



2018/2019

Established in: 1982







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COMPANY PROFILE





MESSAGE FROM THE CEO

The Electric Power System Engineering Company (**EPS**) is specialized in carrying out consulting and engineering services in the field of Electric Power Systems. **EPS**, a joint-stock Egyptian Company, established in October 1982 according to the laws of the General Authority for Investment and Free Zones.



Since its establishment, **EPS** is offering services in the fields of electric power generation, transmission, distribution, control & communication, and information systems, and is ISO 9001 /2015 certified since February 1.2001 Until March 2020.

The services covered include power system planning, techno-economic feasibility studies, power system design, and preparation of tender documents, bid evaluation, contracting support, and project management.

EPS has developed extensive packages of software applications oriented to automate managerial and financial processes, as well as, to support management decision-making.

Furthermore, **EPS** participated in international consultancy and contracting services for various Arab & African countries. During the last 30 years, **EPS** has succeeded to increase its scope of services extensively, and successfully, undertaken to cover a wide range of activities for more than **4440** projects. The company has also been engaged in several consulting and engineering services for generation, transmission, and distribution projects in Arab and African Countries. **EPS** is a recognized leader in power systems analysis and network expansion planning, sub-stations, transmission lines, distribution networks, and SCADA projects. One of the main focuses of the Company is to deliver quality and cost-effective services that satisfy the customers. To achieve customer satisfaction.

EPS is committed to provide quality and cost-effective engineering services in the field of electric power systems that fully meet the needs and expectations of every customer through expertise and standard of excellence. The company is also dedicated to use information technology to develop systems driven by customer need.

EPS vision is to be successful, well reputed, continues to serve a growing.

EPS also envisages expanding the services into business architecture and strategic Planning. Information technology is linked to business architectural and surveying issues to form an integral part of the business delivered to public sector, private sector and inter professional activities covering National and Regional markets.

Eng. Hosni El Kholy
 EPS Chairman and CEO





Company Data



Chairman & CEO		: Eng. Hosni Hassan El-Kholy
Capital		: 5 Million LE
No. of Employees		: 241
Year of Establishment		: 1982
Address		: Misr Lel-Taamir Buildings - Sheraton Heliopolis, Zone 8, Street No. 9, Building No. 7
P.O. Box		: 90 Rawdat El Sheraton
Tel.		:(202) 22669414 – 22669424 – 22669427 – 22669437
Fax		:(202) 22661810
E-mail		: eps@eps-egypt.com
Web Site		: www.eps-egypt.com
Nearby		: Cairo Airport, Radisson Hotel , Fairmont Hotel





Introduction

EPS is a joint stock Egyptian Company established in October 1982 under the laws of the General Authority for Investments and Free Zones. The company is specialized in carrying out engineering and construction management services in the field of Electric Power Systems.

Since its establishment, **EPS** has conducted services for more than **4440** engineering projects in the fields of electric power generation, transmission and distribution in Egypt and in Arab Countries.

The services cover power systems planning, techno-economic feasibility studies, power systems analysis, preparation of tender documents and contracting support, supervision at construction sites, development and implementation of information technology applications. In addition, EPS carries out preparation and execution of training programs.

From inception to completion, we prepare tender documents, plan, execute, and control projects backed by proactive planning and first-hand knowledge of contract terms, client objectives, responsibilities, and capabilities. Project budgets are continuously monitored to secure budget and contract compliance.

Engineers, technologists in addition to teams that are comprised of a variety of professions and disciplines are pooled to create effective project organization structures.

Mission

EPS is committed to provide quality and cost-effective engineering Services in the Field of electric power systems that fully meet the needs and expectations of every customer through expertise and standard of excellence. The Company is also dedicated to use information technology to develop systems driven by Customer needs.



Vision

EPS vision is to be successful, well reputed, and continues to serve a growing market and can, with no limitations, compete local consultants.

EPS also envisages expanding the services into business architecture and strategic planning. information technology is linked to business architectural and Surveying issues to form an integral part of the business delivered to public sector, private sector and inter professional activities covering national and regional markets.

Objectives

EPS objectives are:

- To operate the company for continuity, profile and stability and establish growth objectives through effective management policies and planning procedures.
- To provide shareholders with fair return on investment.
- Employee performance to be stimulated information systems that serve the processes and the management.
- Invest in corporate development and individual training.
- Continually provide employees with modern efficient development and production tools to be in the forefront in the fields of the firm's practice.
- Opening new markets.
- Achieve continuous customer satisfaction.
- To maintain relations with employees through active participation, adequate communication, fair compensation and benefits, good working conditions opportunities for work satisfaction, advancement and professional development.



Organization

EPS is organized to offer a full range of consultancy and engineering services in the fields of power systems engineering. Each individual project is managed with only one goal in mind, which is to render the services required at the highest international standards.

Projects Group

For each specific project or task, a number of specialized engineers are integrated to form a project team, managed by a long-experienced team leader or project manager. Those specialists are assigned from the company's different departments to perform their respective tasks in accordance with established schedules and milestones to fulfill the project objectives.

To provide an even wider range of engineering capability, *EPS* draws directly from the highly qualified and experienced personnel working with the different authorities and organizations of the Electricity and Energy sector.

Consultants

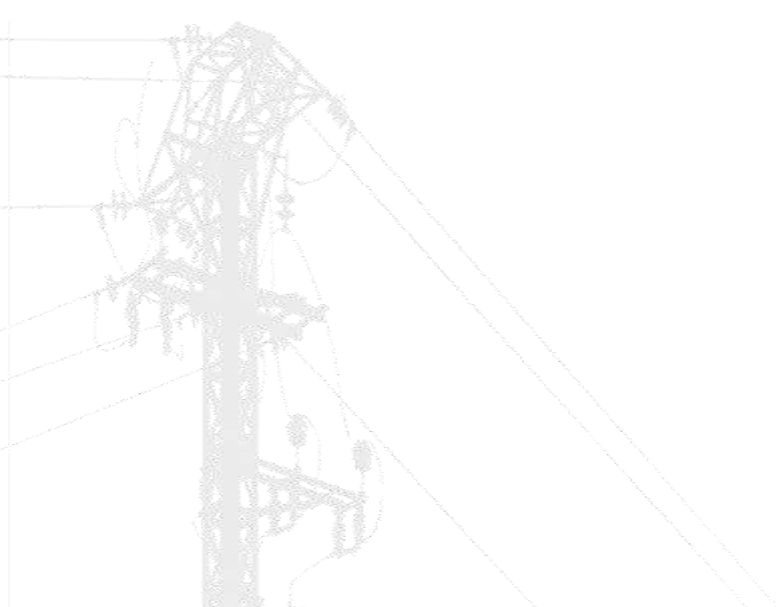
EPS has expanded its technical resources and engineering groups by employing consultants and specialists of the highest caliber as either inhouse or independent consultants to support the projects and project teams.



Facilities

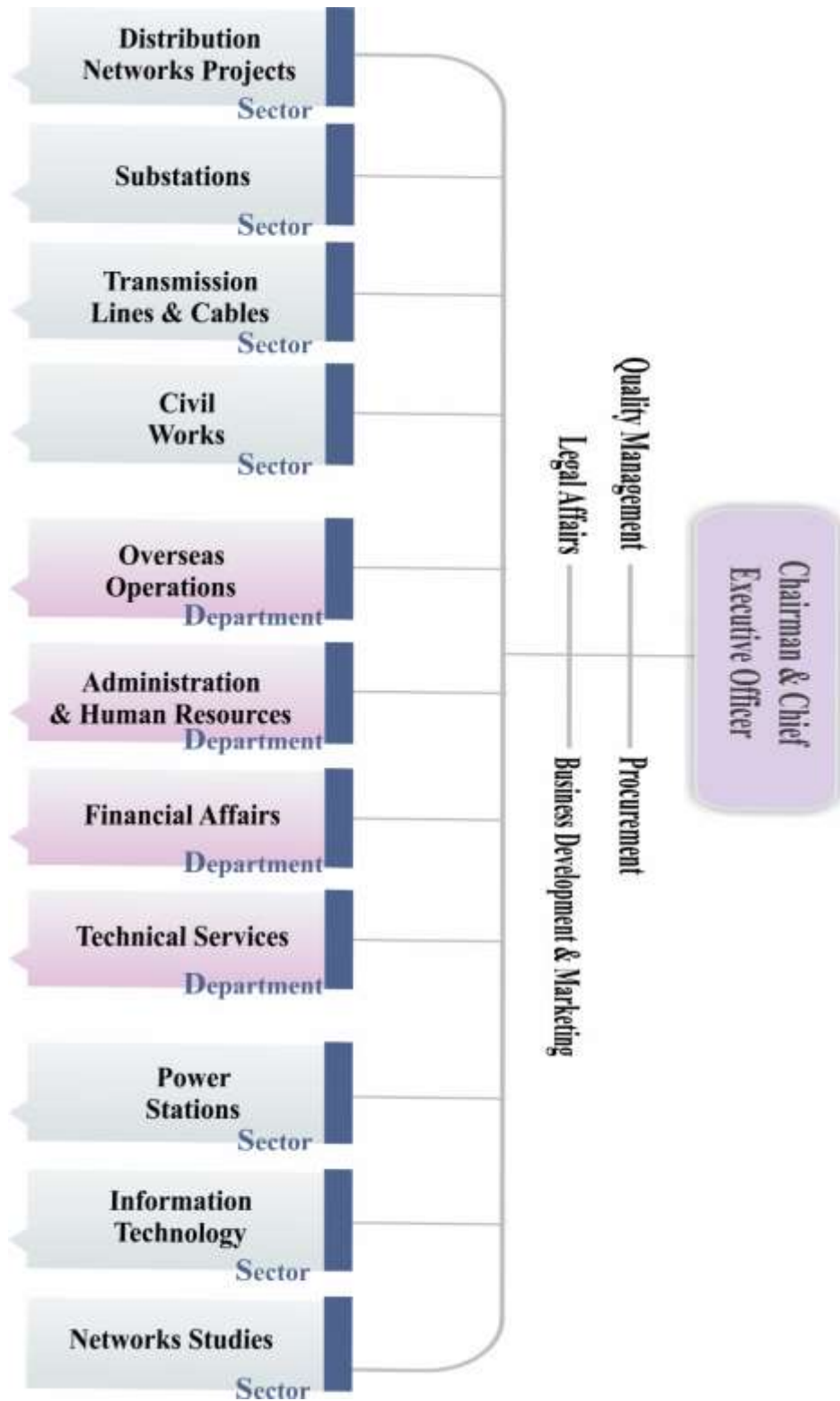
The Company has computer facilities and software packages which provide considerable support during the implementation of different contracts.

EPS also maintains continuous liaison and special agreements with various specialized laboratories and research centers, in order to avail on their facilities and expertise whenever necessary.





Organization Structure





Key Personnel

EPS is managed by highly experienced group of managers. The key personnel are:

Name	Position
Eng. Hosni El Kholy	Chairman and Chief Executive Officer
Eng. Asmaa El-Desouky	Substations, Sector Head
Eng. Osama El-Matarawy	Distribution Networks, Sector Head
Eng. Mohamed Saad	Civil Works, Sector Head
Eng. Amir Tadrour	Transmission Lines & Cables, Sector Head
Eng. Azza Khalil	Studies, Sector Head
Eng. Nevien Khadr	Information & Applications Automation, Sector Head
Eng. Rabea Zayed	Power Station Projects, Sector Head
Eng. Abd El-Rahman Abu El Ezz	Overseas Operation Supervision, Department
Eng. Hatem El Ghorory	Business Development Department
Mr. Mohamed Mekhamar	Admin. & Human Resources, Department
Acc. Manal Ashour	Financial Affairs, Department



Ownership

EPS shares are held and equally divided between the following Authorities and Companies:

- Egyptian Electricity Holding Co.
- Nuclear Power Projects Authority
- Hydro Power Plants Authority
- Cairo Electricity Distribution Co.
- Alexandria Electricity Distribution Co.
- El Nasr Transformers & Electrical Products CO.
- General Co. for Electrical Projects.
- High Dam Electric & Industrial Projects Company.
- Misr Company for Mechanical and Electrical Projects.

The first six shareholders are owned by the Ministry of Electricity and Energy; the next two shareholders are affiliated with the Ministry of Public Sector, while the last shareholder is a Privately-Owned Company.



Major Organizations Recognizing EPS

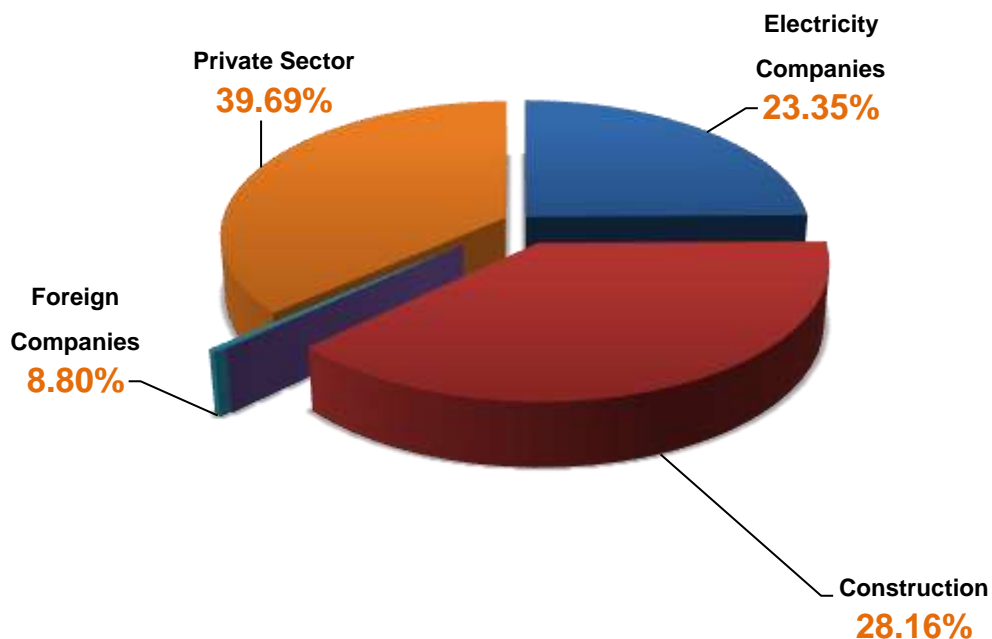
EPS Company is recognized as a Consulting Firm by the agencies given below:

- The World Bank.
- The African Development Bank.
- The Arab Fund for Economic and Social Development.
- The Islamic Bank
- Kreditanstalt für Wiederaufbau (KfW).
- The United Nations Development Program.
- The Commission of the European Communities.
- European Investment Bank (EIB).

EPS is also a member of the Egyptian Syndicate of Engineers and the Federation of African Consultants.

Shareholders

Shareholders of the Fiscal Year 2017/2018





Activities and Services

Fields of Activities		Services
Distribution Networks	<ul style="list-style-type: none"> ○ Distribution Networks Projects ○ Rural Electrification Networks ○ Urban Supply Networks 	<ul style="list-style-type: none"> - Distribution Networks ○ Load Research and Load Forecasting ○ Field Measurements ○ M.V. and L.V. Networks Design ○ Short Term and Long Term Plans ○ Indoor & Outdoor Lighting ○ Optimization of Losses ○ Protection Coordination ○ Supervision for all Elements of Electrical Distribution Networks
Substations	<ul style="list-style-type: none"> ○ Substations up to 500/220KV, 220/66KV, 66/22/11KV 	<ul style="list-style-type: none"> - Substations ○ Engineering Services ○ Protection Coordination ○ Substation Control System ○ Switching Stations ○ Substation Interconnection ○ Communication System ○ Procurement Services ○ Project Management ○ Construction Supervision Services
Transmission Line & Cables	<ul style="list-style-type: none"> ○ Transmission Lines up to 500Kv ○ Power Cables up to 220KV 	<ul style="list-style-type: none"> - Transmission Lines & Cables ○ Towers Electrical Design ○ Towers Spotting ○ Surveying Works ○ Soil Mechanics ○ Procurement Services ○ Construction Supervision



Activities and Services

	Fields of Activities	Services
Civil Works	<ul style="list-style-type: none">○ Design of Steel and Concrete Structures○ Procurement Activities○ Construction Supervision	<ul style="list-style-type: none">- Civil Works○ Design & design review of steel structures for overhead transmission towers up to 500KV.○ Design & design review of telecommunication towers up to 120-meter height.○ Design & design review of civil works for substation GIS and AIS types up to 500KV include detailed design and shop drawings for control and switchgear buildings, transformers foundation, outdoor equipment supports, trenches and roads.○ Prepare BOQ and material list structure and architecture items○ Design reports and provide solution for the upgrade of existing overhead transmission lines, include steel towers and foundations repair and stiffening
Power Station Projects	<ul style="list-style-type: none">○ Steam Plants○ Gas Turbine Plants○ Combined Cycle Plants○ Diesel Plants○ Hydro-Electric Plants○ Wind Farms○ Solar PV and CSP○ Feasibility Studies	<ul style="list-style-type: none">- Power Station Projects○ Studies and Project Investigations○ Engineering Services○ Procurement Services○ Project Management○ Construction Supervision○ Operational and Maintenance Management



Fields of Activities		Services
Overseas Operations	<ul style="list-style-type: none"> ○ Substations ○ Transmission lines ○ Civil Works ○ Distribution networks ○ Power systems studies 	<ul style="list-style-type: none"> - Overseas Operations ○ Technical & Financial Offers ○ Conduct Contract Agreement ○ Prepare the Contracts documents ○ Project Management & Construction Supervision ○ Coordination between company participated sectors ○ Assigning EPS Experts for Specific Jobs
Networks Studies and Control System	<ul style="list-style-type: none"> ○ Interconnection Studies ○ Feasibility Studies ○ Protection Coordination Studies ○ Network Planning ○ Network Operation Studies ○ Load Management ○ Energy Audit ○ Load Forecast & Development of Distribution Network ○ Evaluation & Reduction Method for Technical & Non-Technical losses in Distribution Network ○ Power Quality Study ○ Energy Efficiency ○ Protection Coordination Studies for Distribution Network ○ Electro Magnetic Effect on Pipelines ○ Outages & Interruption Studies for Distribution Network ○ Renewable Energy <ul style="list-style-type: none"> ○ Other Studies 	<ul style="list-style-type: none"> a) Network and Technical Studies <ul style="list-style-type: none"> ○ Interconnection of new and existing substations/power stations studies ○ Feasibility studies ○ High, Extra high and medium voltage network planning studies ○ Load forecast & development of distribution network ○ Power quality study ○ Grid impact studies for renewable energy (wind and solar energy) ○ Static studies; load flow, short circuit calculations and contingency analysis. ○ Dynamic, voltage and reactive power control, fault ride through and transient stability studies b) Detailed Engineering Design Services Primary Engineering. <ul style="list-style-type: none"> ○ Substation general layout & buildings drawing ○ Substation civil works guide and sizing parameters (Ex: Loads) ○ Power Transformers/Reactors/Capacitor Banks Civil work guide ○ Steel structure guide (Equipment Supports & Gentries)



- Earthing Grid Calculation Notes and drawings & Earthing of the equipment
- Lightning Protection Calculation Notes and drawings
- Erection (Installation) drawings to be used by site team
- HV/MV/LV cables routing details
- HV Equipment Specification
- Technical purchasing requirements with detailed BOQ & associated technical specifications for the required material (as Cable Trays/Ladders, HV connectors etc.)

Secondary Engineering

- HV/MV Substation Single Line Diagram (S.L.D)
- A/C – 380/220V S.L.D.
- D/C -220V S.L.D.
- D/C-48V S.L.D.
- Protection, Measuring & Metering principal S.L.D.
- Interlocking principle drawings (for AIS S/S).
- LV Power Cables Sizing Calculation Notes.
- Batteries & Battery charges Sizing Calculation Notes.
- Aux. Transformer Sizing Calculation Notes.
- LV Power/Control Cables Cable Interconnection & Termination (Cable Book).
- A/C – D/C distribution principle.
- Technical purchasing requisitions with detailed BOQ associated
- technical specifications for the required material (LV power and control cables, cable glands, etc.).
- Control & Protection Panel Schematic drawings.
- SAS drawings review and interface.




		<p>Electromechanical</p> <ul style="list-style-type: none"> ○ Substation lighting system (indoor, outdoor, emergency, .. etc.) ○ Power sockets and small power (crane, ... etc) system design. ○ Substation air conditioning & ventilation system. ○ Outdoor fire hydrant system. ○ Fire alarm & detection system. ○ Indoor firefighting system. ○ Water supply and sewage systems for substation includes indoor & outdoor design, manholes, exact root level of each pipe, water tank and sewage tank. ○ All related calculations, technical specifications and BOQ <p>c) SCADA for Distribution and Regional Control Centers</p> <ul style="list-style-type: none"> ○ Preparation and revision of technical specifications and financial documents ○ Preparation of technical DATA BOOK document ○ Supervision on the project execution. <p>d) Telecommunication and Control Systems</p> <ul style="list-style-type: none"> ○ Planning communication network for data channel and telephone communication from substations to control centers and tele-protection for all HV feeders. ○ Planning for automation and fiberoptic solution cables and equipment. ○ Planning for VHF, UHF/GPRS solutions and broadband MESH WIMAX ○ Installation, testing and commissioning
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Fields of Activities		Services
	<ul style="list-style-type: none">- Projects Control<ul style="list-style-type: none">○ Supervisory Control & Data Acquisition Systems (EMS/SCADA/DA)○ Communication Networks (MW, RF, F.O)○ Power Station Control Systems	
Information & Applications Automation	<ul style="list-style-type: none">○ Business Modeling○ Professional Support Systems○ Management Information Systems and Management Support Systems○ Computer Networks (LAN, WAN)○ Billing Systems○ Geographic Information Systems○ ERP○ CRM○ Hospital Applications	<ul style="list-style-type: none">- Information & Applications Automation<ul style="list-style-type: none">○ Business System Architecture Modeling○ S.W Engineering○ Networking○ Testing○ Implementation○ Web Design○ High availability Solutions○ Geographic Information Systems

DISTRIBUTION NETWORKS

Projects served till the end of 2017/18= **3085** Projects

 dis-st@eps-egypt.com





Scope of work

- Planning & Design supervision electrical networks for agricultural lands
- Planning & Design of Distribution networks for new cities
- Rehabilitation of distribution networks for rural area
- Power factor measurements and how to improve

Projects served

Distributed among the following activities

- Planning and Design of M.V. for main Electrical Networks for East Owinat
- Planning, Design & Supervision for internal electrical networks for **17** plants (10000 Fed) for each Plant
- Planning & Design of Distribution Networks for **27** New Cities
- Design of Electrical Power Supply of **2750** Factories
- Rehabilitation of Distribution Networks for **35** Rural Areas
- Planning and Design of M.V. for main Electrical Networks for Toshka
- Electrical Supply Networks for **3** High – Riser Buildings
- Power Factor Improvement for **51** Plants
- Others **200** Projects



Consultancy Services for the Broadcast
Television Building (Maspero)



Planning & Design of M.V for
Electrical Networks for East Owinat

Major Projects

Interconnection Owainat East with the Electric National Grid

- Electric Distribution Networks for 14x10000 Feddan 1300 km 22 kv, 300 km 0.4 kV


Completion Date 2016



SUBSTATIONS



Projects served till the end of 2017/18= **218** Projects

 sub-st@eps-egypt.com





Scope of work

1. Project study and design
2. Feasibility study
3. Bid Documents Preparation
4. Bids Evaluation
5. Prepare Technical Evaluation report with recommendation
6. Prepare Final evaluation report with recommendation
7. Prepare contract documents
8. Project Management
9. Detailed design review of the substation
10. Site Supervision of construction, testing & commissioning till handing over

Projects Served

Distributed among the following voltage levels

- **500** kV S/St's **22**
- **380** kV S/St's **5**
- **220** kV S/St's **53**
- **132** kV S/St's **4**
- **66** kV S/St's **74**
- **Studies** **60**



Kafr El Zayt 220 kV Outdoor Equipment



220 kV GIS Equipment



Major Projects

During last 10 years

16 Project Financed from EIB (European Investment Bank)

- (9) S/St's 500/220/22 kV
- (7) S/St's 220/66/22 kV



Suez Gulf 500/220 KV GIS
Substation 1x500 MVA





Badr 500/220/22 GIS S/St
3x500 MVA





Zahraa El Maadi
500/220/22 AIS (3*500 MVA)



4 Project Financed from WB (World Bank)

- (2) 500/220/22 kV GIS S/St
- (2) 220/66/22 kV S/St

Owainat East Project

- 220/66/22 kV Substation 2x125 MVA + 3x25 MVA
- 2 Substations 66/22, 3x25 MVA each



Medium voltage Switchgear



25 MVA
Transformers

125 MVA 220/66/11
Transformers





Private sectors S/St

- Watania 220/66/22 kV GIS Substation project
- Egyptian American Steel Rolling 220/30/11 KV S/ST
- El Marakby Steel 66/33/22 kV S/ST
- Cairo Festival City Project S/ST
- United 66/11 kV Substation



United 66/11 kV Substation





66 kV Equipment



Private sectors S/St (Con.)

- Barwa 1&2 66/22 kV Substation project
- Damac 1&2 66/22 kV Substation project
- El Motawreen 66/22 kV Substation project
- El Hay El Motamyez 220/66/22 kV GIS Substation project
- Sonker 66/22 kV Substation project
- El Marakby steel 66/22 kV Substation Extension project
- New Heliopolis 66/22 kV Substation project
- Berket Ghlion 66/11 Substation project
- Ashmoon 220/66/11 kV GIS S/S project

Sultanate of Oman



Wadi Sa'a
132/33 KV GIS Substation



New Ghobrah
132/33/11 KV GIS S/St





OVERHEAD TRANSMISSION LINE & CABLES



Projects served till the end of 2017/18= **711** Projects

ohtl@eps-egypt.com





Scope of work

We design, manage and supervise the construction of transmission projects; we have successfully engineered many complex projects, providing the best solutions for transmission problems. Our scope includes but not limited to the following:

- Survey and geotechnical investigations
- Complete designs for Overhead Transmission lines using the most powerful software packages known in the business
- On site supervision of Transmission and Distribution Projects
- Design and supervision of Underground Cable installations for high and medium voltage projects
- Preparation of tender/contract documents as well as tender evaluation, technically and financially
- Studies for upgrading the aged High Voltage and Medium Voltage networks
- Planning, feasibility studies and selection for the best economical and technical solutions for new and existing Overhead Transmission Lines

Projects served

28970 km

Distributed among the following voltage levels

• 500 kV T.L	9470 km
• 400 kV T.L	1370 km
• 380 kV T.L	950 km
• 220 kV T.L	10891 km
• 132 kV T.L	400 km
• 66 kV T.L	4516 km
• 34.5 kV T.L	36 km
• 220 kV Cables	6 km
• 66 kV Cables	1115 km
• 11 kV	216 km



500 kV Double Circuit Tower



500 kV Single Circuit Tower



**Multi Circuits Towers Approach
to El-Siouf Substation**

**Abu Qir/ Kafr El Zayat/ Bassous
- 193 Km 500 kV**



Major Projects

Zahraa Maadi Interconnection

- 500 kV OHTL South Helwan/Zahraa El Maadi

Completion Date 2018

Single Circuit OHTL Abu Qeer/ Badr 500 kV

- Total Length 344 km

Completion Date 2015





Double Circuit OHTL Samalut/ Suez Gulf 500 kV

- Total Length 257 km


Completion Date 2017



CIVIL WORK



Projects served till the end of 2017/18= **460** Projects

 civil@eps-egypt.com





Scope of work

EPS civil sector provides consultancy services for the structure and architecture design, preparation of technical specifications and tender documents, projects management, construction supervision especially for substations up to 500 KV, power generation, OHTL towers up to 500 KV and telecommunication towers.

Services provided are given a competitive advantage as we apply the latest method of technology in the engineering by using the latest international computer systems and programs.

Projects served

460 Projects

Distributed among the following activities

- Overhead Transmission Line Projects **325**
- Substations Projects **63**
- Telecommunication Towers Projects **30**
- Distribution Panels & Services Buildings Projects **36**
- Consultancy Services for Industrial Projects **6**



**Design & Construction Supervision
Of MicroWave Towers**



Loading test for Towers



Deep Foundations (Piles) for OHTL



Foundation for OHTL

**High Voltage testing station
Repair of Steel Structure
& Foundation**



POWER STATIONS PROJECTS



Projects served till the end of 2017/18= **135** Projects

powgen@eps-egypt.com





Scope of work

Power stations services cover Feasibility Studies & Project Investigations, Engineering Services, Procurement Services, Project Management & Construction Supervision, and Operation & Maintenance Services.



Total generation Capacity Served

Distributed among the following types of Power Stations

- Steam Power station
- Gas Turbine Power station
- Diesel Power station
- Combined Cycle Power station
- Feasibility Studies
- Co-Generation Power station
- Hydraulic Power station
- Wind Farms
- Solar PV & CSP

1- Steam Power stations:

14 Projects with a total power reached **7535** MW

2- Gas turbine and Combined Cycle power stations:

7 Gas turbine projects **7** combined cycle projects with a total power reached **5775** MW

3- Diesel Power Stations:

10 Projects with a total power reached **84.9** MW

4- Co-Generation Power stations:

Two Projects with a total power of **26.3** MW

5- Hydraulic Power stations:

5 Projects with a total power reached **169.3** MW

6- Wind Farm:

9 Projects with a total power of **895** MW distributed as follow: -

- NREA/DANIDA Zafarana Wind Farm Phase I (**30** MW)
The project comprises **50** units of **600** kW. The units are running now.
- NREA/DANIDA Zafarana Wind Farm Phase II (**30** MW)
The project includes **46** units of **660** kW. The farm is running now.
- NREA/KFW Zafarana Wind Farm Phase I (**33** MW)
The farm is consisting of **55** wind energy converters of **600** kW.
The units are running now.
- NREA/KFW Zafarana Wind Farm Phase II (**47** MW)

The project comprises **71** units of **660** kW the units are now running.

- Spanish **85** MW wind farm. EPS acted as main consultant for all local works. The project comprises **100** turbines of **850** kW each.
- Kfw IV Zafarana **80** MW wind farm. EPS acted as sub-consultant with LI as main consultant. The project comprises **94** turbines of **850** kW capacities each.
- JBIC Wind Power Plant Project at Zafarana (**120** MW) – NREA sub-consultant with Decon. The project comprises **142** turbines of **850** kW capacities each.
- JICA **220** MW Wind Farm Power Plant at Gabal El-Zeit as Subconsultant to Lahmayer in the field of MV and LV networks.
- **250** MW BOO Wind Power Plant Project at Ras Ghareb as a Consultant for the main contractor (Orascom Construction).
- **500** MW Consultancy services agreement with NREA for operation and maintenance of the wind farms at Zafarana in order to improve the availability.



EPS rendered feasibility studies for the following projects: -

- **220** MW with JICA on SAPROF (Special Assistance for Project Formation) Study for Gulf El Zeit Wind Power Plant Project in the Arab Republic of Egypt.
- 120 MW Italgen Wind Farm at Gulf El Zeit.
- **5** MW Co-generation project KC textile factor at 10th, of Ramadan City.

7-Solar Energy:

EPS had signed joint venture agreements with the following entities: -

- British University Egypt (BUE).
- Solar Technology Advisor (STA).
- Engcotec Advanced Technology – Prof Dr. Ibrahim Samak.
- New and Renewable Energy Authority (NREA).
- NOKRASHY Engineering GmbH Prof. Dr. Hany El Nokrashy.

In the field of Solar Power Stations Project.

- EPS were sub-consultant for the Engineering Services for Kureimat Solar Power Station (**140** MW) with the German Consultant Fitshner.
- Consultancy services agreement with NREA for operation and maintenance of Kureimat thermal solar power plant
- EPS completed the project of installing **10** KW PV solar over its Building at Sheraton Heliopolis.
- EPS has been assigned to be the independent engineer for the feed in Tariff (FiT) PV power projects at Benban **1800** MW and Zaafarana **305** MW with a total power of **2105** MW.
- EPS is the main consultant to carryout the consultancy services including the detailed design for **3** plots with total power of **165** MWp PV, FiT power plants at Benban.
- EPS was selected by Egyptian Transmission Company as a short list with STA for offering consultancy services for **200** MW at Kom Ombo.



- EPS provided support to Egyptian Electricity Transmission Company (EETC) for technical analysis and evaluation of the contractor's proposals in the field of wind farm and PV solar projects at Egypt with a capacity reaches **4300 MW** BOO Projects.
- EPS performed pre-feasibility studies for PV solar system at Canal Electric Distribution Company.
- EPS/Engcotec achieved the following activities in the first stage of New Touthka City (5000 KWp solar PV) project:
 - Performing the feasibility study.
 - Prepare the study of interconnection the solar park with the unified grid.
 - Preparing the tender documents for the project
 - Assist the Owner (NUCA) in the evaluation of the contractor offer.
- The scope of EPS/Engcotec will also include the following tasks for the above project of New Touthka City:
 - Supervision of erection and commissioning
 - Prepare the provisional Acceptance Certificate (PAC)
- EPS prepared the feasibility study for **20 MW** and **50 MW** CSP for the Owner (NUCA).



Zafarana Wind Farms



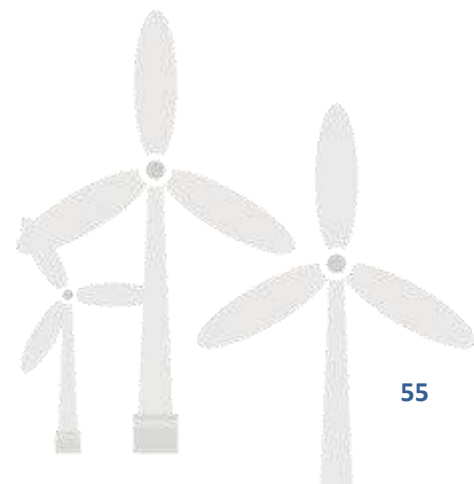
Karama Power Plant



Damietta Combined Cycle Power Station



ESNA Hydro Power Plant





Major Projects

South Sudan

- Electric Power Station of Bor City 2.4 MW
- Electric Power Station of Yambio City 2.4 MW



Yambio Power plant over View



Bor Power Plant Main Entrance

- Electric Power Station of Rombik City 2.4 MW
- Electric Power Station of Wau City 2 MW

Completion Date 2012



Wau Power plant over View



Diesel engines inside engine hall

Owainat East Project

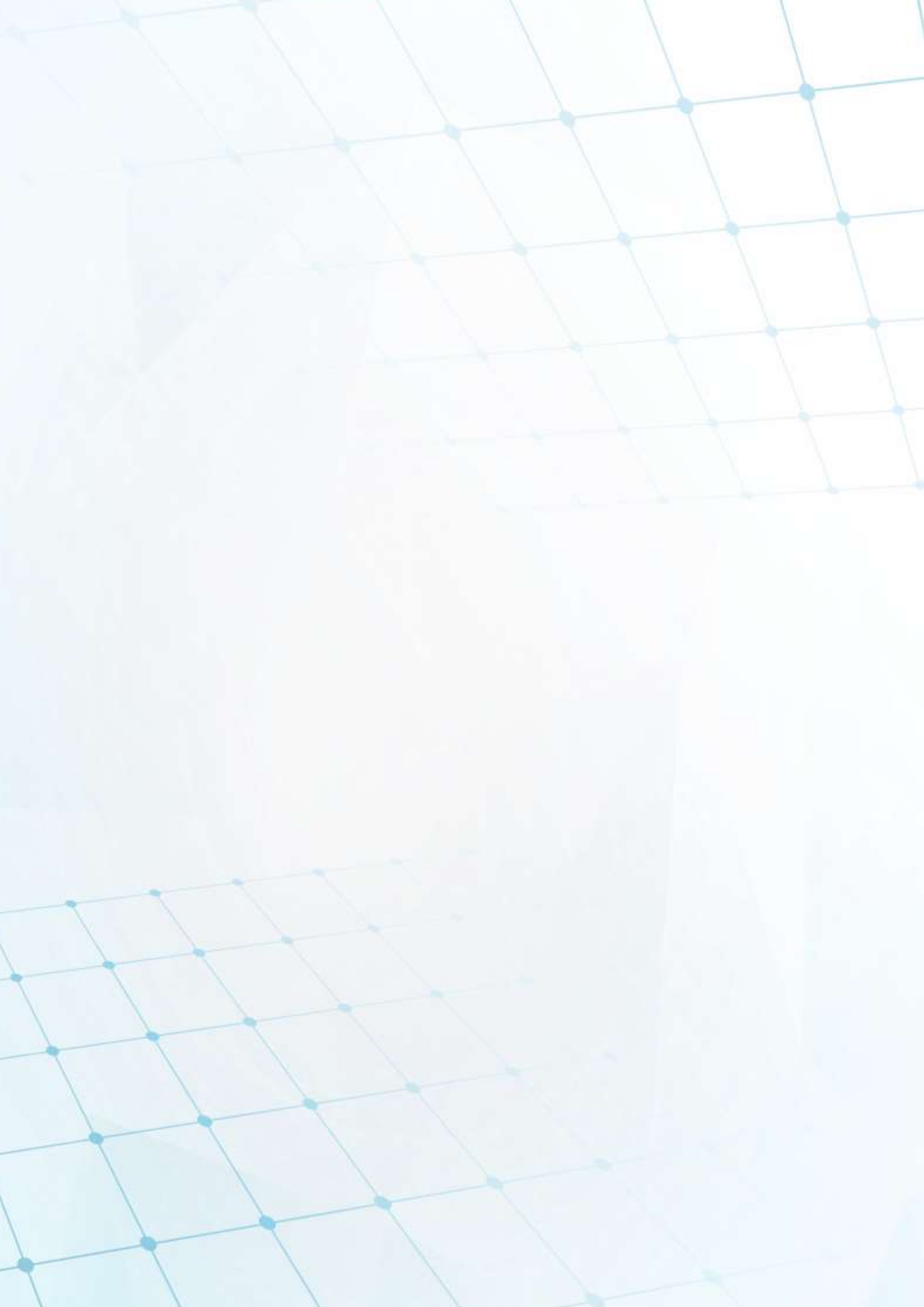
- 3 Electric power stations 4 MVA each

Completion Date 2012

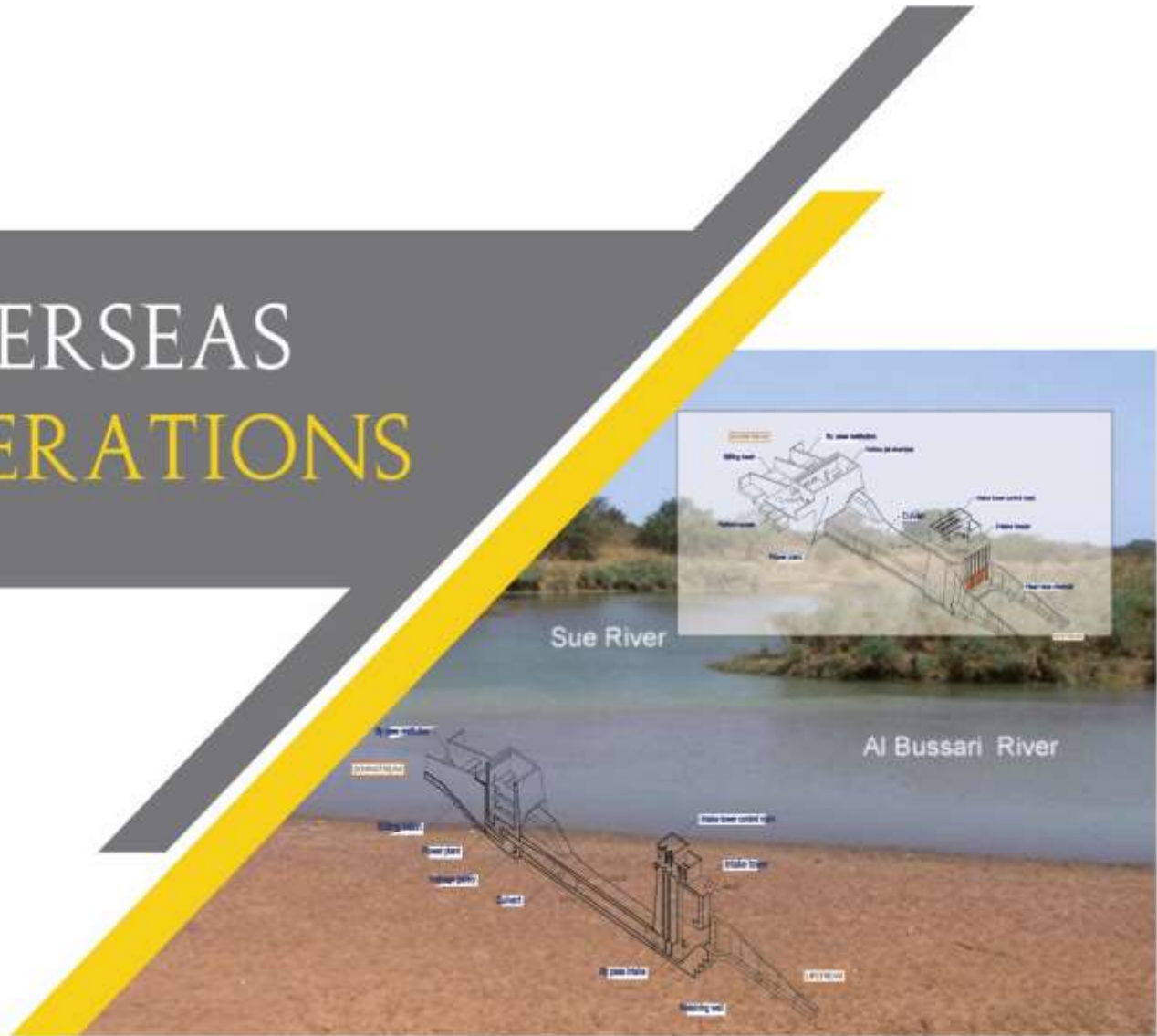


Diesel engines inside engine hall





OVERSEAS OPERATIONS



Projects served till the end of 2017/18= **26** Projects





Scope of work

- Conduct Pre-feasibility Study & Feasibility Study
- Study and prepare technical and financial tender documents according to client TOR
- Design of reinforced concrete structures and reinforced concrete deep and shallow foundations for Substations, Power Generation & OHTL's
- Prepare contract documents between the client and EPS
- Prepare contract documents between the client and successful bidders
- Project management and construction supervision
- Coordination between company participated sectors
- Conduct contract / progress meetings
- Assign EPS experts to participate for providing engineering services for specific jobs
- Provide required assistance to the client during guarantee period
- Setting KPI (key Performance Indicator) to measure the implementation of contracted work
- Technical consultant for supervision & monitoring for facility management
- Report to stakeholders the status, progress & achievement of milestone

Overseas Projects

- Providing Consultancy Services to Oman Electricity Transmission Company (OETC) in Sultanate of Oman, Qatar General Electricity and Water Corporation (KAHRAMAA) in Qatar, Saudi Electricity Company (SEC) in Kingdom of Saudi Arabian, Dubai Electricity Water Authority (DEWA) in United Arab of Emirates, Republic of South Sudan Government, Burundi Government, General Electrical Company Of Libya (GECOL) in Libya and Algerian Energy Company (AEC) in Algerian for Substations, Transmission Lines, Civil Works, Distribution Networks and Power Systems Studies Projects.
- Independent engineer for benban solar power park project infrastructure (substations, OHTL, underground cables, Local monitoring center, roads around the site (ring road) & internal roads
- Independent engineer for supervision & monitoring of facility management (traffic, security, workforce & waste management common roads maintenance & pest control) and fence construction

Major Projects

South Sudan

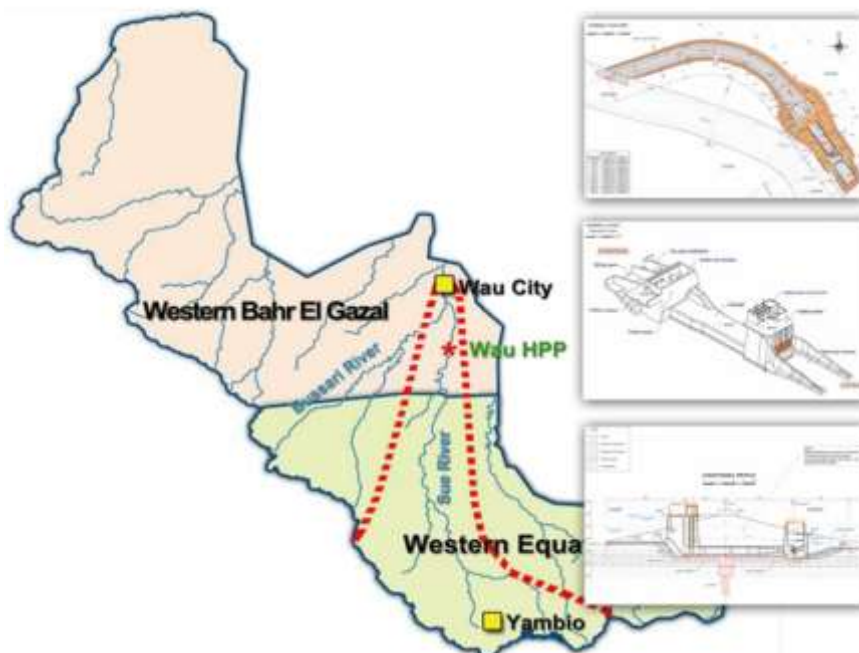
- **Electric Distribution Network of Wau City 15 MW 11 kV**

Completion Date 2012



- **New Wau Hydropower on Sue River Dam with capacity 10.4 MW**

Completion Date 2014





Substation & Transmission Line Oman

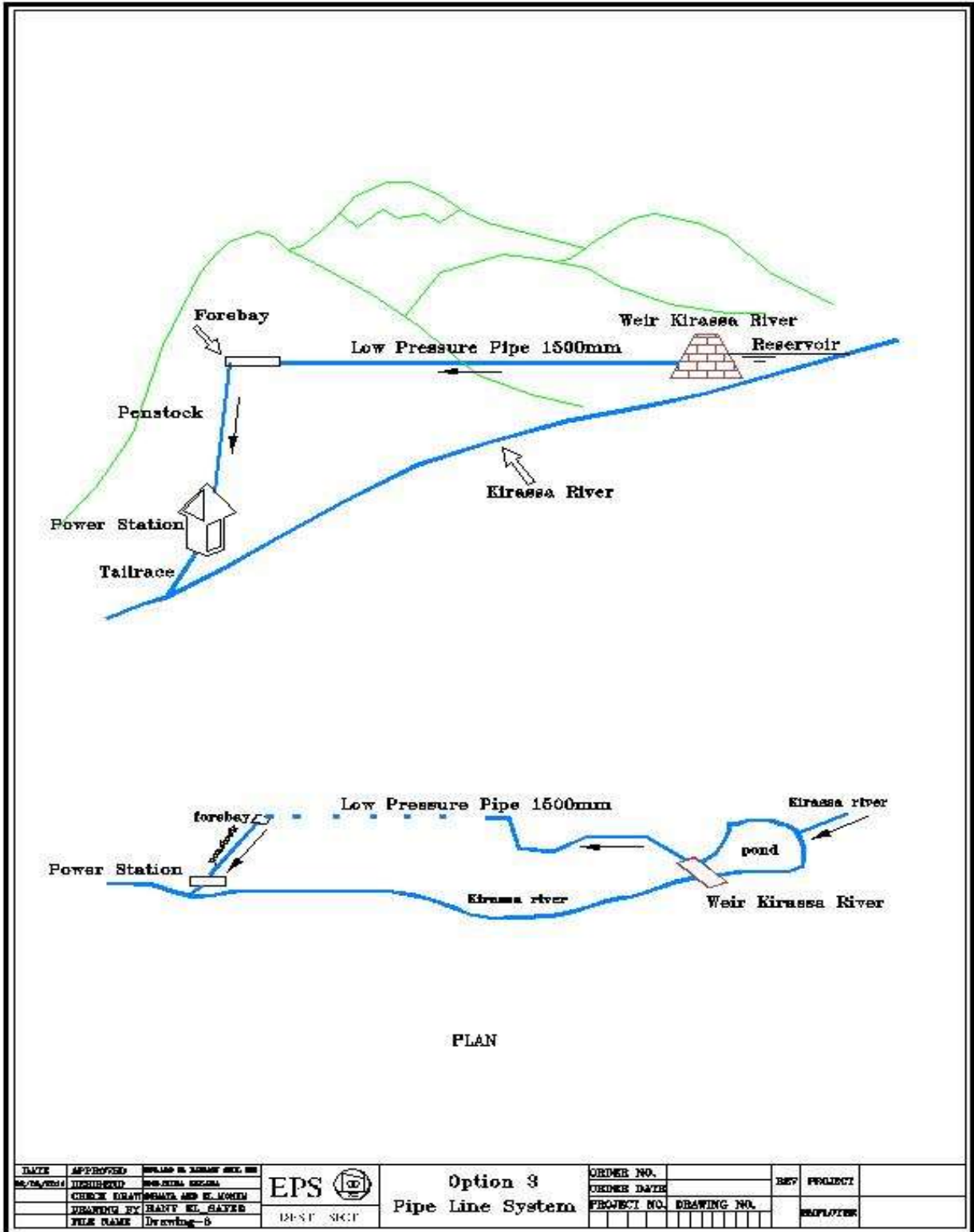


Power Generation & Distribution Sudan

Burundi

Pre-feasibility study for kirasa hydropower project in republic of Burundi

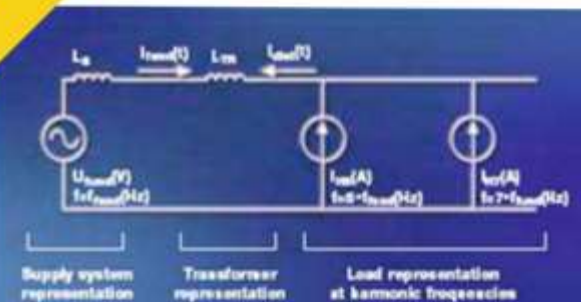




NETWORKS STUDIES



Figure 1.4 Comparison of the current waveform $i_{line}(t)$ with the waveform $(I_{fund}(t) + H5(t) + H7(t))$



- $i_{line}(t)$: The line current flowing between the supply and the load
 $i_{line}(t) = I_{fund}(t) + I_{dist}(t)$
- $I_{fund}(t)$: The load current at the fundamental frequency, determined by the supply system impedance, the transformer impedance and the load impedance at the fundamental frequency
- $I_{dist}(t)$: The distortion current (i.e. harmonics) generated by the load

Figure 1.5 Schematic representation of the harmonic flow for the thyristor bridge load of figure 1.1

Projects served till the end of 2017/18= **352** Projects



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Scope of Work

The Networks studies and control system sector including:

- Network and Technical Studies
- Detailed Engineering Design Services
- SCADA, Telecommunication and Control Systems

1. Network Studies

❖ **Electrical Network Planning Studies**

- A. Load forecast studies.
- B. Planning of high voltage, extra high voltage and medium voltage networks including.

Static studies:

- Load Flow Calculations Study.
- Three Phase and Single Phase Short Circuit Calculations Study.
- Contingency analysis.

Dynamic studies:

- Dynamic studies have been performed to assess the system stability and to establish the stability limits following a set of critical faults on the power system. These studies assess the dynamic performance of transmission system modelling.
- C. Rehabilitation and expansion of electrical power High voltage networks.
 - D. Planning of medium voltage networks including load forecast .

❖ **Interconnection studies**

Interconnection of new and existing substations/power stations studies for the power system high voltage (unified network).

❖ **Interconnection studies for renewable energy plants**

Study the impact of the connection of wind farm generations as well as the solar plant (Static and Dynamic studies)



Projects:

- Gird Impact Study for Al-Subh Solar Project Plants for Three different plots (including static and dynamic studies) according to the Egyptian Gird Code requirement for 50 MW PV Solar projects in Benban for Acciona
- **250 MW BOO** Wind Power Plant Project at Ras Ghareb as a Consultant for the main contractor (Orascom Construction).
- Study the influence of the interconnection of Masder (200 MW) Wind Farm to the Unified Power
- Study the influence of the interconnection of Italgen Wind Farm to the Unified Power System by the year 2013

2. Detailed Engineering Design Services

The detailed Electrical Engineering includes the following activities:

A. Primary Engineering.

In substation projects, the engineering works related to HV design and general installation part (primary engineering) include the following items:

- Substation general layout & buildings drawing
- Substation civil works guide and sizing parameters (Ex: Loads)
- Power Transformers/Reactors/Capacitor Banks Civil work guide
- Steel structure guide (Equipment Supports & Gantries)
- Earthing Grid Calculation Notes and drawings & Earthing of the equipment
- Lightning Protection Calculation Notes and drawings
- Erection (Installation) drawings to be used by site team
- HV/MV/LV cables routing details
- HV Equipment Specification
- Technical purchasing requirements with detailed BOQ & associated technical specifications for the required material (as Cable Trays/Ladders, HV connectors etc.)

B. Secondary Engineering

In substation projects, the engineering works related to LV system control (Secondary Engineering) include the following items:

- HV/MV Substation Single Line Diagram (S.L.D)



- A/C – 380/220V S.L.D.
- D/C -220V S.L.D.
- D/C-48V S.L.D.
- Protection, Measuring & Metering principle S.L.D.
- Interlocking principle drawings (for AIS S/S).
- LV Power Cables Sizing Calculation Notes.
- Batteries & Battery charges Sizing Calculation Notes.
- Aux. Transformer Sizing Calculation Notes.
- LV Power/Control Cables Cable Interconnection & Termination (Cable Book).
- A/C – D/C distribution principle.
- Technical purchasing requisitions with detailed BOQ & associated technical specifications for the required material (LV power and control cables, cable glands, etc.).
- Control & Protection Panel Schematic drawings.
- SAS drawings review and interface.

C. Electromechanical

In substation projects, the engineering works related to Electromechanical system include the following items:

- Substation lighting system (indoor, outdoor, emergency, .. etc.)
- Power sockets and small power (crane, ... etc) system design.
- Substation air conditioning & ventilation system.
- Outdoor fire hydrant system.
- Fire alarm & detection system.
- Indoor firefighting system.
- Water supply and sewage systems for substation includes indoor & outdoor design, manholes, exact root level of each pipe, water tank and sewage tank.
- All related calculations, technical specifications and BOQ

Projects :

- Engineering Works for Benban (3) 500 kV Substation
- 15th of May (220/66/11) kV GIS Substation
- El Narges (220/66/22) kV GIS Substation
- Electromechanical works for wind power plant at Ras Ghareb as a Consultant for the main contractor (Orascom Construction).



- Tameya (220/66/11) kV GIS Substation
- Sharm & Hurghada (220/66/11) kV GIS Substation
- Engineering work for BenBan (1,2,3&4) substations.
- 165 MW FIT projects PV at BenBan

3. SCADA, Telecommunication and Control Systems

EPS participate in the following control centers as a consultant

A. Distribution Control Center

- North Cairo distribution control center
- Alexandria distribution control centers (East – West – Middle)
- Canal distribution control centers (Ismailia – 10th of Ramadan)
- North Delta distribution control center (El-Mansoura)
- South Delta distribution control center (Tanta)
- Middle Egypt (Menya – Asyut)
- Upgrade Canal distribution control center (**Running**)
- Upgrade North Cairo (Helmiya – Damietta – Alex West) (**Running**)

B. Regional Control Centers

- Canal Regional Control Centers (CANRCC)
- Upgrading Upper Egypt Regional Control Center for Nga Hamady, (**Running**)
- Upper Egypt Regional Control Center for Samalout (**Running**)

Software packages:

❖ Networks and Technical Studies:

- PSS/E Ver.34.5 (Power System Simulator for Engineers).
- ETAP Ver.16.0.0(Electrical Transient Analyzer Program)

❖ In Detailed Engineering Design Services

- HAP Ver. 4.9 Hourly analysis program
- AutoCAD
- Revit
- Dialux 4.12
- Cymgrd
- Cymcap

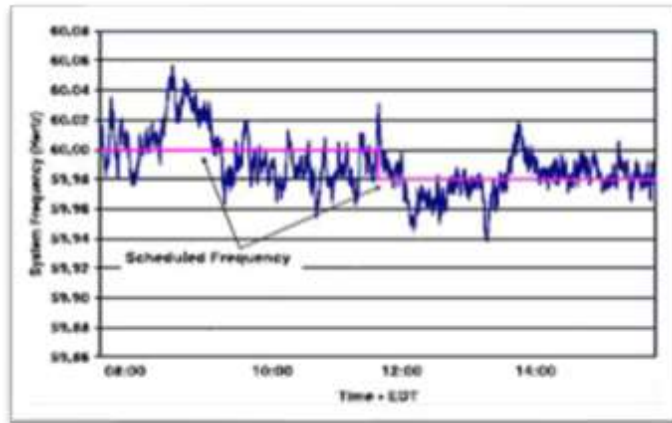


Projects served

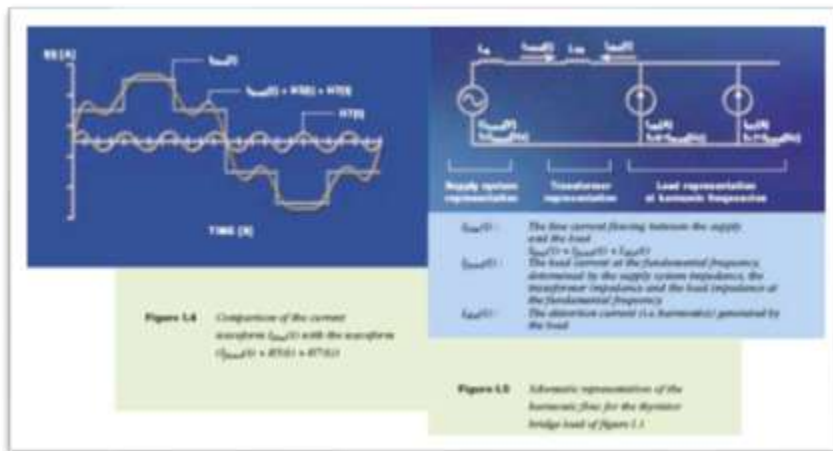
Distributed among the following activities

• Interconnection Studies	25
• Feasibility Studies	12
• Protection Coordination Studies	20
• Network Planning	30
• Network Operation Studies	11
• Load Management	4
• Energy Audit	43
• Load Forecast & Development of Distribution Network	21
• Evaluation & Reduction Method for Technical & Non-Technical losses in Distribution Network	39
• Power Quality Study	4
• Energy Efficiency	9
• Protection Coordination Studies for Distribution Network	5
• Electro Magnetic Effect on Pipelines	2
• Outages & Interruption Studies for Distribution Network	1
• Supervision of Installation & Construction of Distribution Network	1
• Voltage drop and power losses studies	1
• Renewable Energy	7
○ Wind Farm	3
○ Nuclear Power Plant	1
○ PV Plant	3
• Other Studies	64
• Detailed Engineering Design for Substations	14
• Distribution Network Control Centers	16
• Regional Control Centers	2
• Communication Networks	3
• Water Network Control Centers	1
• Control Centers Upgrade Studies	4
• GIS/SCADA Interface	2

- SCADA Adaptation (Installation and Testing) 4
- DMS Training 4

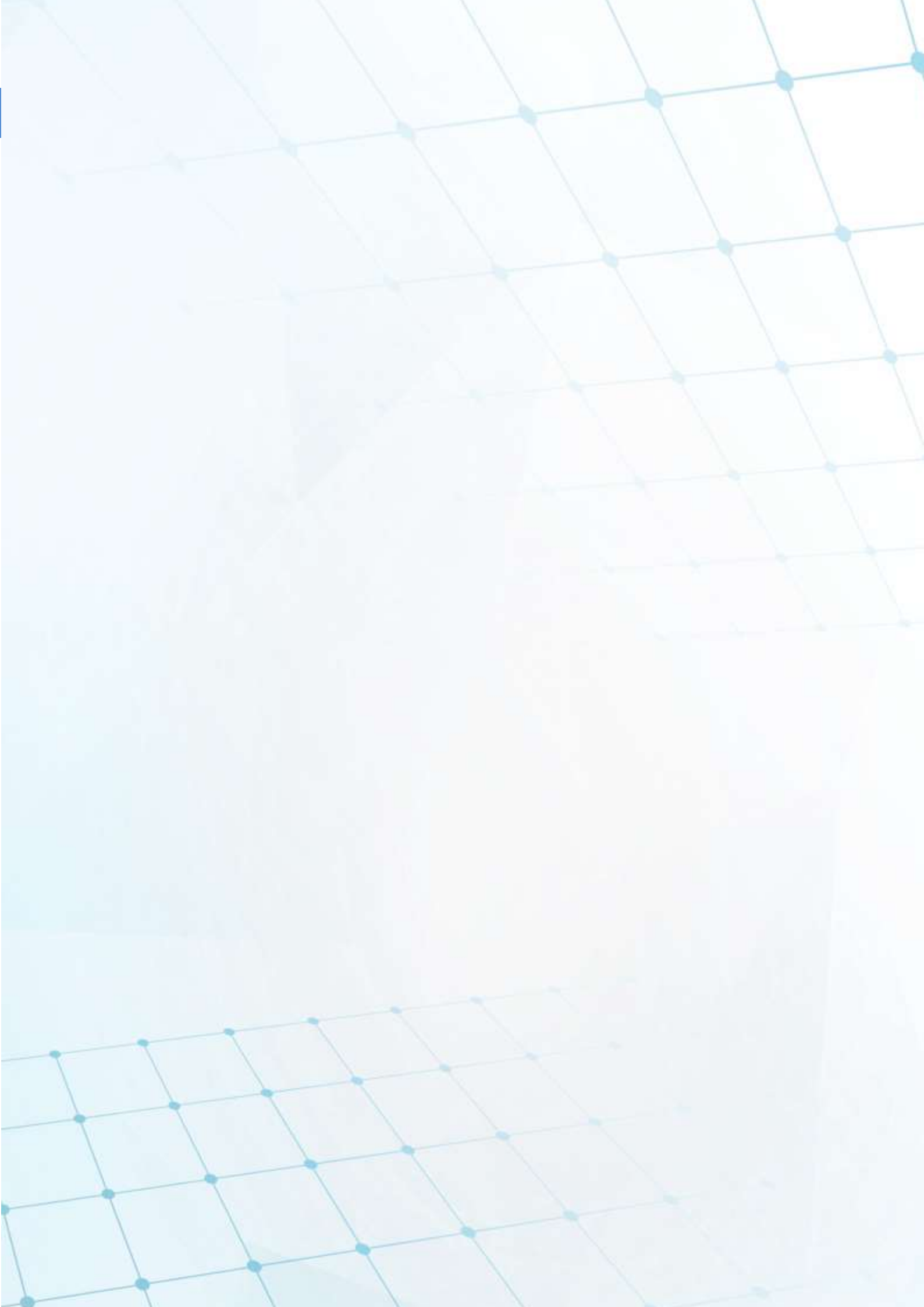


Dynamic Stability Simulation for Load Shedding Study



Quality of Supply Study Measurement of Harmonics & Design of Filters





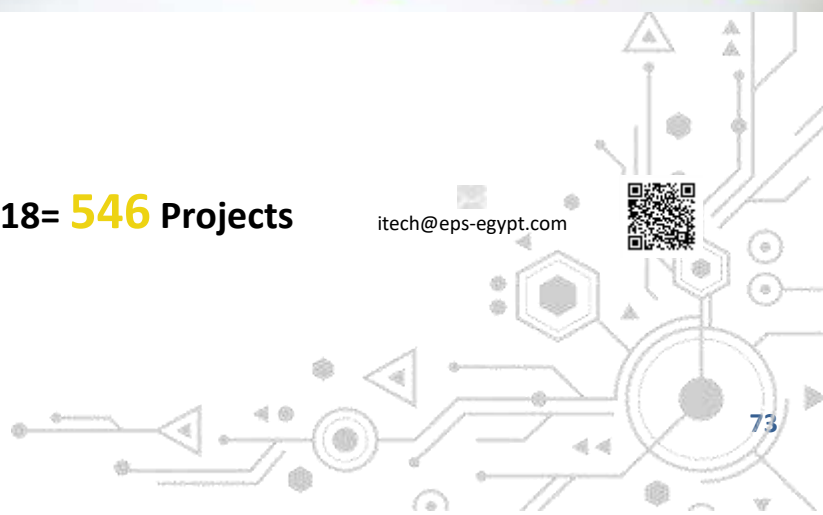


INFORMATION TECHNOLOGY



Projects served till the end of 2017/18= **546** Projects

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The Role

- Take the project through a development cycle, from initial planning to production based on customer needs.
- Developing of Software Integrated Packages (Technical – Finance – Administrative)
- Design and Implementation of Integrated Solutions
- Supplying of hardware (servers – PCs – Printers)

Development Methodologies

- Software Engineering Development Process
- Business Molding
- ERD Diagrams for Database
- Object Oriented Design
- Object Oriented Analysis
- Object Oriented Programming

We are providing a Qualified Technical Support Team for Applications and Databases.

We use the latest technologies of Computers, Servers, as well as the latest release of Databases such as Relational DB SYBASE, MS SQL Server, ORACLE, others

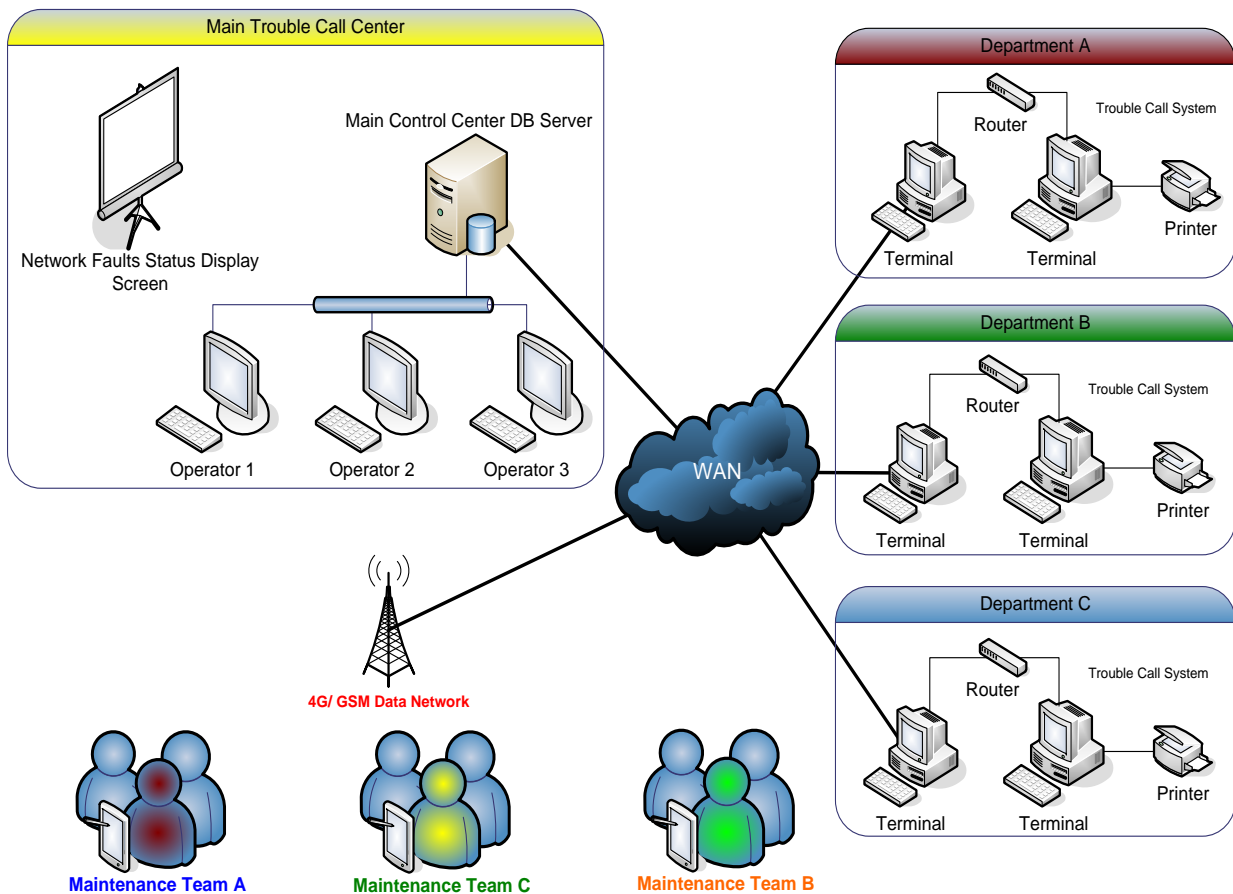
Our Mission

- Development Software Applications
 - Desktop Applications
 - Web Applications
 - Mobile Applications
- Maintained and support Applications
- Network solutions
- Hardware solutions and implementations



The activities as follows

1. Preparation of offers and contracting process and project management
2. Requirements Definition
3. Design
4. Development
5. Integration and Testing
6. Installation in customer site



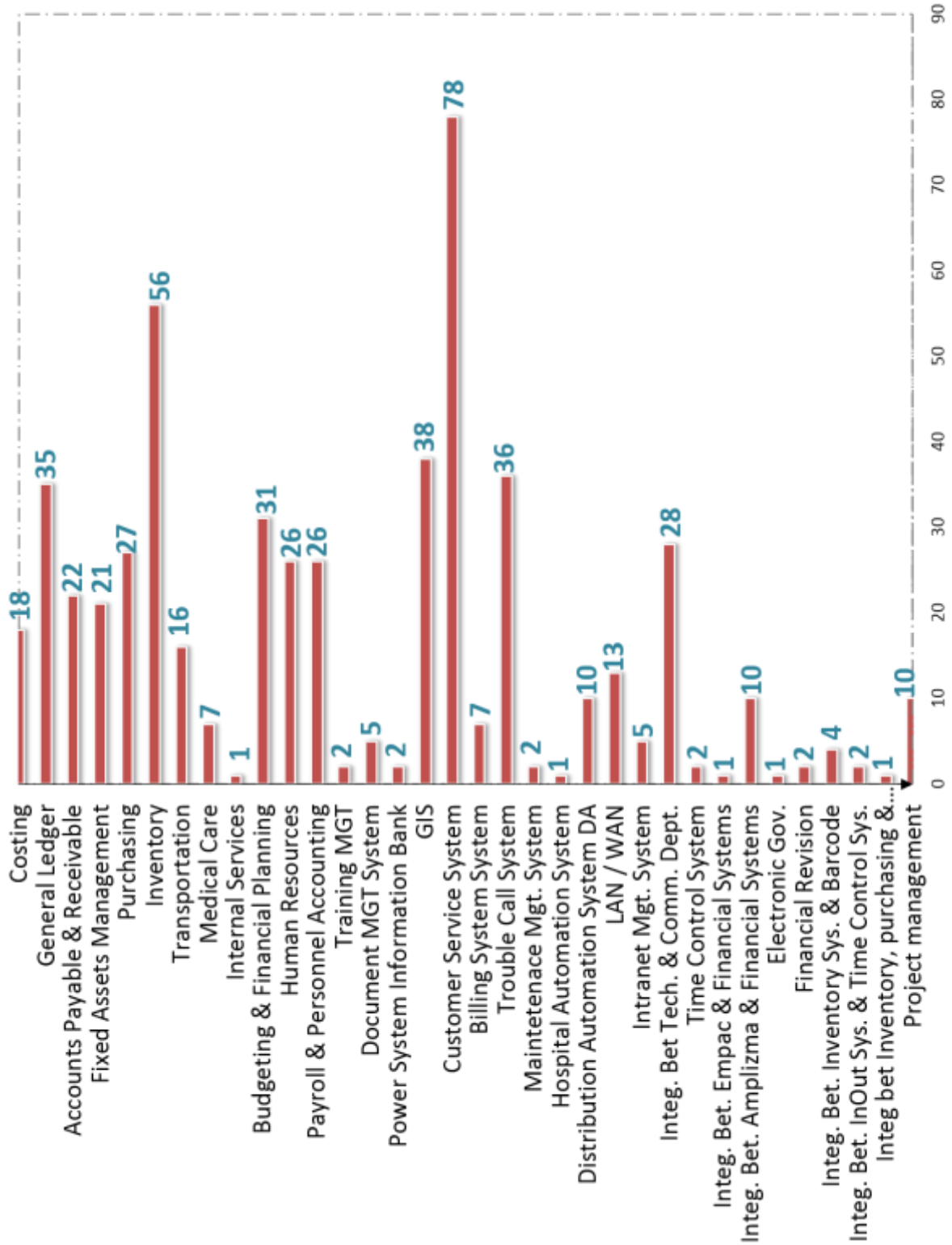
Trouble Call System

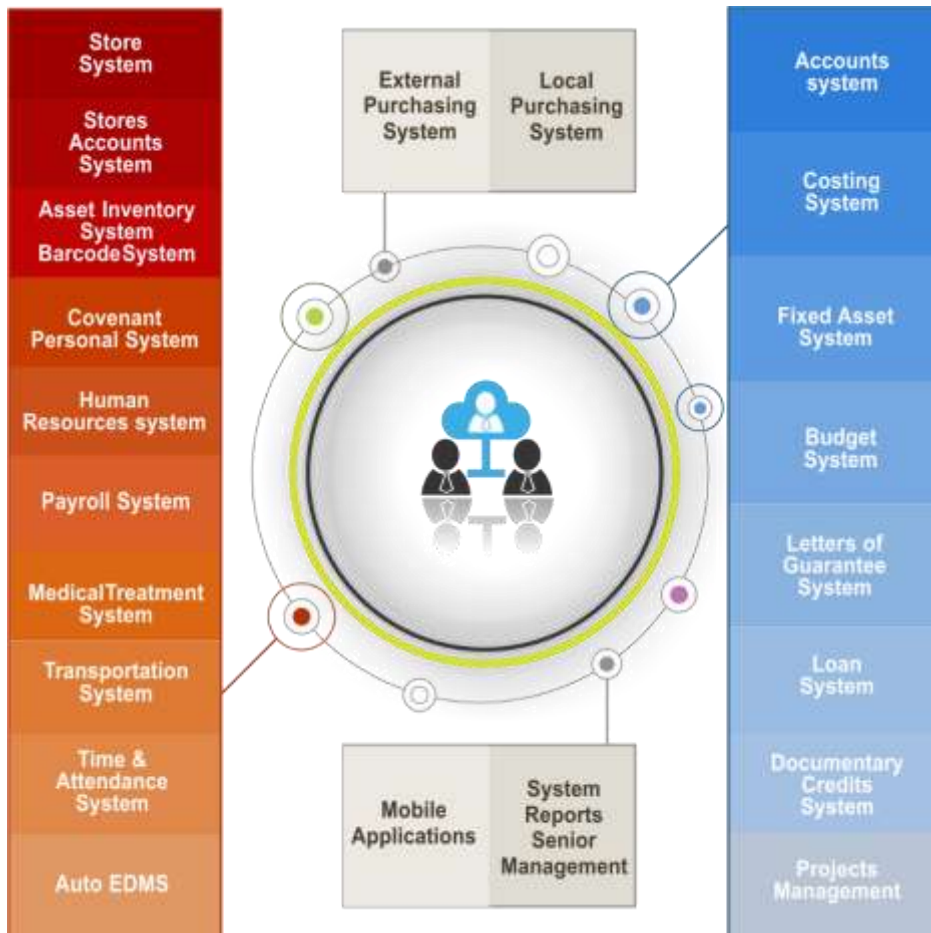
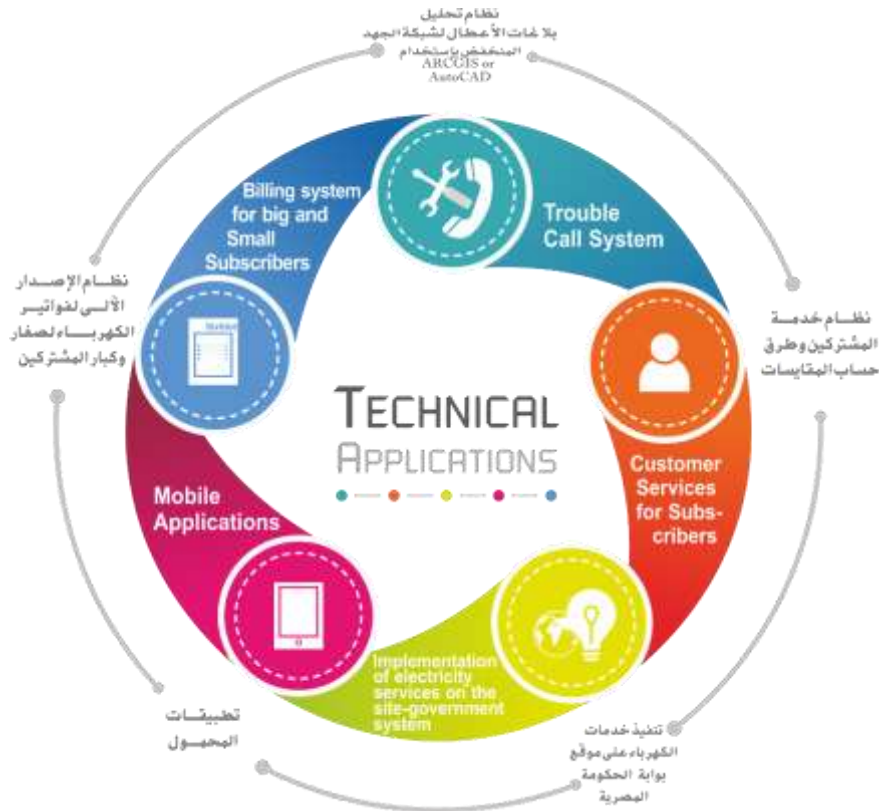




Projects served

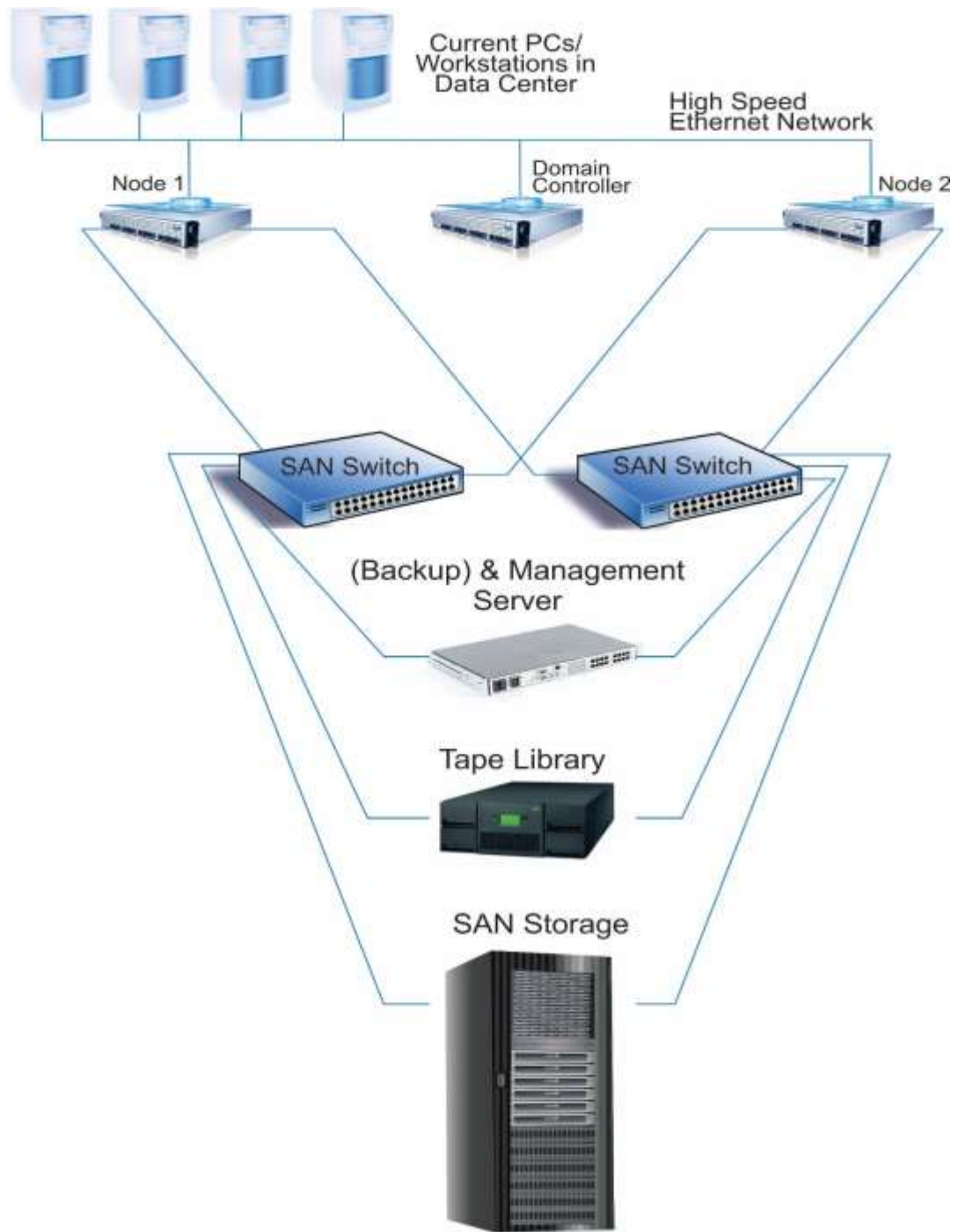
546 Projects





Financial and Administrative Application Systems





Electricity Billing Systems



HR DEVELOPMENT & TRAINING



Services

- Class-Room Training
- On Job Training
- Laboratory Testing
- Field Training
- Software Applications



EPS is providing different training programs. One goal of the training activity is to provide trainees with the specific knowledge and skills necessary to effectively perform their work. The training plan may also include, strategies for marketing. **EPS** training programs covering the fields of Power Stations Projects, Transmission, Distribution, Control Communication, and Information Technology.

Training courses are tailored to meet the needs of individuals, teams and organizations and are customized for developing their skills and improving their innovations and creativity.

EPS has an equipped training facility for formal class-room, and theoretical training. The training programs are structured as a mix of theory, practical experience knowledge, and laboratory experiments.

EPS is using the laboratory facilities available at the Training Centers in Egypt.

The following training programs were provided at **EPS**'s Training Centre:

- Planning of High Voltage Networks.
- Planning of Distribution Networks.
- Protection Coordination for Electrical Systems.
- Maintenance and Operation of Distribution Networks.
- Improvement of the Performance and efficiency of Power Stations .
(Steam, Gas Turbine, Combined, Cycle, Hydraulic, and Diesel Stations).
- Operation and Maintenance of all types of Power Stations.

- Shaft Alignment, Balancing and Vibration monitoring of different types and Power Stations Rotors.
- Operation of Control Centers.
- Geographic Information Systems.
- Modern Transmission Lines Survey using Total Stations.
- Optimum Tower Spotting for High Voltage Transmission Lines using Computers.
- Short Term Unit Commitment for Power Stations.
- Large Scale Project Management.
- Legal Rules and Regulations for Electricity Companies.
- Distribution Networks Design & Planning.
- Safety in substations and switchyards.
- Dielectric oil testing and how to determine the transfer technical state form oil testing results.
- Dielectric gas SF6 testing technical state assignment
- Design and optimization of OHL using PLS-CADD and PLS. Tower SW.
- Electrical network study and planning and network losses reduction.
- Occupation safety and health administration.
- Quality management system documentation control.
- Numerical bay control unit.
- Wireless techniques.
- New generation in telecommunication systems.
- Interfaces between different telecontrol protocols .
- Computerized maintenance.
- Feeder protection, remote terminal units and SCADA systems.
- System grounding design and planning.
- Power feeding for the isolated area far away from the general electrical network.
- Information evaluation.
- Civil survey.
- Using the international standards.
- Power quality improvement for different loads.





- Planning and design methods for distribution for low voltage distribution networks.
 - Study of protection against electrical shocks.
 - Power Quality and energy saving.
 - Electrical network performance implements and new power management .
 - Project Management.
- **Among them 150 Trainees from the General Electricity Company of Libya, 50 from Public Electricity Corporation of Yemen, 45 from Southern Sudan Electricity Corporation (SSEC), 10 from Sultanate of Oman and 515 from Egyptian Electricity and Energy Sectors.**

In addition to the above programs EPS has conducted training in Software applications to the employees of the different customers. Training covered how to run and maintain the application software in addition to databases such as: ORACLE, SYBASE, ACCESS, etc. Also, operating systems such as: Windows NT, Windows 2000, UNIX and open VMS are covered.

- **The Number of Trainees till the end of 2017/18, reached more than 2050 Trainee.**

The Training programs are to be organized at different locations as follows:

- **EPS's** Training Center at Cairo.
- Hotels.
- Customer's premises.
- MEE's and EDCS's laboratories training Centers and site visits to the power utilities.

