

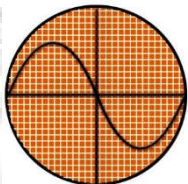


SATCON

(COMPANY PROFILE)

(Electrical Design, Engineering & Consultancy Services for Transmission & Distribution System Substations (AIS/GIS), Power Generation and Industrial Power Distribution projects)

ISO 9001 CERTIFIED ORGANISATION



We Think Quality



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A. INTRODUCTION

We are pleased to introduce ourselves as Design Engineers & Consultants for Basic engineering, Pre-bid estimation engineering and Detail engineering services for Electrical, Controls, Protection, Substation Automation System and associated Civil/Structural and Mechanical works of following type of projects:

- 1. Gas Insulated/Conventional indoor/outdoor substations from 11kV up to 400kV.**
- 2. Electrical portion of Thermal power plants (Oil/coal/gas fired), Electrical B.O.P packages.**
- 3. Overhead Transmission lines up to 400kV.**
- 4. Electrical, Controls, Automation, HVAC & Firefighting systems of :**
Steel, Minerals, Coal, Materials Handling, Mining, Building works and misc. industrial projects.
- 5. Substation Automation, SCADA and telecommunication systems for large substations.**

Our personnel have experiences in similar projects in India and abroad.

SATCON was established in the year 2004. At present it is providing design engineering services in various projects in India, Afghanistan, Africa and Middle East countries. In many of its projects SATCON is providing their services as Contractor's consultant which requires intensive engineering skill in order to optimize system and equipment. Presently, SATCON has agreements with the following overseas Companies to provide technical support in design engineering services:

1. TOP DEVELOPMENT CONSULT, Qatif, a Saudi Arabian engineering firm.
2. AHMIN TECHNOLOGY & POWER SYSTEMS LTD., Abuja, Nigeria.
3. ASAS ENGINEERING & PROJECT MANAGEMENT CONSULTANCY EST., Abu Dhabi, UAE
4. ATLAS INTERNATIONAL ENGINEERING CONSULTANTS, Muscat, Oman.
5. NOVIN SIMIA COMPANY, Kabul, Afghanistan.
6. ASSIST CONSULTANTS INC., Kabul, Afghanistan.
7. TRANSGULF INTERNATIONAL ELECTRO MECHANICAL W.L.L, Doha, QATAR
8. TECHNA ELECTROMECHANICAL SERVICES COMPANY LTD., Libya.
9. GHARANY EXCELLENCE CONSTRUCTION, Kabul, Afghanistan.

We can provide Project management, monitoring, progress review and supervision of erection, testing and commissioning by deputing senior engineers at site.

We also provide Contour survey, preparation of topographical contour survey drawings using TOTAL STATION for substation plots and overhead line routes, Soil resistivity measurements using four Wenner method, Geotechnical investigation at site for Indian Projects.



B. EXPERTISE & CAPABILITIES

We provide the following services in electrical and associated civil/structural/Mechanical/Substation Automation works for the above mentioned type of projects:

1. Electrical Systems Engineering

System engineering consisting of Engineering drawings, design calculations, BOQ and equipment/systems specifications for Electrical equipment and systems.

- a. **Engineering drawings:** Single line diagrams, three line diagrams, relay & metering diagrams, breaker/disconnects/ground switch control schematics. Electrical layouts consisting of equipment layout, switchyard layouts, grounding / shielding / lighting / cable / cable tray layout, erection key diagrams, BOM for switchyard hardwares / clamps / connectors / HV & LV cables / grounding & lightning protection materials/lighting materials / cabling accessories, Fire detection and alarm system layout, I/O lists, Plant control logic, PLC/SAS block diagrams, HV & LV power & control cable schedule & interconnection diagrams.
- b. **Equipment specifications:** For various EHV/HV and LV Electrical equipment and systems (from 240V to 400KV).
- c. **Design calculations:** Load flow, short circuit, motor starting, transformer sizing, ground grid design & protection coordination calculations using [ETAP](#) software, total maximum demand calculation of an Industry and corresponding Transformer sizing, DSLP (Direct stroke lightning protection) calculations, Lighting calculations, Calculation for CT/PT sizing, NGR and earthing transformer sizing, voltage drop calculations, HV & LV power cable sizing, Capacitor sizing for P.F improvement, Sag & Tension calculation, Short circuit force calculation on strained bus and rigid bus.
- d. **Software used :** Autocad 2009/12/13/16/18, ETAP 7.0, Staad Pro (Connect Edition), Microstation Power draft and MS Office.
- e. **MV Switchboard Engineering :** Preparation of technical details, master signal line diagrams, panel GA and foundation plan, LV compartment door layout, breaker control schematics and wiring diagrams, equipment list and terminal plan of 6.6 / 12 / 36 KV indoor switch gear panel using automated wiring software **AutoCAD Electrical 2009**.
- f. **Control and Relay Panel Engineering :** Preparation of protection and metering SLD, three line diagrams, control schematics and wiring diagrams, equipment list, panel GA and foundation plan and terminal plan for 33 / 132 / 220 / 400 KV control & relay panels (conventional / with BCU) using automated wiring software **AutoCAD Electrical 2009**.

2. Civil/Structural

- a. Civil/Structural/Architectural design and detail drawings of tower, gantries, equipment structures and foundations, Control room/DG/fire fighting pump house / Security/Store/Staff Quarter buildings, fire water reservoir, transformer foundation-cum-oil collection pit, common oil pit, oil-water separator pit, outdoor/indoor cable trenches, switchyard roads & drainage system, switchyard fence & gate. Civil/structural design calculations are made using STAAD software.



- b. Preparation of structural GA drawings for switchyard gantry/beam/equipment support structures.

3. **Mechanical System Engineering**

Design calculations and layout/schematic drawings, BOQ and technical specifications for Air conditioning, Ventilation, firefighting systems.

4. **Substation Automation System, Telecommunication and Teleprotection Systems**

Preparation of layout/schematic/block diagrams, I/O List, BOQ and technical specifications for SCADA based Substation Automation System (SAS) and Fiber Optic/PLCC based telecommunication and teleprotection system.

5. Preparation of Tender Documents, Tender evaluations, recommendations to client and providing assistance to client for procurement of various electrical equipment and works for the above mentioned type of projects.
6. Vendor drawing review and approvals/coordination with vendors for equipment finalizations.
7. Detail engineering: Modifications/finalization of preliminary engineering/drawings with respect to actual equipment supplied.
8. Inspection & testing of electrical equipment at manufacturer's works.
10. The design and engineering work will be executed in line with client's standards and specifications, national/international codes & standards like IS/ANSI/IEC/NEC/NFPA etc. as required.
11. Supervision and management of Erection, Testing and Commissioning of electrical, civil & structural works at site.
12. Contour survey, preparation of topographical contour survey drawings using TOTAL STATION for substation plots and overhead line routes, Soil resistivity measurements using four Wenner method, Geotechnical investigation at site.

12. **Testing & Commissioning :**

Testing and Commissioning of EHV substations. We have all required testing equipment and devices for Pre-commissioning tests and commissioning of substations and overhead lines. Refer page 22 for list of Testing and Commissioning equipment.



C. RESOURCES

Satyaki Mukherjee, Proprietor : Bachelor of Electrical Engineering (Jadavpur University), Fellow of Inst. Of Engineers (FIE), MIEEE, Chartered Engineer – (Experience – 30 years in Power generation, EHV transmission and distribution substations, Industrial power distribution Projects)

The Proprietor of SATCON is an Electrical Engineer from Jadavpur University, Kolkata in 1989. He has worked in Development Consultants Pvt. Ltd., Kolkata (DCPL), a well-known transnational Consultancy Company for 11 years, in Kuljian Corporation, Philadelphia and in Saudi Electricity Co. (SEC)-East, KSA (Through Dar Al Riyadh Consultants) for 4 years. He started SATCON in Kolkata in the year 2004 after his return from KSA. He has experience in providing Consultancy services in India, USA, Saudi Arabia, Afghanistan, Nepal, Nigeria, Sierra Leone, UAE, Oman, Qatar, Sierra Leone, Bhutan, Namibia and Sudan in last 30 years. He remains involved in each and every engineering activity in order to guarantee proper quality before submission to Clients.

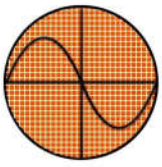
Resources : Three (3) Sr. Electrical Engineers, Three (3) Electrical design engineers, Two (2) senior Civil/Structural Engineers, One diploma electrical engineer, Three (3) drafting personnel. We have electrical, civil, structural, electronics, telecommunication and mechanical engineers to execute all aspects of EHV substation, Overhead lines and electrical power distribution systems (HV/MV/LV) of large utility, industrial and infrastructural projects.

S.K. Deb, Sr. Consultant, Bachelor of Electrical Engineering (Jadavpur University, Kolkata, 1975) (Experience –42 years) (Retired as Addl. Chief Engg-WBSETCL), Fellow of Inst. Of Engineers (FIE).

S.K. Paul, General Manager (Design, ISO and Quality Control), Bachelor of Electrical Engineering (Jadavpur University, 1971), Section B Examination in Mechanical Engineering ,1977 equivalent to Mechanical Engineering from The Institution of Engineers (India) (Experience –40+ years in WBSEB and CESC – Electrical & Power Generation), Member of Inst. Of Engineers (MIE).

Kumar Sankar Nath, Chief Engineer (Civil & Structural), Bachelor of Civil Engineering (Jadavpur University, Kolkata, 1987) (Experience –31 years), Highly experienced in working abroad.

CVs of other senior engineers can be shared upon request.



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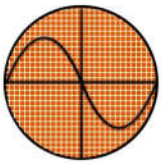
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D. CURRENT PROJECTS (Within India)

SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE
1.	Earthing design calculations by Cymgrd software for 400/220/66kV Bhogat GIS Substation of GETCO, Gujarat	Kalpataru Power Transmission Ltd., Noida	GETCO, Gujarat	02.02.2019
2.	Electrical and Structural Consultancy services for 50km double circuit transmission line and 5km long single circuit 33kV overhead distribution line in Mizoram, India	Sterling & Wilson Ltd., Kolkata	Powergrid Corporation of India Ltd.	24.01.2019
3.	Detail engineering for Electrical, Civil and Structural works of 33/11KV Switchyard and 3.3kV overhead line at Gua Iron Ore Mines, Jharkhand	Technisys, Delhi	Steel Authority of India Ltd. (SAIL)	09.01.2019
4.	Civil & Structural design & engineering services for 3 nos. 132/33kV new Substations and 1 no. existing 132kV substation under comprehensive scheme for strengthening of Transmission and Distribution system in Arunachal Pradesh by PGCIL	Tata Consulting Engineers Ltd., Noida	Powergrid Corporation India Ltd.	05.11.2018
5.	Detail engineering for Electrical, Civil and Structural works of 33/11KV Switchyard at Barsua Iron Mines	Technisys, Delhi	Steel Authority of India Ltd. (SAIL)	22.09.2018
6.	Detail engineering of Electrical, Civil & Structural works of 132Kv Line bay extension at existing 132/33Kv Rajkharsawan GSS of JUSNL at Jharkhand	Udayan Heavy Electricals Pvt. Ltd., Tatanagar	Shree Cement	01.09.2018
7.	Consultancy services for detail engineering of 132/11Kv Main receiving substation of Hindustan Shipyard Ltd., Vizag	Power Tech Industrial Services, Vizag	Hindustan Shipyard Ltd., Vizag	22.05.2018
8.	Overall Consultancy and Review engineering services for 220/132Kv , 2 x 80MVA outdoor substation at Maithon and 220Kv, 10km long D/C overhead line between PGCIL, Maithon and the new Substation	India Power Corporation Ltd., Kolkata	India Power Corporation Ltd., Kolkata	31.03.2018
9.	Earthing calculations using CYMGRD software for Nine (9) nos. 132/33Kv outdoor substations of TSECL, Tripura under NER Power system upgradation project	SPML Infra Ltd., Kolkata	Tripura State Electricity Corporation Ltd. (TSECL) Consultant : PGCIL	01.01.2018
10.	Electrical, Civil and Structural detail engineering services for 132/33Kv outdoor substation of BSPTCL at Raghapur, Bihar	ABN Tower & Transmission Pvt. Ltd.	Bihar State Power Transmission Co. Ltd. (BSPTCL)	01.02.2018
11.	Electrical, Civil and Structural detail engineering services for 2 x 132Kv Line bay	Emotions Transmission Pvt.	Jharkhand Urja Sancharan Nigam	03.10.2017



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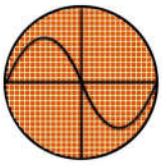


SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE
	extension at Rajmahal and Sahibganj GSS of JUSNL for power supply to Traction substations.	Ltd.	Ltd. (JUSNL)	
12.	Electrical, Civil and Structural detail engineering services for 132/33Kv GIS substation of WBSETCL at Debra	Bajaj Electricals Ltd., Mumbai	WBSETCL	28.06.2017
13.	Basic and Detail engineering services (electrical, civil, structural, Substation automation) including contour survey and geotechnical investigation for installation of 220/132/33Kv, 2x150MVA & 2x50MVA Outdoor grid substation of JUSNL at Godda, Jharkhand	Jakson Ltd., Noida	Jharkhand Urja Sancharan Nigam Ltd. (JUSNL)	21.06.2017
14.	Basic and Detail engineering services (electrical, civil, structural, Substation automation) including contour survey and geotechnical investigation for installation of 220/132/33Kv, 2x150MVA Outdoor grid substation of JUSNL at Garwah, Jharkhand	Jakson Ltd., Noida	Jharkhand Urja Sancharan Nigam Ltd. (JUSNL)	21.06.2017
15.	Detail engineering services for 2 nos. 220Kv Line bay extension at existing Darbhanga substation of BSPTCL, Bihar	ABN Tower & Transmission Co. Ltd., Kolkata	Bihar State Power Transmission Co. Ltd. (BSPTCL)	11.08.2017



E. CURRENT PROJECTS (Outside India)

SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE
1.	Electrical and Structural Consultancy services for Relocation of 95MVA Generator Transformers and Station Aux. Transformer and extension of 10.5kV Isolated Phase Bus Duct at Khor-Al-Zubair Power Station in Iraq	Kavin Engineering & Services Pvt. Ltd., Coimbatore, India	Ministry of Electricity, Iraq	22.02.2019
2.	Electrical Consultancy services for Load flow study, Short circuit study, Relay setting calculations, Earthing & Lightning protection calculations, MV & LV cable sizing calculations for Visitor Center Substation # 08 at Hamad Port, Qatar.	United Construction Establishment, Doha, Qatar	Hamad Port, Doha, Qatar	18.02.2019
3.	Detail engineering services for Electrical, Civil & Structural works of 132/33kV, 2 x 60MVA Outdoor substation at Shonga and 2 x 132kV Line bay extension at Ganmo of TCN, Nigeria	Rap Power Industries, Nigeria	Transmission Company of Nigeria (TCN)	10.01.2019
4.	Basic and Detail engineering services for Electrical, Civil & Structural works of 110/63kV Substations at Bangui-B & Boali-1, 110-63/15kV Mobile Substation and 110kV Overhead line (renovation of 100km) in Central African Republic	Jaguar Overseas Ltd., Delhi	ENERCA, Central African Republic	20.11.2018
5.	Basic and Detail engineering services for Electrical, Civil & Structural works of 20kV overhead lines from Pole Charki substation to Kabul Military Training Centers-1 & 2 of US Army in Afghanistan	Gharany Excellence Construction (GEC)., Kabul, Afghanistan	US Army Corps of Engineers (USACE)	11.08.2018
6.	Design calculation of Pre-stressed concrete poles (12 m to 16m high) for use in MV overhead lines in Afghanistan	Novin Simia Co., Kabul, Afghanistan	US Army Corps of Engineers (USACE)	03.09.2018
7.	Basic and Detail engineering services for extension of existing 110/20kV substations at Pol-e-Charki, North West & Brishnakot and 20kV overhead lines to ANSF bases of US Army at various parts of Afghanistan	Novin Simia Co., Kabul, Afghanistan	US Army Corps of Engineers (USACE)	01.01.2018
8.	Basic and Detail engineering services for 330/132/33kV, 2x150MVA & 2x66MVA New Kano substation, 132/33kV, 2x66MVA Billiri substation and modification of 132/33kV, 3x66MVA Gusau substation of TCN in Nigeria	Supreme & Co. Pvt. Ltd., Kolkata	Seacof Ltd., Lagos, Nigeria	18.08.2016
9.	Detail engineering services for 63/20kV, 2x10MVA outdoor substation and 63kV double circuit LILO overhead line at Franceville, Gabon, West Africa	Gabon Special Economic Zone (GSEZ), Libreville	Gabon Special Economic Zone (GSEZ), Libreville	16.11.2016
10.	Basic and Detail engineering for electrical,	Nespack Nigeria	Transmission	06.05.2013



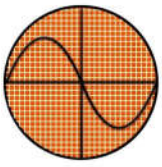
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE
	civil, structural, HVAC, Firefighting, plumbing, SCADA, PLCC systems of 132/33kV, 2x60/66 MVA AIS outdoor substation at Dambatta and 2x132kV Line bay extension at Daura of TCN, Nigeria	Ltd. Abuja, Nigeria	Company of Nigeria (TCN)	(Project installation delayed in Nigeria)
11.	Basic and Detail engineering for electrical, civil, structural, HVAC, Firefighting, plumbing, SCADA, PLCC systems of 132/33kV, 2x60/66 MVA AIS outdoor substation at Kankara of TCN, Nigeria	Nespak Nigeria Ltd. Abuja, Nigeria	Transmission Company of Nigeria (TCN)	06.05.2013 (Project installation delayed in Nigeria)
12.	Basic and Detail Engineering services for electrical, civil, structural, HVAC, Firefighting, plumbing, SCADA, PLCC systems of 132/33kV AIS Substation at Song and 2x132kV line bay extension at existing 330/132kV Yola substation of TCN	Qingdao Wuxiao Group Company and Ahmin Technology & Power Systems Ltd J.V, Abuja, Nigeria	Transmission Company of Nigeria (TCN)	12.04.2012 (Project installation delayed in Nigeria)
13.	Detail Engineering services for electrical, civil, structural, HVAC, Firefighting, plumbing, SCADA, PLCC systems of 2 x 60MVA, 132/33kV AIS Substation at Gulak of TCN in Nigeria	Concept Engineering Projects Pvt. Ltd., Pune, India	Transmission Company of Nigeria (TCN)	21.02.2013 (Project installation delayed in Nigeria)



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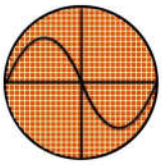
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F. PROJECTS COMPLETED (Within India)

SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
1.	Detail engineering services (Electrical) for 220/132/33Kv GIS, 2x150MVA Substation at Sagardighi of WBSETCL, West Bengal	Godrej & Boyce Mfg. Co. Ltd., Mumbai	West Bengal State Electricity Transmission Co. Ltd. (WBSETCL)	25.08.2016
2.	Basic and Detail engineering services (electrical, civil, structural) including contour survey for installation of 220/132/33Kv, 2x150MVA & 2x50MVA Outdoor grid substation of JUSNL at Jainamore, Bokaro, Jharkhand	Technofab Engineering Ltd., Faridabad	Jharkhand Urja Sancharan Nigam Ltd. (JUSNL)	29.06.2016
3.	Detail engineering services (electrical, civil, structural) for Extension of 132/33Kv, 80MVA transformer and 132Kv Hybrid GIS bay equipment at existing Gaighat substation of BSPTCL, Patna	ABN Tower & Transmission Co. Ltd., Kolkata	Bihar State Power Transmission Co. Ltd. (BSPTCL)	09.07.2016
4.	Complete design & engineering (electrical, civil, structural, SAS, PLCC) services for 132/33kV, 2x20MVA AIS grid station and 132kV double circuit LILO Transmission line at Chitra, Jharkhand.	AKS Construction Pvt. Ltd., Ranchi	Jharkhand Urja Sancharan Nigam Ltd. (JUSNL)	13.11.2015
5.	Survey, geotechnical investigation, soil resistivity test and detail engineering services for 132/33kV GIS, 2x67.5MVA substation and 132kV LILO double circuit Transmission Line for SMS-1 modernization of SAIL, Bokaro Steel Plant	Sterling & Wilson Ltd., Kolkata	SAIL, Bokaro Steel Plant	31.08.2015
6.	Complete detail design & engineering (electrical, civil, structural, SAS, PLCC) services including contour survey and geotechnical investigation, procurement assistance, drawing review for 220/132/33kV, 2x150MVA & 2x50MVA AIS grid station at Chatra, Jharkhand.	Flowmore Ltd., Ranchi	Jharkhand Urja Sancharan Nigam Ltd. (JUSNL)	03.08.2013
7.	Complete design & engineering (electrical, civil, structural, SAS, PLCC) services including survey and geotechnical investigation, procurement assistance, drawing review for 132/33kV, 2x50MVA AIS grid station and 132kV double circuit LILO Transmission line at Tamar, Jharkhand.	Flowmore Ltd., Ranchi	Jharkhand Urja Sancharan Nigam Ltd. (JUSNL)	24.09.2013
8.	Basic and Detail engineering (electrical, civil, structural) for installation of 2x500MVA 400/220kV Transformer bay extension and 1x125MVAR Bus reactor at Maithon, 1x500MVA 400/220kV Transformer bay	Toshiba Transmission & Distribution India Ltd., Hyderabad	Power Grid Corporation of India Ltd. (PGCIL)	09.12.2014



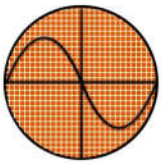
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	extension at Mujaffarpur and 1x160MVA 220/132kV Transformer bay extension of Ara substation of PGCIL in Eastern Region.			
9.	Basic and Detail engineering (Electrical) for 400/220/132kV Outdoor substation of APTRANSCO at Jammalamadugu in A.P, India.	Techno Electric & Engg Co., Kolkata	AP Transco	11.09.2013
10.	Basic and Detail engineering (Electrical) for 132/33kV Outdoor substation of WBSETCL at UAJNU, 1 no. 132kV Line bay extension at 4 nos. existing substations and 1 no. 132kV bays at 4 nos. Traction substation, West Bengal.	Mcnally Bharat Engineering Co. Ltd., Kolkata	West Bengal State Electricity Transmission Co. Ltd. (WBSETCL)	25.09.2013
11.	Detail engineering services (electrical, civil, structural) for Extension of 2 nos. 132kV Line bay extension at existing Sitamarhi substation of BSPTCL, Patna	ABN Tower & Transmission Co. Ltd., Kolkata	Bihar State Power Transmission Co. Ltd. (BSPTCL)	28.05.2016
12.	Detail engineering (Electrical) for 2x400kV Line bay extension at Satpura TPS-2X250 MW (U#10&11) of MPPGCL	Mcnally Bharat Engineering Co. Ltd.	MPPGCL, M.P	20.11.2013
13.	Electrical detail engineering services for 132/33kV Substations at Tusura and Ghens of OPTCL in Odisha.	Bajaj Electricals Ltd., Mumbai	Odisha Power Transmission Corporation Ltd. (OPTCL)	08.01.2016
14.	Basic and Detail engineering (Electrical and structural) for 33/6.6kV Substation of 1.6MTPA Coal Washery of BCCL at Dahibari, Dhanbad	MBE Coal and Mineral Technology India Pvt. Ltd.	Bharat Coking Coal Ltd. (BCCL, Dhanbad)	31.07.2014
15.	Basic and Detail engineering (Electrical, civil and structural) for 33/11kV, 2x10MVA Power Substation of South Bihar Power Distribution Co. Ltd. at Aurangabad	Supreme & Co. Pvt. Ltd., Kolkata	South Bihar Power Distribution Co. Ltd.	04.11.2014
16.	Detail engineering services for electrical power distribution system of Flue Gas Desulphurization (FGD) system of 1x500MW Thermal power plant of NTPC, Vindychal.	Alstom Ltd., Kolkata	National Thermal Power Corporation (NTPC)	17.12.2014
17.	Preparation of Lighting design calculation and lighting layout drawings for 400/132kV switchyard and control building at 2x660MW NTPC, Meja power plant	Techno Electric & Engg Co., Kolkata	National Thermal Power Corporation (NTPC)	27.05.2014
18.	Basic and detail engineering for 5 nos. 132/33kV Outdoor Substations at Jorhat, Bordubi, Bilasipara, Matia, Hailakandi and 1 no. 132/33kV GIS substation at Kamakhya in Assam	Alstom T&D India Ltd., Kolkata	AEGCL, Assam	19.02.2013
19.	Basic and detail engineering for 2 x 50 MVA, 132/33kV Outdoor Substation at Serakol for WBSETCL, West Bengal	Alstom T&D India Ltd., Kolkata	WBSETCL, West Bengal	19.02.2013
20.	Design and Engineering services (Prebid),	GTL Limited	Neyvelli Lignite,	30.03.2012



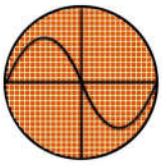
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	preparation of SLD and layout drawings, BOQ for 400/220kV Transformer yard, 400kV GIS, 220kV GIS, Energy management system, Telecommunication system and complete balance of plant package NTA 3 for 2x500MW NNTPS, Neyvelli.		Tamilnadu	
21.	Basic and detail engineering for 400/220/132/33kV new substations at Howrah Foundry park and bay extensions at Laxmikantapur, Arambag, Uluberia of WBSETCL, West Bengal	Siemens Ltd., Kolkata	WBSETCL, West Bengal	30.05.2011
22.	Detail engineering for EBOP (Electrical Balance of Plant) package of 4x270MW thermal power plant of Abhijit Infra Pvt. Ltd. at Chitarpur, Jharkhand	Sterling & Wilson Ltd., Kolkata	Abhijit Infra Pvt. Ltd.	28.08.2012
23.	Detail engineering for line bay extension at 400kV Outdoor Substations at Patna, Ranchi and Malda, 220kV substation at Mariani and 132kV substation at Imphal of PGCIL	Sterling & Wilson Ltd., Kolkata	Power Grid Corporation of India Ltd.	21.08.2012
24.	Pre-Bid Engineering Work for the EBOP of 2x600 MW TPP of Athena Chattisgarh Power Pvt. Ltd.	Sterling & Wilson Ltd., Kolkata	Athena Chattisgarh Power Pvt. Ltd.	12.03.2010
25.	Pre-Bid Engineering Work for the EBOP of 4x300 MW TPP of SKS Power Generation Ltd.	Sterling & Wilson Ltd., Kolkata	SKS Power Generation Ltd.	13.07.2011
26.	Detail engineering for 1x400kV Bus reactor bay extension of PGCIL in Amritsar, Hissar, Nalagarh and Jalandhar	Sterling & Wilson Ltd., Kolkata	Power Grid Corporation of India Ltd.	16.02.2011
27.	Detail engineering for 132/33kV, 2x50MVA Grid substation at Simdega, 4 x 132kV Line bay extension at Gumla and 2 x 132kV Line bay extension at Lohardaga, JSEB	Genus Power Infrastructures Ltd.	Jharkhand State Electricity Board (JSEB)	09.10.2012
28.	Basic and detail engineering for 132/33/6.6kV GIS substation and downstream ring main system for Construction power system of NMDC for 3 MTPY Integrated steel plant at Nagarnar, Chattisgarh	KEC International, Gurgaon	NMDC, Nagarnar, Chattisgarh	25.01.2011
29.	Design & engineering services for 132/33kV AIS substation at Suryamaninagar of Tripura State Electricity Co. Ltd.	Areva T&D India Ltd., Kolkata	Tripura State Electricity Co. Ltd.	09.03.2011
30.	Detail engineering for 33/11/3.3kV Indoor substations for DSP Modernization MV package	Sterling & Wilson Ltd., Kolkata	Durgapur Steel Plant	01.06.2011
31.	Design and engineering services for 3x132kV bay extension at DPL, DPPS, Durgapur, W.B	Siemens Ltd.	Durgapur Projects Ltd. (DPL), West Bengal	02.03.2010
32.	Consultancy services for 33kV ring main system comprising of 33kV overhead line and	NIT, Rourkela	NIT, Rourkela	08.06.2009



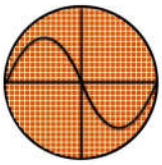
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	including 11nos. 33/0.433kV substations for National Institute of Technology (NIT), Rourkela, Orissa			
33.	Design & engineering Services for 6.6/0.433kV electrical power distribution system at Uranium Ore Mining & Processing Plant at Tumallapalle, Kadapa, A.P	Areva T&D India Ltd., Kolkata	Uranium Corporation of India Ltd.	26.03.2009
34.	Design & engineering Services for ten (10) nos. 33 / 6.6 KV Load Block Distribution Stations (LBDS) and three (3) nos. 6.6 / 0.415 KV LCSS at SAIL, IISCO, Burnpur	Areva & EMC consortium	SAIL, IISCO, Burnpur	17.03.2009
35.	Design & engineering services for 132/33kV AIS substation at Nazirpur and 2x132kV line bay extension at Amtala of WBSETCL	Areva T&D India Ltd.	WBSETCL, West Bengal	26.11.2009
36.	Design and engineering services for 132/33kV GIS MRSS of Tata Steel Ltd. at Noamundi, Jharkhand for Joda & Noamundi Mines expansion project	Siemens Ltd.	Tata Steel, Noamundi	16.06.2010
37.	Design & engineering Services for 2x400kV bay extension at 400/220kV Switchyard of PGCIL at Namkum, Ranchi	Areva T&D India Ltd.	Power Grid Corporation of India Ltd.	04.07.2008
38.	Basic and Detail Engineering services for 400/33kV Main receiving substation (MRSS) of Abhijit Infra Pvt. Ltd. for 4x270MW thermal power plant at Chandwa, Jharkhand	Areva T&D India Ltd.	Abhijit Infra Pvt. Ltd.	04.07.2008
39.	Design & engineering services for 400kV Bay extension at OPTCL, Meramundali grid substation at Angul, Orissa	Areva T&D India Ltd.	OPTCL, Orissa	11.07.2008
40.	Design and engineering services for 132/33/11 kV substation of OPTCL, Sambalpur, Orissa for Aryan Ispat and Viraj Steel	Areva T&D India Ltd.	Aryan Ispat and Viraj Steel	20.03.2008
41.	Detail Engineering services for 220/132/33kV Outdoor substation (MRSS) of JSEB at Bodhgaya	Areva T&D India Ltd.	Jharkhand State Electricity Board (JSEB)	25.03.2008
42.	Complete design ,engineering and consultancy services for 132/33 kV ,2x50 MVA AB zone substation (7x132 kV bays,12x33 kV bays, 11 kV-7 panel Swbd.) of Durgapur project Ltd. (DPL) at Durgapur	Areva T&D India Ltd.	Durgapur Projects Ltd. (DPL), West Bengal	28.12.2007
43.	Design & engineering services for 132 / 33 KV, 2 X 62.5 MVA Main receiving station (MRS) for 1 MPTA bar mill and 0.6 MPTA wire rod mill of Jindal Steel and Power Limited (JSPL) at Patratu, Jharkhand	Siemens Ltd.	Jindal Steel and Power Limited (JSPL)	29.07.2008
44.	Design and engineering services for Expansion of 132/33 kV MSDS-III of SAIL,RSP	Siemens Ltd.	Steel Authority of India Ltd. (SAIL), Rourkela Steel	25.06.2008



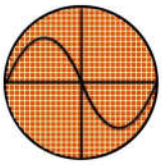
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
			Plant	
45.	Design and engineering services for five (5) nos. 132/33 kV substations (7x132 kV bays, 2x50MVA trafo, 9x33 kV bays) at Lohardaga, Latehar, Sahebganj, Pakur & Kanke of JSEB	Areva T&D India Ltd.	Jharkhand State Electricity Board (JSEB)	13.03.2007
46.	Design and engineering services for 132/11 kV Main Receiving substation (MRSS) of Phillips Carbon Black Ltd. (PCBL) and extension of 1x132 kV line bay at DPPS swyd., Durgapur	Siemens Ltd.	Durgapur Projects Ltd. (DPL), West Bengal	2007-2008
47.	Preparation of Cable Schedule & interconnection diagrams, Control cable block diagram and lighting design/drawings for 220/132/33 kV substation at Subhasgram of WBSETCL	Areva T&D India Ltd.	WBSETCL, West Bengal	2008
48.	Design, engineering and consultancy services for three (3) nos. new 132/33 kV, 2x50 MVA new substation and expansion of three (3) nos. 132 kV existing substations of WBSEB	Areva T&D India Ltd.	WBSETCL, West Bengal	01.02.2006
49.	Basic and detail engineering services for 2 nos. 33/11 kV, 2x7.5MVA new substation of Dishergarh Power Supply Co.	Siemens Ltd. , Kolkata	Dishergarh Power Supply Company (DPSC)	04.06.2006
50.	Basic and detail engineering services for 132/11 kV, 2x80MVA new substation of new Oxygen Plant of Bokaro Steel Plant and expansion of 132 kV swyd. at existing TPP-CPP swyd at Bokaro	Siemens Ltd.	SAIL, Bokaro	2006-2007
51.	Basic and detail engineering, procurement action, vendor drawing review and site assistance for 132/33 kV, 1x37.5MVA A-zone substation of Durgapur Projects Ltd at Durgapur	Areva T&D India Ltd.	Durgapur Projects Ltd. (DPL), West Bengal	08.12.2005
52.	Complete design, engineering and consultancy services for 33 kV indoor substations, downstream power distribution, PLC controls and instrumentation for 3000 TPH Iron Ore Preparation Plant of Jindal Steel and Power Ltd, Barbil, Orissa.	Netguru Systems Ltd., Kolkata	Jindal Steel & Power Ltd.	04.11.2005
53.	Basic and detail engineering, procurement assistance, vendor drawing review and inspection of equipment for 33/6.6 kV substation of Tata Steel Tubes Division at Jamshedpur	Areva T&D India Ltd.	Tata Steel	26.08.2005
54.	Basic and detail engineering, procurement action, vendor drawing review and inspection of 33 kV substation and downstream LV power distribution system for a 2 X 15 MT steel making and continuous casting project of Jharkhand Ispat Pvt. Ltd. at Ramgarh,	Maknan Consultants, Kolkata	Jharkhand Ispat Pvt. Ltd. at Ramgarh, Jharkhand	2004-2005



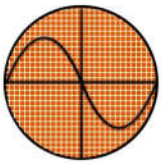
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	Jharkhand			



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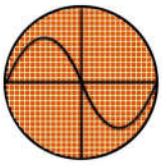
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G. PROJECTS COMPLETED (Outside India)

SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
1.	Prebid engineering services for electrical, civil, structural, substation automation, fire protection and air conditioning works of 220/132/33kV GIS substation at Khudi and Manang of Nepal Electricity Authority	Pinggao Group International Engineering Co., Ltd., China	Nepal Electricity Authority, Kathmandu	08.11.2018
2.	Prebid engineering for electrical, civil, structural and substation automation works of 400kV GIS, 220kV AIS. 3x500MVA Transformers at Hetauda & Inaruwa of Nepal Electricity Authority.	Pinggao Group International Engineering Co., Ltd., China	Nepal Electricity Authority, Kathmandu	07.07.2018
3.	Detail engineering (Electrical, Civil, Structural, SCADA, F.O communication) for 132/33kV Motanga Substation of Bhutan Power Corporation Ltd.	Venus Controls & Switchgear Pvt. Ltd.	Bhutan Power Corporation Ltd.	28.03.2018
4.	Preparation of Structural GA drawings for gantry towers, beams, shielding tower and equipment support structures for 132/33kV Kabba and Shagamu Substations of TCN-PMU, Nigeria	Rap Power Industries, Abuja, Nigeria	TCN – PMU, Nigeria	01.09.2017
5.	Electrical system study (Load flow, Short circuit, Protection coordination, Harmonic analysis), verification and stamping of electrical drawings, Electrical design calculations, Earthing and Lightning protection system design calculations, Relay setting calculations and layout drawings for 22/0.433kV power distribution system of New Port Project (NPP0064) near Doha in Qatar.	Construction Development Company LLC, Qatar	State of Qatar, New Port Project	08.02.2016
6.	Detail engineering services including Substation automation system for 132/13.8kV Al Bader GIS substation # 8131 in Riyadh of National Grid, Saudi Arabia, Central	Dar Al Riyadh Consultants, Riyadh	National Grid, Saudi Arabia	03.01.2016
7.	Electrical system study (Load flow, Short circuit, Protection coordination, Harmonic analysis), verification and stamping of electrical drawings, Electrical design calculations, Earthing and Lightning protection system design calculations, Relay setting calculations and layout drawings for 22/0.433kV power distribution system of New Port Project (CP-13, NPP0057) near Doha in Qatar.	Sinohydro Corporation Ltd., Qatar	State of Qatar, New Port Project	05.03.2016
8.	Complete Basic and Detail Engineering	BES Europe Ltd,	Ministry of	11.12.2015



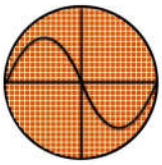
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	services including SOE-Data monitoring system for Reinforcement of 161/33kV Kingtom substation, 33/11kV Wilberforce, Wellington, Ropoti and Blackhall substations, Installation of 8km 33kV overhead line under UPGRADE OF FREETOWN PRIMARY DISTRIBUTION NETWORK FOR ENERGY ACCESS PROJECT, MINISTRY OF ENERGY (MOE), SIERRA LEONE	Middlesex, UK	Energy, Govt. of Sierra Leone	
9.	Complete Basic and Detail Engineering services (including SCADA and FO/PLCC communication system) for electrical, civil & structural works of 220/22kV Pule Alam Substation, 110/20kV Pushmol and 110/20kV Mainwand Substations of US Army Corps in Afghanistan	Assist Consultants Inc., Afghanistan	DABS, Afghanistan	05.02.2015
10.	Review and preparation of SLD, schematics drawings and electrical design calculations (Load flow study, Short circuit study, MV/LV cable sizing calculation, Earthing calculation, Lightning protection risk assessment study and Lightning protection system calculations), Relay setting calculations, preparation of cable schedules for electrical, SCADA and PMS for entire 22/0.433kV power distribution system of New Port Project (NPP0032) near Doha in Qatar	Transgulf International Electro Mechanical WLL, Qatar	State of Qatar, New Port Project	06.08.2014
11.	Review and preparation of Lightning protection risk assessment study, LPS calculations and stamping of Earthing drawings, calculations and Lighting protection system drawings for support facility buildings at New Port Project (NPP0032) near Doha in Qatar	Shapoorji Pallonji Qatar WLL	State of Qatar, New Port Project	07.06.2015
12.	Prebid engineering services (electrical, civil & structural) for 400kV new substation at Kunene and extension of 400/132kV existing substation at Omatando of Nam Power in Namibia	Kalpataru Power Transmission Ltd., Mumbai	Nampower, Namibia	01.10.2015
13.	Preparation of tender document and tender drawings for electrical, civil, structural, HVAC, Firefighting, SCADA, FO communication, Integrated security system (CCTV), plumbing systems of 132/33kV, 2x125MVA GIS substation at Sinaw and 132/33kV, 2x63MVA GIS substation at Samad of OETC, Oman	Atlas International Engineering Consultants	Oman Electrical Transmission Co. (OETC)	21.01.2015
14.	Preparation of tender document and tender drawings for electrical, civil, structural, HVAC,	Atlas International Engineering	Oman Electrical Transmission Co.	15.07.2015



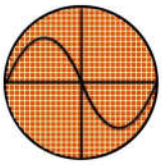
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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	Firefighting, SCADA, FO communication, Integrated security system (CCTV), plumbing systems for installation of 3rd and 4th 132/33kV, 2x125MVA transformers at Al-Khadra and Madinat Al-Barka GIS substations of OETC, Oman	Consultants	(OETC)	
15.	Preparation of tender document and tender drawings for electrical, civil, structural, HVAC, Firefighting, SCADA, FO communication, Integrated security system (CCTV) and plumbing systems of 33/11kV, 2x20MVA GIS substation at Rusayl-09 of MEDC, Oman	Atlas International Engineering Consultants	Muscat Electricity Distribution Co. (MEDC), Oman	21.01.2015
16.	Prebid engineering services (electrical, civil, structural, HVAC, Firefighting, Plumbing etc.) for four (4) nos. 220/20kV outdoor substation at Qarabagh, Mokor, Shah Joy and Qalat, 220/110/20kV outdoor substation at Kandahar East, 220kV SVC and RPC bay extensions at existing Chimtala, Sayedabad, Ghazni substations, Afghanistan	Kalpataru Power Transmission Ltd., Mumbai	DABS, Afghanistan	31.03.2015
17.	Basic and detail engineering for expansion of 66/33kV, 1x2.5 MVA AIS outdoor substation at Chinsali of REA/ZESCO, Zambia	Supreme & Co. Ltd.	REA/ZESCO, Zambia	18.01.2014
18.	Preparation of Power and control cable schedule and interconnection diagram for 132/33kV AIS/GIS substation at Fort Portal and Opuyo of Uganda Electricity Transmission Co. Ltd.	Techno Electric Engineering Co. Ltd.	Uganda Electricity Transmission Co. Ltd.	31.03.2014
19.	Basic and detail Engineering for electrical, civil, structural, SCADA, PLCC systems of 132/33kV WUDIL AIS Substation in Nigeria	Supreme & Co.Pvt. Ltd., Kolkata	Transmission Company of Nigeria (TCN)	02.12.2010
20.	Preparation of Sag & Tension calculation of 11kV Overhead lines of ADDC for distribution network expansion for Farms and Ezabs belonging to VIP Customers in Eastern Region of Abu Dhabi	ASAS Engineering & Project Management Consultancy Est., UAE	Abu Dhabi Distribution Co. (ADDC)	08.07.2013
21.	Detail Engineering for electrical, civil, structural, SCADA and PLCC systems of 4 nos. 132/33kV AIS Substations at Oghara, Ozoro, Ughelli, Ukwa and 2x132kV Line bay extension at Ughelli power plant in Nigeria	Supreme & Co.Pvt. Ltd., Kolkata	Niger Delta Development Corporation (NDDC), Nigeria	16.04.2012
22.	Basic and detail engineering for 33kV transmission lines and 33/0.42kV compact substations for Mala Infill crude oil Well heads of White Nile Petroleum Operating Co. (WNPOC), Sudan	Supreme & Co.Pvt. Ltd., Kolkata	White Nile Petroleum Operating Co. (WNPOC), Sudan	26.05.2011
23.	Design and engineering services for lighting, earthing and lightning protection of Riyadh	Lahmeyer International,	SEC - COA, KSA	09.05.2007



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SL. NO.	NAME OF PROJECT	NAME OF CLIENT	NAME OF END CLIENT	P.O DATE OR DURATION
	Power Plant No. 9 Extension, Plant-F consisting of 12 nos. frame 7EA (66MW each) simple cycle gas turbine generator units in Riyadh, Saudi Arabia	Gurgaon		
24.	Preparation of Scope of Work and technical specifications along with base design and detail design drawings and calculations for the following substations : a) Expansion of Rafha New Power Plant 33kV Switchgear and Construction of New 33/13.8kV Rafha Substation. b) Reinforcement of 33/13.8KV Adarah Substation. c) Reinforcement of 33/13.8KV Qurayat Power Plant Substation. d) Reinforcement of 33/13.8KV Qurayat West Substation	Top Development Consult, KSA	SEC-EOA, KSA	10.12.2006
25.	Preparation of Electrical single line/three line diagrams, DC schematics, wiring diagrams, SCADA and annunciation diagrams for 138 kV circuit breakers, medium voltage switchgear and station control panels (control, protection, mimic panels, SCADA IFC panels) of General Switchgear and Controls, Toronto, Canada for 6 nos. frame-5 GT power station and 138 kV ring bus substation at Gialo, Libya	General Switchgear and Controls, Toronto, Canada	WAHA Oil Company, Libya	17.11.2006
26.	Basic engineering and preparation of EPC offer for 33/11 kV substation and downstream 11/0.415 kV distribution substations for Qatar Petroleum Support Facilities Area (QPSFA) at Dukhan, Qatar.	Balmer Lawrie Ltd., Kolkata	Qatar Petroleum	2004-05
27.	Basic engineering and preparation of EPC offer for plant control, instrumentation and automation system for Ras Laffan Water works site, Qatar	Balmer Lawrie Ltd., Kolkata	Qatar Petroleum	2004-05
28.	Basic engineering and preparation of EPC offer for SCADA control, telemetry, instrumentation and plant automation for Ash Sharqia Sands water works, Oman	Balmer Lawrie Ltd., Kolkata	Ministry of Water, Oman	2004-05



H. LIST OF CLIENTS

Indian Clients (Past & Present) :

1. ABN Tower & Transmission Co. Ltd., Kolkata
2. Areva T & D India Ltd., Noida and Kolkata
3. Arcvac Forgecast Ltd., Dankuni, W.B
4. Blue Star Ltd.
5. B.O.C (Linde) India Ltd.
6. Bajaj Electricals Ltd., Mumbai
7. CES Ltd., Kolkata
8. CESC Ltd., Kolkata
9. Concept Engineering & Projects Ltd., Pune
10. EMC Ltd., Kolkata
11. Flowmore Ltd., Ranchi
12. Genus Power Infrastructures Ltd., Jaipur
13. GTL Limited, Pune
14. Godrej & Boyce Mfg. Co. Ltd., Mumbai
15. Indo Power Projects Ltd.
16. India Power Corporation Ltd., Kolkata
17. Jaguar Overseas Ltd., Delhi,
18. Jindal Steel & Power Ltd., Barbil
19. Kavin Engineering & Services Pvt. Ltd., Coimbatore, Tamilnadu
20. KEC International, Gurgaon
22. L&T Automation, Mumbai.
22. McNally Bharat Engineering Co. Ltd., Kolkata
23. Netguru Systems Ltd., Kolkata
24. Siemens Ltd., Kolkata (I & S, PTD)
25. Supreme & Co. Pvt. Ltd.
26. Sterling & Wilson Ltd.
27. S.K Samanta & Co. Pvt. Ltd.
28. Techno Electric & Engineering Co. Ltd., Kolkata
29. Technofab Engineering Ltd., Faridabad
30. Toshiba Transmission and Distribution Systems (India) Pvt. Ltd.
31. Technisys, Delhi,
32. MBE Coal & Mineral Technology India Pvt. Ltd, Kolkata
33. Venus Controls & Switchgear Pv. Ltd., Kolkata

Overseas Clients (Past & Present) :

- Atlas International Engineering Consultants, Oman.
- Assist Consultants Inc. Afghanistan.
- Alsdur Limited, Port Harcourt, Nigeria
- ASAS Engineering & Project Management Consultancy LLC, Abu Dhabi
- BES, Europe, UK
- Construction Development Company LLC (CDC), Qatar
- Dar Al Riyadh Consultants, Saudi Arabia
- Gharany Excellence Construction, Kabul, Afghanistan
- Hoquado Ltd., Nigeria
- Nespak Nigeria Limited, Abuja, Nigeria
- Novin Simia Company, Kabul, Afghanistan
- Olam International Ltd., Gabon
- Qingdao Wuxiao Group Company and Ahmin Technology & Power Systems Ltd J.V, Abuja, Nigeria.
- Rap Power Industries, Nigeria
- Sinohydro Corporation Ltd., Qatar
- Top Development Consult, Saudi Arabia
- Transgulf International Electro-Mechanical WLL, Doha, Qatar
- Techna Electromechanical Services Company Ltd., Libya
- United Construction Est. (UCE), Doha, Qatar



I. OFFICE FACILITIES AND SUPPORT STAFF

We are based in Kolkata, India. Our resources are suitable for execution of design and engineering jobs of large volume. We have necessary gadgets like computers (15 nos.), server, plotter (A0 size), fax machine, ISD telephone connection, 4G high speed internet connection, printers and engineering softwares for day to day engineering work. Our operations are fully computerized.

J. LICENCES & REGISTRATIONS

We have valid trade license, Goods & service tax (GST) registration, professional tax registration, TAN registration and all our employees are covered under EPFO (Employees Provident Fund Organisation).

K. CERTIFICATES & ENLISTMENTS

We are an ISO 9001 (2015) certified company. Our operations are executed as per ISO approved quality procedure. All design and drawings are prepared with proper checking and verifications at least three experience levels, thus ensuring proper quality as per Customer specification and satisfaction.

We are also enlisted as an MSSE (Micro and Small Scale Enterprise, Govt. of West Bengal) registered company having Udyog Aadhar Number of WB10D0005196.

Satcon has been accredited by NSIC-D&B-SMERA performance and credit ranking of SME 2B (high performance and moderate financial strength). SMERA is SME Rating Agency of India Ltd. The D&B (Dun & Bradstreet) D-U-N-S no. is 65-066-37397.

L. LICENSED SOFTWARES

We own the following licensed softwares :

1. One (1) license of ETAP 7.0 for system study calculations like load flow study, fault level studies, protection coordination, equipment sizing and motor starting study. We are in the process of upgrading it to latest version of ETAP.
2. Four (5) licenses of Autocad 2018/2016/2013/2012 for preparation of electrical, civil and structural layout and detail engineering drawings.
3. Two (2) licenses of Autocad Electrical 2009 for automated preparation of GA, wiring, schematic, terminal plant drawings of control & relay panels and MV/LV switchgear panels.
4. One (1) license of Staad Pro for civil and structural analysis and design calculations.
5. One (1) license of PLS CADD (lite) for Overhead line design.



M. TOPOGRAPHICAL CONTOUR SURVEY & GEOTECHNICAL INVESTIGATION

Activities:

- 1) Geotechnical investigation of Substation plot and Transmission line route.
- 2) Surveying (on land & water) of Substation plot and Transmission line route and Preparation of Survey drawing with Topographical Contour layout in Autocad.

Strength:1

Sl. no.	Machinery	Quantity
a.	Full fledge well equipped laboratory for carrying out testing soil & rock	1 no.
b.	Combined geo machine for boring & rock drilling	3 nos.
c.	CBR machine	1 no.
d.	Plate load test equipments	2 sets
e.	DCPT	2 sets
f.	PACKER test instrument	1 set

Strength:2

Sl. no.	Machinery	Quantity
a.	Electronic total station (sokia make)	3 sets
b.	Levelling instrument	3 sets
c.	Hand GPS	2 nos.
d.	HP plotter	1 no.



N. LIST OF TESTING & COMMISSIONING EQUIPMENT (Through Associate Company)

<u>SL. NO.</u>	<u>DESCRIPTION OF EQUIPMENTS</u>	<u>RATING</u>	<u>MAKE</u>
1.	High Voltage Kit	0-30 KV Ac/Dc	Shruti Electronics
2.	High Voltage Kit	0-30 KV Ac/Dc	Shruti Electronics
3.	High Voltage Kit	0-60KvAc/80kvDc	Shruti Electronics
4.	HV Probe	Up To 80 KV	Shruti Electronics
5.	Primary Injection Kit	Up To 500 A	Shruti Electronics
6.	Primary Injection Kit	UpTo 3000A	Shruti Electronics
7.	Secondary Injection Kit	Up To 50 A	Shruti Electronics
8.	Secondary Injection Kit	Up To 100 A	Shruti Electronics
9.	Secondary Injection Kit	Up To 200 A	Shruti Electronics
10.	HV Capacitance & Tan Delta Kit	Up To 10 KV	Megger/U.K.
11.	HV Capacitance & Tan Delta Kit	Up To 10 KV	Megger/U.K.
12.	Transformer Winding Resistance Meter	10 A	Eltel
13.	Transformer Turn Ratio Meter	0-19999 to 1 In three Range	Eltel
14.	Digital Micro OHM Meter	DMO-100D	Eltel
15.	Scot M3K (3 Pole C.B. Closing & Tripping Time)	Automatic	Scope
16.	Circuit Breaker Dynamic Test Set And DCRM Unit	HISAC/ULTIMA	Scope
17.	Transformer Resistance Meter	TRM-104	Scope
18.	Scot M3K Time Interval Meter	Automatic	Scope
20.	Single Phase Variac	4A	Penta
21.	Single Phase Variac	6A	Penta
22.	Single Phase Variac	8A	Penta
23.	Single Phase Variac	20A	Penta

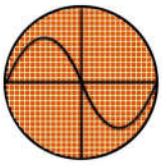


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24.	Single Phase Variac	15A	Penta
25.	Three Phase Variac	4A	Penta
26.	Three Phase Variac	15A	Cosmo Enterprise
27.	Insulation Tester	500V 100 MΩ	Waco
28.	Insulation Tester	1000V 2000 MΩ	Waco
29.	Insulation Tester	2500V 10000 MΩ	Waco
30.	Insulation Tester	500 V 50000 MΩ	Waco
31.	Earth Tester	0-100Ω	Waco
32.	Isolating Transformer	Upto 3 KV	Shruti Electronics
33.	Power Pack	10A	Shruti Electronics
34.	Power Pack	15A	Shruti Electronics
35.	Power Pack	20A	Shruti Electronics
36.	Micro OHM Meter	1999 μΩ - 19.99 kΩ	Agronic
37.	Relay Testing Kit	Up to 50 A	Shruti Electronics
38.	Relay Testing Kit	Up to 100A	Shruti Electronics
39.	Relay Testing Kit	Up to 200A	Shruti Electronics
40.	Mili Volt Drop Test Kit	100A, 0-2000 μΩ	Shruti Electronics
41.	Phase Sequence Meter	50V-500V	Autometic Electric
42.	Analog Multimeter	Ac, 25-60Hz 2.5V-1000V Ac & Dc 50 μA-10A AC,100 mA-10A Dc	Motwane
43.	Digital Multimeter	0-1000 V, 0-10A (A.C./D.C)	Rishabh
44.	Digital Multimeter	0-1000 V,0-10A (A.C./D.C)	Fluke
42.	Tong Tester	0-1000 A (A.C.)	Metravi
43.	Tong Tester	0-1000 A (A.C.)	Lutron



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44.	Mili Tong Tester	0-300 A 0-300 m	Motwane
45.	SF- 6 Gas Filling Device		
46.	SF-6 Gas Leakage Detector		
47.	Microprocessor Controlled Single Phase Relay Test Set.	T-1000	ISA/ Italy.
48.	Microprocessor Controlled Three Phase Relay Test Set.	CMC256 Plus	OMICRON
49.	10 KV Insulation Tester	MIT 1020/2	Megger



P. ORGANIZATION CHART

