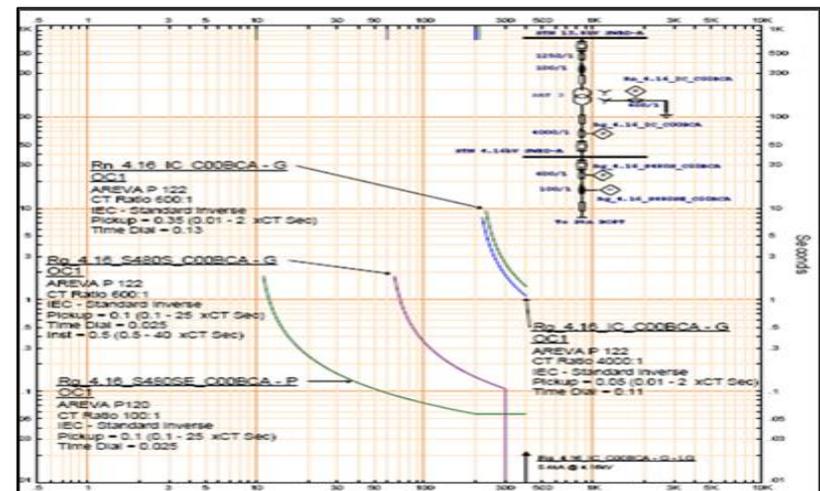
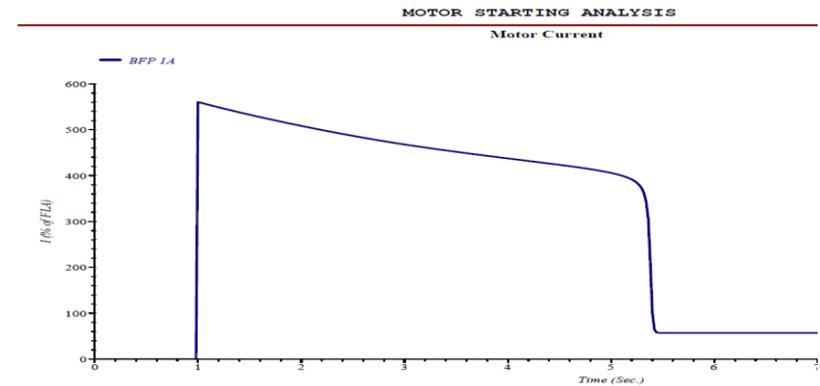
SERVICES OFFERED

Motor Starting Study (Static/Dynamic/Reacceleration)

- This study is performed to select the best method of starting, motor parameters and the required system design for minimizing the impact of motor starting on the entire system. This study also helps in determining the starting time of motor and re-acceleration philosophy

Protection Relay Setting and Coordination Study

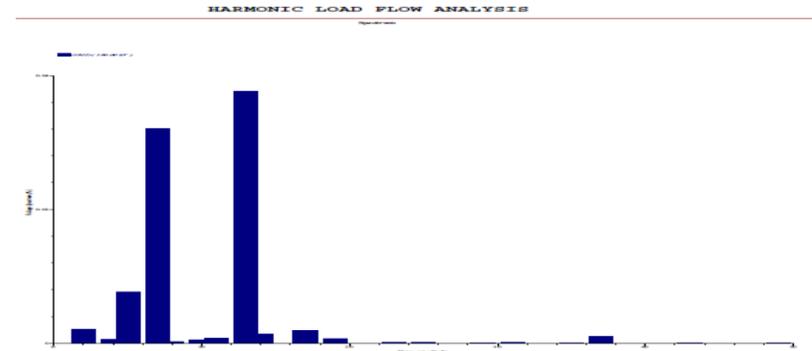
- This study is done to determine the most suitable settings for protective relays of Motors, Transformer, Cables & Overhead Lines. Further, calculation of overcurrent and earth fault settings to provide protection coordination to the plant equipment with optimum sensitivity, stability and selectivity is also performed. Comprehensive relay configuration files and setting sheets are developed to ease the commissioning activities.



SERVICES OFFERED

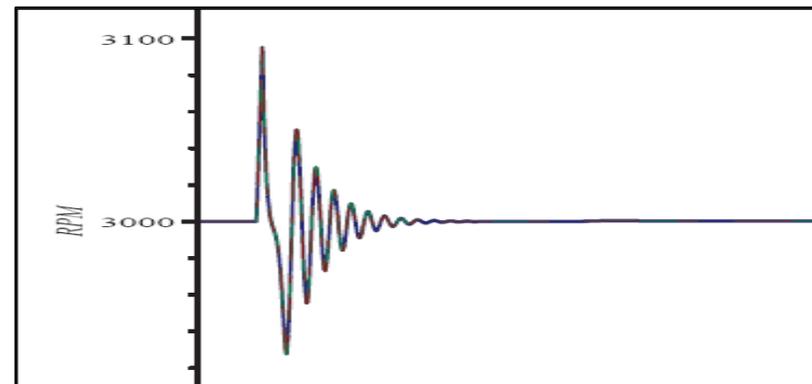
Harmonic Analysis

- The main information obtained from this study comprises different harmonic indices / factor related to the voltage / current waveform. This information is essential for analyzing the quality of power at different voltage levels. Also by this study the requirement of harmonic filters is ascertained.



Transient Stability Study

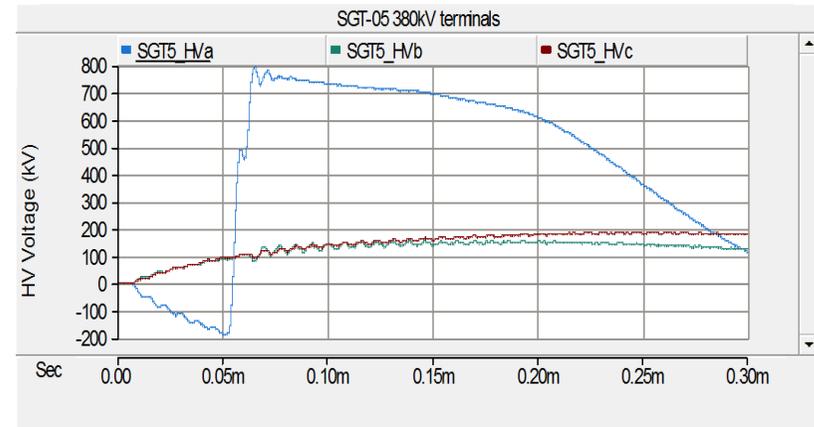
- Determination of critical fault clearing time under different loading and operating conditions. Verification / tuning of the turbine control, excitation control system and PSS to obtain desirable performance of the generating unit. Also determination of PSS effect on system damping in small signal stability analysis.



SERVICES OFFERED

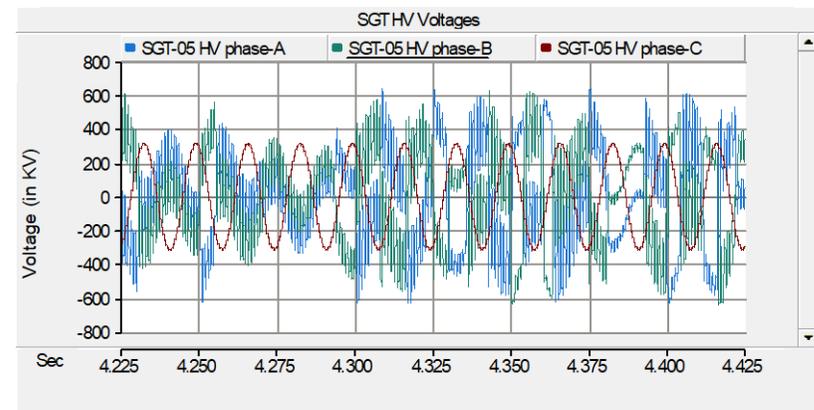
Insulation coordination study

- Insulation coordination study determines the selection and verification of surge arrester at right place to limit various types of overvoltages in the system within the equipment withstand levels. Maximum overvoltage like Temporary overvoltage, switching overvoltages, lightning overvoltages and Very fast front overvoltages are determined for various operating conditions.



Ferro resonance Study

- Ferro resonance is a non-linear resonance phenomena which occurs in a low loss electric circuit. This study is performed to find out various operating scenarios and system configurations of electrical network, which may lead to Ferro-resonance of power transformers and voltage transformers and to provide the solution to limit the over-voltages occurring during Ferro-resonance.



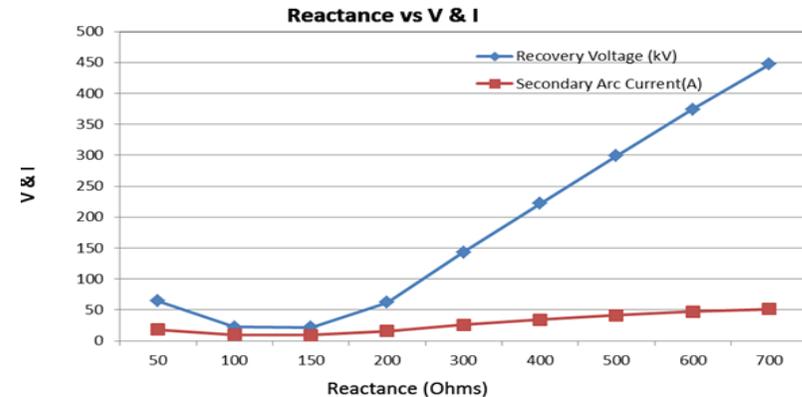
SERVICES OFFERED

Neutral Grounding Reactor Sizing Calculation

- This study is performed to design a neutral grounding reactor (NGR) to minimize the recovery voltage and residual fault current (secondary arc current) during a single line to ground fault which are about 80% of the transient faults, thereby reducing the reclosing time of transmission line circuit breaker to increase the system reliability and stability limit.

Arc flash Study

- This study is to used ascertain the incident energy available in the event of occurrence of short circuit while working on or operating an exposed and energized piece of equipment. This incident energy is used to determine the flash protection boundary and the appropriate level of Personal Protective Equipment (PPE), which can minimize personal injury from exposure to an electrical arc flash and maximize the probability for survival.





WARNING

Arc Flash and Shock Hazard

Appropriate PPE Required

124 mm	Flash Hazard Boundary
0.59	J/cm² Flash Hazard at 457 mm
Category 0	Untreated Cotton
400 VAC	Shock Hazard when cover is removed
00	Glove Class
1067 mm	Limited Approach (Fixed Circuit)
305 mm	Restricted Approach
25 mm	Prohibited Approach

Bus: 19BJA Prot: 19BJA01A



SERVICES OFFERED

Review of Generator Protection Settings

- Review of generator protection settings provided by manufacturers to reinforce the client's satisfaction and to ensure the coordination with the rest of the system.

Grid Integration for Renewable plants

- A grid integration study is an analytical framework used to evaluate a power system with high penetration levels of variable renewable energy (VRE). A grid integration study simulates the operation of the power system under different VRE scenarios, identifying reliability constraints and evaluating the required actions to alleviate those constraints. VRE plants should demonstrate their compliance at the grid connection point to the parameters defined in grid codes and in regulations.



SERVICES OFFERED

FOLLOWING STUDIES ARE OFFERED AS A PART OF GRID INTEGRATION OF RENEWABLE PLANTS

Power Flow Studies with Reactive Power compensation

- VRE shall be capable of absorbing or supplying reactive power output at the connection point within the range as specified in the grid codes/CEA recommendation for grid connection. Based on the study, reactive power compensation requirement such as capacitor banks or STATCOMS are recommended. Also VRE shall be capable of withstanding any rate of change of frequency and voltage as per grid code requirement without disconnection from the network.

Short Circuit Studies

- Short Circuit Study is performed to determine the magnitude of currents flowing through the system for various types of faults at different locations. This information is used to select / verify equipment short circuit ratings.

Harmonic Analysis

- VRE such as Solar PV & Battery energy storage system deploy the use of inverters which is non-linear source injecting harmonics/distortion in the system. When large rated VRE is connected to grid then harmonic injected may impact the power quality, hence this analysis is performed to check that VRE connected to the transmission system shall not impose voltage and current Harmonics exceeding the distortion limits greater than those specified in grid codes and IEEE standard 519-1992.

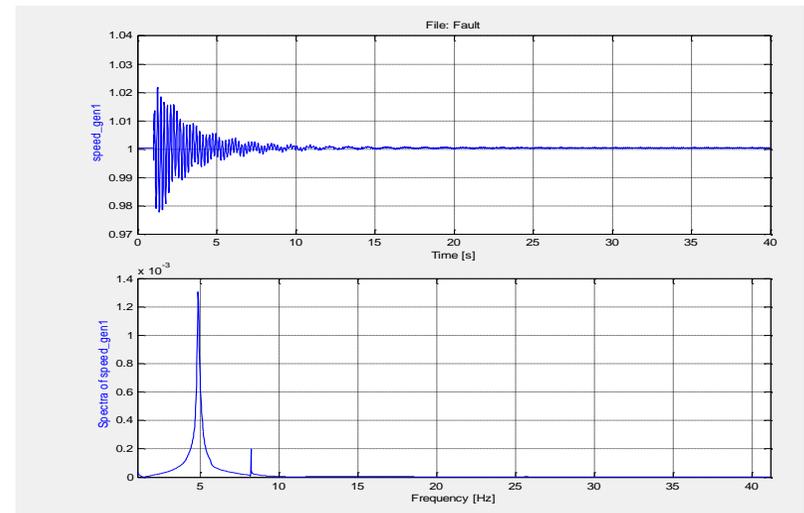
Dynamic Analysis

- VRE Modules are required to provide dynamic voltage support during network disturbances. VRE are required to remain synchronized to the network following a disturbance and shall be able to recover Active Power output after fault clearance or after voltage regains levels as specified in grid codes.

SERVICES OFFERED

Sub-Synchronous Resonance (SSR) / Sub-Synchronous Torsional Interactions (SSTi)

- The phenomenon of interaction between the torsional vibrations of the nearby turbo-generating units and the current oscillations in the connected network is referred to as sub-synchronous resonance (SSR).
- The main objective of this study would be to determine whether network has potential to create Sub synchronous oscillation condition



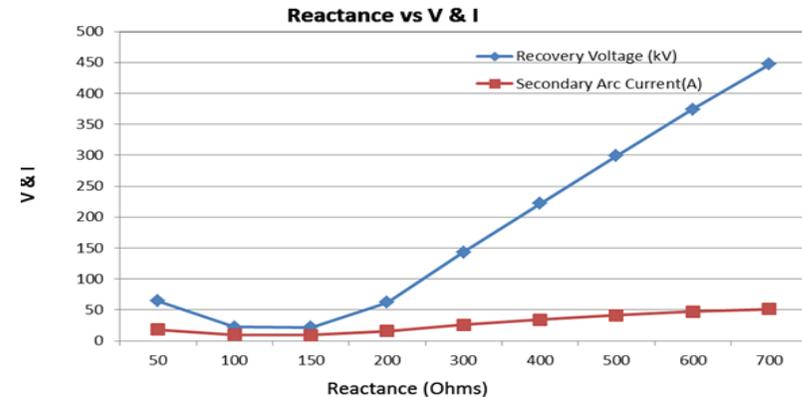
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Bus: 19BJA Prot: 19BJA01A



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- Review of generator protection settings provided by manufacturers to reinforce the client's satisfaction and to ensure the coordination with the rest of the system.

Grid Integration for Renewable plants

- A grid integration study is an analytical framework used to evaluate a power system with high penetration levels of variable renewable energy (VRE). A grid integration study simulates the operation of the power system under different VRE scenarios, identifying reliability constraints and evaluating the required actions to alleviate those constraints. VRE plants should demonstrate their compliance at the grid connection point to the parameters defined in grid codes and in regulations.

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
Thomassen Service Middle East LLC, UAE	Power System Stability Studies for 2x25 MW GTG Power Plant for Notore Nitrogenous Fertilizer Plant, Rivers State, Nigeria
Al-Jazirah Engineers & Consultants, Saudi Arabia	Insulation Coordination Study for Rabigh PV Substation, Saudi Arabia
Al-Toukhi Company for Industry, Trading & Contracting, Saudi Arabia	Insulation Coordination Study (ICS) for 380/132/33kV BSP (Phase-1) SS of Modon Waad Al-Shamal project, Saudi Arabia
Thermax Limited, India	System Stability Studies for 2X65 MW Captive Power Plant of GNAL (GACL-NALCO), Gujarat
Al-Jazirah Engineers & Consultants, Saudi Arabia	Insulation co-ordination Study 132/18.8kV System associated to Shuqaiq 3- IWP, Saudi Arabia
Al-Jazirah Engineers & Consultants, Saudi Arabia	Insulation co-ordination study for Expansion of Qassim-2 BSP (9025) 380/132/13.8kV SS, Saudi Arabia

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
L&T Power /Rajasthan Rajya Vidyut Utpadan Nigam Ltd. India	Power System Studies- Load Flow, Short Circuit, Motor Starting, Relay Co-ordination and Unit protection Setting Calculation Study for 2x660MW Chhabra Supercritical Thermal Power Project, India
Alghanim International, Kuwait	Power System Studies-Load Flow, Short Circuit, Motor Starting, Transient Stability Study, Harmonic Analysis Study, Relay Co-ordination and relay setting calculation study for 750 MW Stage-III Sabiya Power & Distillation Plant Site , Kuwait
Alghanim International, Kuwait	Power System Studies-Load Flow, Short Circuit, Motor Starting, Transient Stability Study, Harmonic Analysis Study, Relay Co-ordination and relay setting calculation study for Conversion of the First Stage Sabiya Gas Turbines to Combined Cycle Plant CCGT-1
Alghanim International, Kuwait	Power System Studies-Load Flow, Short Circuit, Motor Starting, Transient Stability Study, Harmonic Analysis Study, Relay Co-ordination and relay setting calculation study for 500 MW Stage-II Sabiya Power And Distillation Plant Site , Kuwait
Almana Engineering & Contracting Co., Qatar	Load Flow, Short Circuit, Motor Starting, Transient Stability, harmonic analysis, Protection System Relay co-ordination study for Upgrade of Sewerage Treatment Plant at Dukhan, Qatar
Larsen & Toubro Limited, EAIC - Control & Automation BU , India	System Study Services for Martabe HFO Power Station Project, Indonesia

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
Thermax Limited, India	Power System Study for 2x25MW Power Plant of RCF at Trombay, India
Thermax Limited, India	Power System Studies for 1x20 MW GTG based power plant for NFL Bhatinda project, India
Thermax Limited, India	Power System Studies for 1x20 MW GTG based power plant for NFL Panipat project, India
Thermax Limited, India	Power System Studies for 1x20 MW GTG based power plant for NFL Nangal project, India
Al-Jazirah Engineers & Consultants, Saudi Arabia	Insulation Co-ordination Study - 230/132/13.8KV Sub-100 for Rastanura Refinery Clean Fuels Project, Saudi Arabia
Bhilosa Industries Pvt Ltd., India	Consultancy for Root Cause Analysis on trip incidents of Rakholi Plant and trip incidents & system study at Naroli Plant, India
Bhilosa Industries Pvt Ltd., India	Power System Studies and Relay Coordination for Naroli Polyester Complex Phase-III
Larsen & Toubro Limited, EAIC - Control & Automation BU	System Study Services for Martabe HFO Power Station Project, Indonesia
Almana Engineering & Contracting Co	Power System Study for Upgrade of Sewerage Treatment Plant at Dukhan, Qatar

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
Bhilosa Industries Pvt Ltd., India	Load flow study of DNHPDCL network at 220 kV level
Al-Jazirah Engineers & Consultants, Saudi Arabia	Insulation co-ordination & NGR Sizing study for 380/132/13.8 kV Airport Housing Substation, Saudi Arabia
Bhilosa Industries Pvt Ltd (BIPL), India	Relay Co- ordination study of 220 kV Substation for BIPL Naroli CP site, India
SSEM, Saudi Arabia	Technical consultancy services for Relay Setting for Qurayat Power Plant Extension-III, Saudi Arabia
Radicon Gulf, Saudi Arabia	Insulation co-ordination study of 380/110 kV AL-Khaldiya Substation, Saudi Arabia
Siemens, India	Insulation co-ordination study of 220 kV GIS/AIS System for Reliance J3 project, Jamnagar, India
SSEM/AJEC, Saudi Arabia	Electrical System Study of 380/110/13.8kV AL-ADEL Substation, covering Insulation co-ordination study including TOV, lightning surge, switching surge, VFTO and Transferred surge Calculation & Ferro resonance

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
SSEM/AJEC, Saudi Arabia	Short circuit calculation of 380 kV and 132 kV Bisha Substation and Insulation co-ordination study including, TOV, lightning surge, switching surge, VFTO and Ferro-resonance
IOCL, India	Consultancy services to IOCL for Load Flow Study, Short Circuit Analysis, Relay Co- ordination Study, Reactive Power Compensation Study, Harmonic Analysis, Transient Stability and Load Shedding Analysis at Panipat, Haryana, India
Alok Industries, India	Earthing System, Protection Application, Harmonic Analysis and Power System Study for Relay Setting, Relay Co-ordination from 220 kV LILO Station to 415 Volt System
L&T- Power / D B Power, Chhattisgarh, India	2x600 MW Coal based Power Project, Chhattisgarh, India (BOP and BTG Civil) Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study and Insulation Coordination Study
L&T- Power / MAHAGENCO, Maharashtra, India	3x660 MW Koradi Coal based Thermal Power Station. Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study, Transient Stability Study and Insulation Coordination Study
L&T/ Nabha Power, India	2x700 MW Rajpura Super Thermal Power Station, Punjab, India Load Flow Study, Short Circuit Analysis, Motor Starting Study, Transient Stability Study and Insulation Coordination Study

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
Arabian Bemco, Saudi Arabia/ Sargent & Lundy, USA	Conversion of Qurayyah Open Cycle Power Plant to CCPP Load Flow Study, Short Circuit Analysis, Motor Starting Study and Relay Co- ordination Study
DOOSAN, Korea	1x700 MW Super Critical Thermal Power Project, Thailand Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study and Insulation Coordination Study
L&T/ GMR Rajahmundry Energy, Andhra Pradesh, India	2x383.8 MW GMR Rajahmundry Energy Combined Cycle Power Project, AP, India Load flow study, Short Circuit Analysis, Motor Starting Voltage Drop Studies
Thermax (Power Division), India	2x150MW Thermal Power Plant at Krishnapatnam, AP, India Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study and Insulation Coordination Study
Arabian Bemco, Saudi Arabia/ Sargent & Lundy, USA	2000 MW Simple Cycle Qurayyah Power Plant Relay Co-ordination and Protections System Study
DOOSAN, Korea	216 MW Taweelah A10 Power and Desalination Project, UAE Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study and Insulation Coordination Study, Dynamic & Transient Stability, EMTP-SSR Studies, Harmonic Analysis
Arabian Bemco, Saudi Arabia/ Sargent & Lundy, USA	Conversion of Qurayyah Open Cycle Power Plant to CCPP Load Flow Study, Short Circuit Analysis, Motor Starting Study and Relay Co- ordination Study

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
DOOSAN, Korea	370 MW Amman East Combined Cycle Power Plant Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study and Insulation Coordination Study
Mirant Mid-Atlantic, USA	Morgantown SCR Project Unit. Relay Setting Calculations and Coordination Study
Al-Toukhi, Saudi Arabia	Tihama Power Plant Extension Project, Saudi Arabia Switching Surge Analysis at 132kV side of GT, Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co-ordination Study
Arabian Bemco Co., Saudi Arabia	PP9- Tank Farm Project, Saudi Arabia , Load Flow and Relay Coordination Study
Pratt & Whitney Power Systems, USA	Generator Protection Setting review
Indian Oil Corporation, (EIL)/ L&T	194 MW IOCL Panipat Cogen Power Project Short Circuit Study, Load Flow Study, Motor Starting Study, Dynamic and Transient Stability Studies, Harmonic Analysis, Reactive Power Compensation Studies, Protection Co-ordination Study
Al-Toukhi, Saudi Arabia	250 MW Jazan Power Plant Extension Project, Saudi Arabia Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
EXCEL Energy, USA/ Sargent & Lundy, USA	468 MW Riverside Generating Plant, Minnesota, USA Load Flow Study, Short Circuit Analysis, Motor Starting Study
Sargent & Lundy, USA	250 MW PEC-TECH, LNG Plant, Indonesia Transient Stability Studies
GE Hydro, Australia	Banimboola Hydroelectric Project Study Motor Starting Analysis and Relay Coordination Study
Doosan, S. Korea / Sohar Power Company, Oman	585 MW Sohar Water and Power Project in Oman Load flow study, Short Circuit Analysis, Relay co-ordination, Electro-magnetic Transient Study
Toshiba, Japan	Calabar Power Station, Ihovbor Power Station & Sapele Power Station, Nigeria Load Flow Study, Short Circuit Analysis, Motor Starting Study, Relay Co- ordination Study
Qatar Petroleum, Qatar	Dukhan Fields of Qatar Petroleum Relay Co-ordination and System Study
L&T/ VPGL, Andhra Pradesh, India	388.5 MW Vemagiri CCPP, Andhra Pradesh, India Load flow Study, Short Circuit Analysis, Motor Starting Voltage Drop Studies
L&T/ KEOPL, Andhra Pradesh, India	445 MW Konaseema CCPP in Andhra Pradesh, India Short Circuit Analysis, Motor Starting, Voltage Drop Studies

PROJECT REFERENCES

CUSTOMER	PROJECT DETAILS
L&T-GTFB / HPL Cogeneration, India	116 MW Haldia CCCPP, West Bengal Load Flow Study, Short Circuit Analysis, Motor Starting Voltage Drop
Sargent & Lundy, USA / STI Guna India	330 MW STI Guna Power TPS Load Flow Study
Grasim Industries, India	2x289 MW Bina Power TPS Load Flow Study
DFID, Great Britain/ Sargent & Lundy, USA	Andhra Pradesh Power Sector Reform , Load Flow Study , Stability Study, Short Circuit Study, Recommended for Static VAR Compensation and Reactive Compensation
L&T/ Gujarat Cement Works, India	53 MW Pipavav CCPP, Gujarat -Load Flow Study, Short Circuit Analysis, Motor Starting Voltage Drop Study
L&T/Sojitz Kelanitissa (Private) Limited (Erst. AES Kelanitissa) , Sri Lanka	1x168.1 MW Sojitz Kelanitissa (Private) Limited (Erst. AES Kelanitissa) CCPP in Sri Lanka - Load Flow Study, Short Circuit Analysis, Motor Starting Voltage Drop, Relay Co-ordination Study

CONTACT US



L&T-SARGENT & LUNDY LIMITED



Head Office

L&T – Sargent & Lundy Limited
6th Floor, East Block -1
Gate No. 1, L&T Knowledge City, NH 8,
Between Ajwa- Waghodia Crossing
Vadodara-390019, Gujarat, INDIA



Website

www.Lntsnl.com



E-mail

Ltsl@Lntsnl.com



Contact

+91-265-244-5457
+91-265-244-5322
+91-265-244-5321