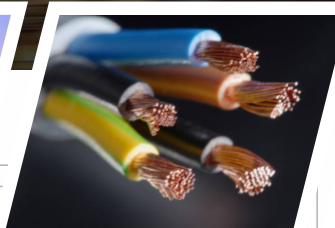
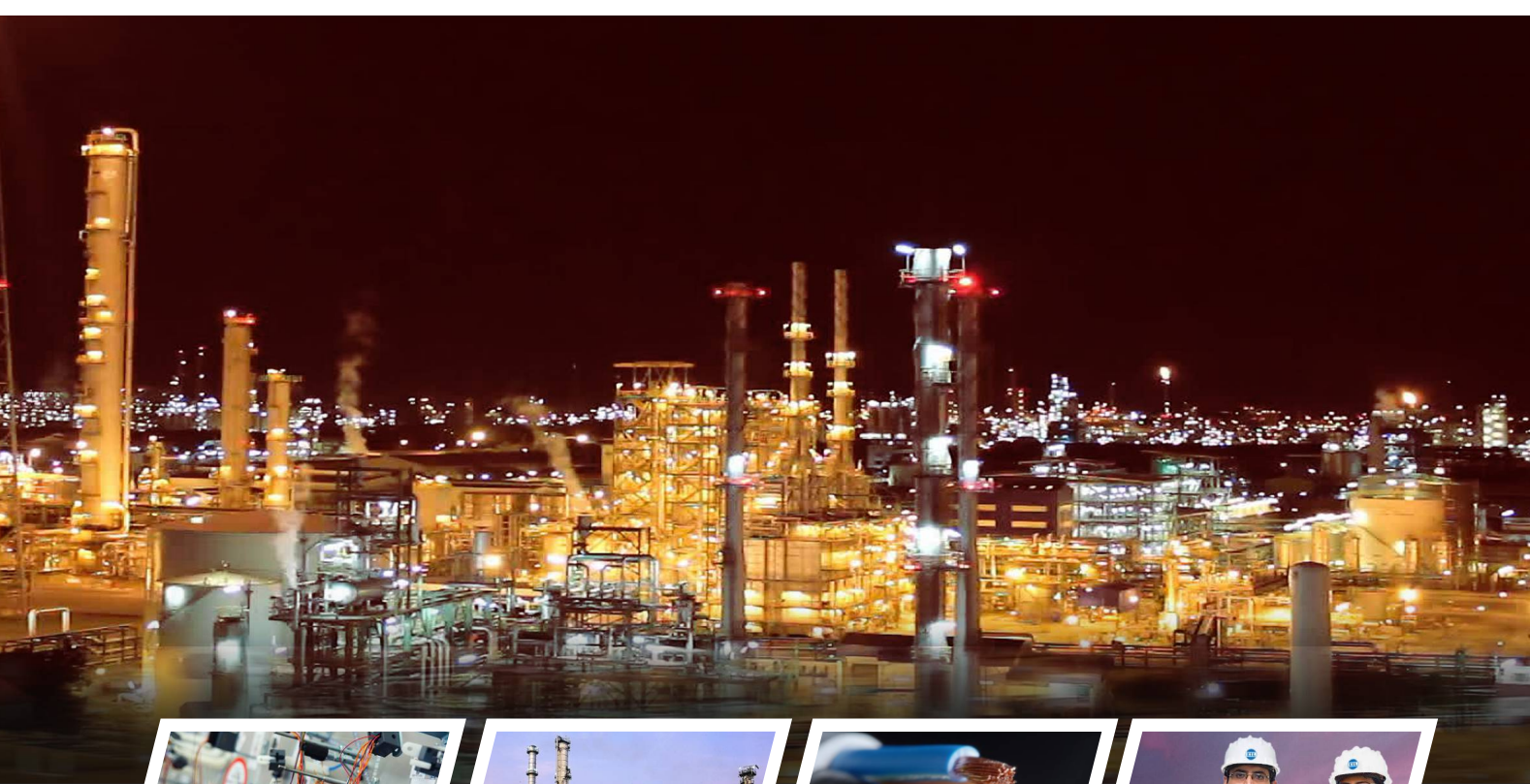




Engineers India Limited

# *Electrical Services*

**Customized Electrical Solutions  
From Concept To Commissioning**





Engineers India Ltd. (EIL) is a leading global engineering consultancy and EPC company. The Company has a diverse portfolio comprising Hydrocarbon, Chemicals & Fertilizers, Mining & Metallurgy, Infrastructure, Water and Waste Management, Solar & Nuclear Power sectors.

EIL has emerged as a 'Total Solutions' engineering consultancy company providing design, engineering, procurement, construction and integrated project management services from 'Concept to Commissioning' with highest quality and safety standards. It also provides specialist services such as heat and mass transfer equipment design, environmental engineering, specialist materials and maintenance and plant operations and safety services.

EIL has successfully completed all projects, all of which are operating smoothly (in most cases at more than rated capacity), and has, hence, created an array of satisfied clients. EIL has secured many repeat

businesses from its clients which is a sign of client satisfaction, confidence and trust reposed in EIL.

**Over the past five decades, EIL has executed more than 5000 projects including over 400 major projects worth USD 200 Billion in "total cost".**

EIL has earned the reputation of being a veritable treasure of technical knowledge, skills and professional competence. EIL has worked with almost all process licensors and a large number of engineering/contracting companies worldwide and our engineers are well versed with international engineering codes and standards. With a workforce of over 3000 experienced employees & a variety of specialised services available under one roof, EIL offers an unique advantage to clients like none other.

**5.6 million available Technical Manhours annually**  
**9,600 available Construction Management and Supervision Man-months annually**

## GLOBAL PRESENCE

Geographical Regions	Key Countries served
Middle East	UAE   Bahrain   Kuwait   Iran   Oman   Saudi Arabia   Qatar   Iraq
Asia / Asia Pacific	Australia   Malaysia   Indonesia   Bangladesh   Vietnam
Europe	Norway   Turkey
Africa	Algeria   Ghana   Kenya   Nigeria   Angola   Sudan   Cameroon

## TRACK RECORD

- 72 Major Refinery projects, including 10 grass root refineries,
- 9 Petrochemical complexes,
- 41 Oil and Gas Processing projects,
- 213 Offshore platforms including 40 process platforms,
- 46 Pipeline projects,
- 13 Ports, Storage & Terminals,
- 9 Fertilizer projects,
- 32 Mining and Metallurgy projects,
- 33 Infrastructure projects (airports, highways, bridges, water management, & energy-efficient intelligent buildings),
- 23 Turnkey/EPC projects.
- Infrastructure Projects
- Power / Captive Power Projects



## Electrical System

A reliable, safe and efficient electrical system is a key requirement for operation of most industrial plants. Engineers India Limited has a specialized Electrical engineering department which is responsible for rendering services from concept to commissioning. Major activities of Electrical Department are Conceptualisation of Electrical System, Project Engineering, Specialized Functions & Standardization, Quality Assurance and Adoption of Newer Technologies.

With enhancement in plant capacities, the complexities of electrical power system are also increasing. Engineers India Limited is fully geared to offer unique solution to meet ever growing challenges such as integration of systems, higher fault levels & complex captive power generation systems.

The outputs from the Electrical department include basic system design, single line diagrams, sizing /selection of equipment, preparation of hazardous area classification, electrical equipment, earthing & lightning protection, cabling and lighting layouts.. 3-D modelling are carried out for process areas using PDS & PDMS softwares.

EIL has been a global player for delivering the electrical system from concept to commissioning for various plants across all major Industries such as Hydrocarbon Sector (Refineries, Petrochemicals, Gas Processing, Pipelines etc.), Chemical & Fertiliser Plants and Metallurgical Plants etc.

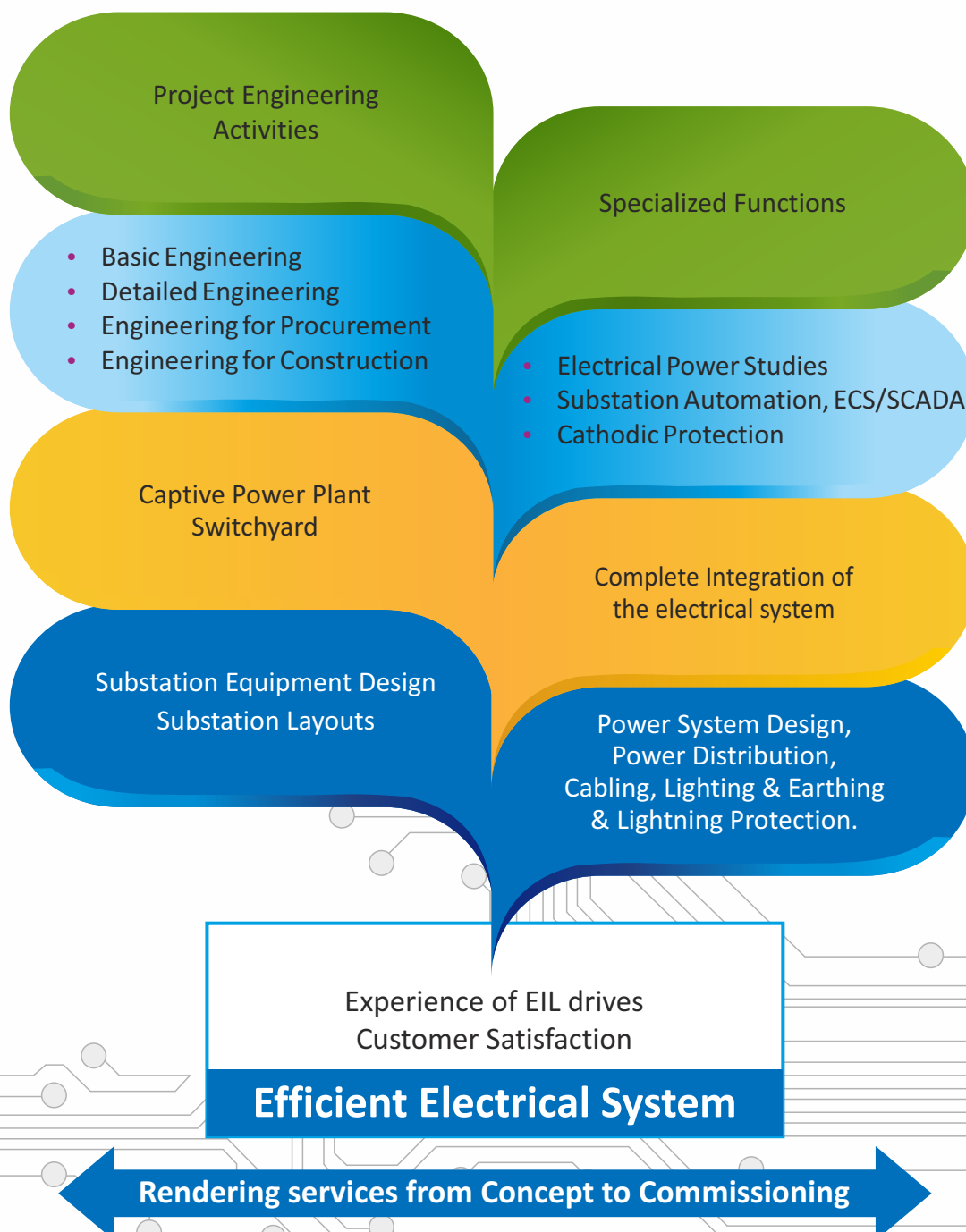
Reliable Electrical System of EIL Ensures Customer Satisfaction by its variety of Concept to Commissioning services for electrical systems.

**Electrical is having human capital of cumulative experience over 900 Years**



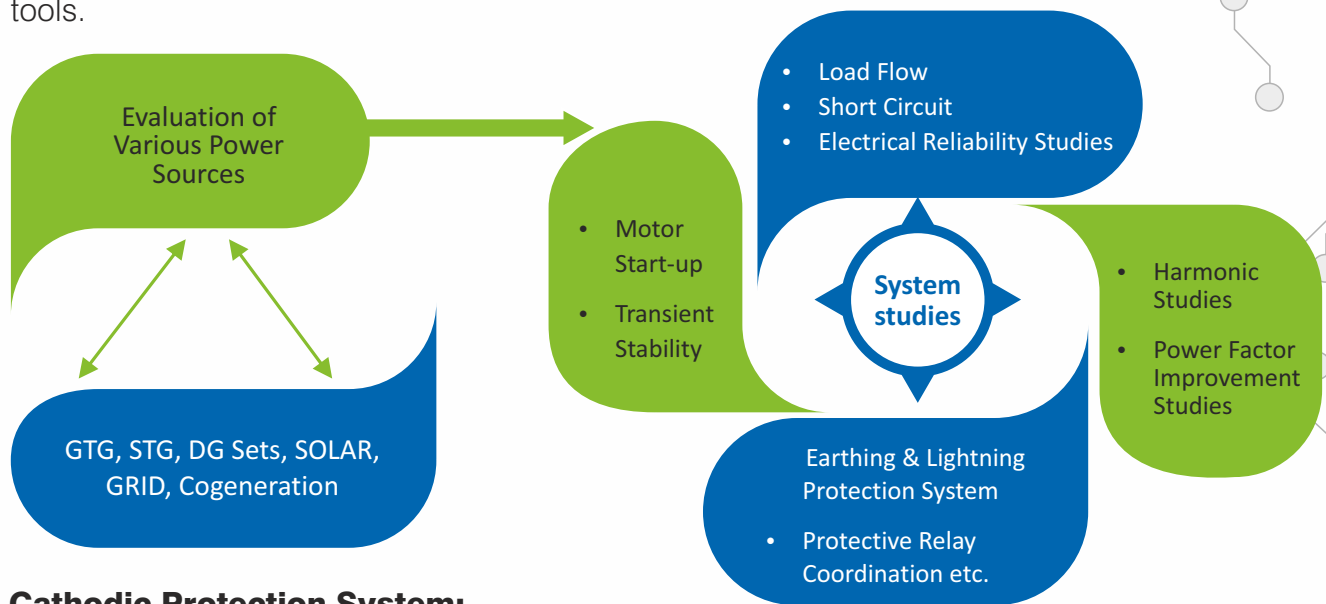
## Concept to Commissioning Services

- Project Engineering activities which includes basic engineering, detailed engineering, engineering for procurement and engineering for construction
- Specialized Services Electrical power system studies, Cathodic protection, substation automation, Electrical Control System (ECS) & SCADA system
- Electrical Equipment Design & Purchase
- Complete Integration of the electrical system. Power distribution, Cabling, Lighting, Earthing systems
- Configuration Studies of Power Plants, Power Plant System Design which include Fault Level Assessment, Load Flow, Motor Start-up, Transient Stability and Harmonic Analysis.
- Renewable Power Systems (Solar- PV & Thermal) using PV System Modelling

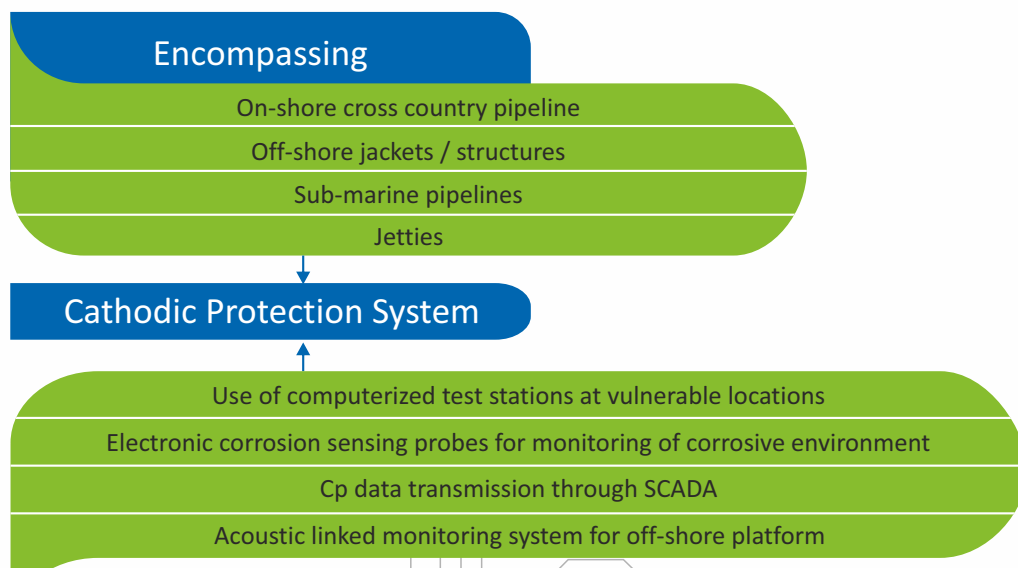




**Electrical Power System Studies:** Utilising ETAP & CYME power system software modelling tools.



### Cathodic Protection System:



Electrical Power System Studies play a pivotal role in conceptualising Electrical System for a Plant / Facility and metamorphosing conceptual Electrical System design into detailed design, evaluating scenarios of its performance under varied normal and abnormal conditions and consequently leading to implementation and realisation of the complete Electrical System envisaged for running a Plant or Facility.

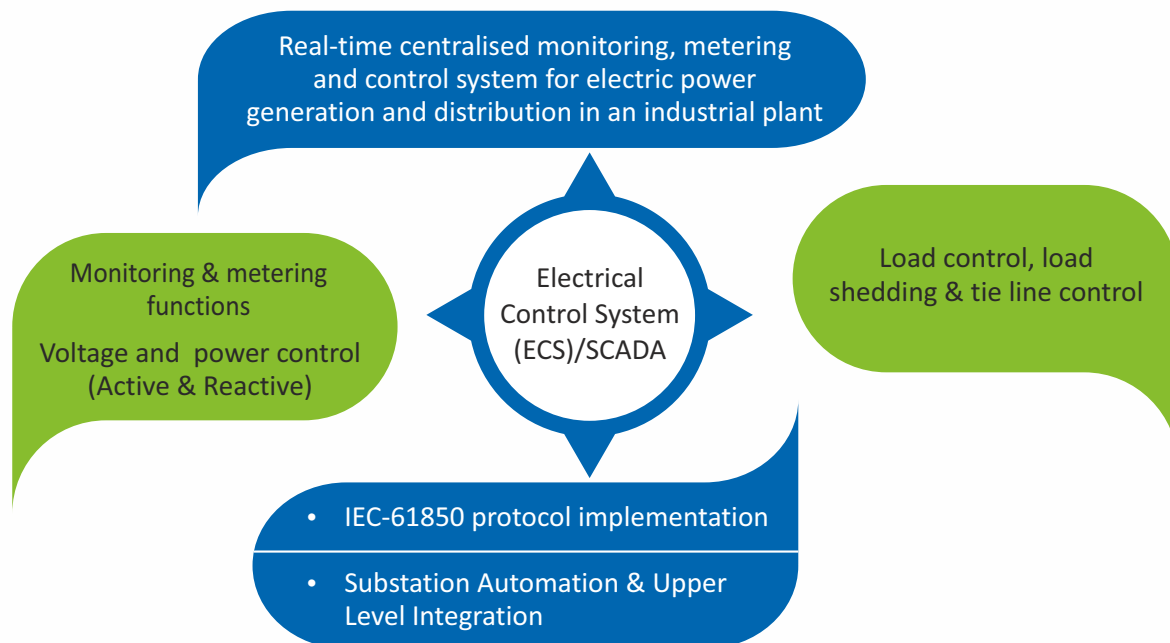
These system studies are pre-requisites for designing of any new electrical system or for any renovation, modernization & expansion plans of a running electrical system, highlighting potential areas of improvements for arriving at solutions for problems being faced in the operations.

Optimum, efficient and reliable Electrical System is paramount in successful running of any Plant. Electrical System Studies does take care of these important aspects.

The power system studies include a comprehensive analysis of the electrical system components by mapping a blueprint of entire system and carrying out a diagnostic of areas of concern. These studies form foundation of basic engineering and serve as guide in the selection of critical parameters of major electrical equipments associated with generation, distribution and utilisation of electrical power including providing guidance in improving power factor. These studies also help out to decide starting method of large motors to arrest intolerable voltage dip during start-ups of large motors. As-Built status of electrical as well as driven equipments can also be simulated through these studies to facilitate formulating critical operating instructions for safe, reliable and optimum Plant operations.

## System Highlights

### Electrical control system (ECS)/SCADA



### Major Electrical Software:

- ETAP software for carrying out Electrical Power System Studies.
- PVSYST software for carrying out solar photovoltaic system simulation.

## Experience & Major Projects

- Experience of executing over 4000 projects of various sizes with the entire electrical system design performed in house.
- More than 40 captive power plant projects have been executed. Experience of electrical systems pertaining to various models of power generation viz. conventional coalbased, gas turbine based simple/combined cycle cogeneration power plants, and diesel/gas engine based power plants.
- A pioneer in rendering service in all the modes of project implementation, i.e., :
  - EPC
  - FEED + PMC
  - EPCM



### Major jobs involving Electrical Control System (ECS):

- PREP – IOCL, Panipat, India
- PNCP – IOCL, Panipat, India
- HMEL – GGSRL, Bhatinda, India
- BCPL – BCPL, Lepetkata, India
- IREP – Kochi, India

Year of Completion	Project	Type of Services	Location	Client
International Projects				
1993	4x30 MW Cogeneration steam and power plant	FEED	Iran	Tabriz Petrochemical Complex
1994	3 Boiler CPP + 3X8 MW STG	FEED	Urea/Ammonia Plant, Khorasan, Iran	Khorasan Petrochemical Complex
1996	2x1.8 MW GTG based power plant offshore platform	FEED & PMC	White Tiger Project, Vietnam	Petro Vietnam
2002	140MW integrated solar combined cycle plant	FEED	Stuttgart, Germany	Fichtner Solar, GmbH
2006	6x160MW Cogeneration steam and power plant, Petrochemical Project	PMC	Bandar Imam, Iran	Fajr Petrochemical Company, Tehran, Iran
2011	1X12 MW Cogeneration steam and power plant, Refinery Project	PMC	Skikda, Algeria	SONATRACH (NAFTEC), Algeria
Domestic Projects				
1997	1X80 TPH oil fired boiler + 1X17 MW STG double ext. cond.	FEED & PMC	Kochi, India	Cochin Refineries Ltd.
1998	1X30 MW GTG + 75 TPH HRSG + 75 TPH UB	FEED & PMC	GPC/Gandhar, India	Gas Authority of India Ltd.
1998	2X30 MW GTG + 130 TPH HRSG Cogeneration plant	FEED & PMC	Numaligarh, India	Indo Burma Petroleum Co. Ltd.
2001	1X 32MW + 100TPH CPP augmentation	FEED	Mumbai, India	Bharat Petroleum Corporation Ltd.
2001	3X40 MW Petcoke Integrated Gasification Combined Cycle Power plant	FEED & PMC	Paradip, India	IOCL
2003	300MW Refinery Residue based Integrated Gasification Combined Cycle Power Plant	FEED	Panipat, India	IOCL/ Marubeni Corporation - JV
2007	4X30 MW Cogeneration steam and power plant, Refinery Project	PMC	Panipat, India	IOCL
2007	3 X 30 MW Cogeneration steam and power plant, Alumina Project	PMC	Lanjigarh, India	Sterlite Industries (India) Ltd.
2009	235 MW combined cycle cogeneration steam and power plant, PNCP	PMC	Panipat, India	IOCL
2011	170 MW Combined cycle cogeneration steam and power plant	PMC	Bhatinda, India	HMEL
2012	111 MW Combined cycle cogeneration steam and power plant, Refinery Expansion Project	PMC	Mangalore, India	MRPL
2010	3X 33 MW Cogeneration steam and power plant, Refinery Project	PMC	Bina, India	BORL
Projects in Progress				
In progress	47 MW Combined cycle cogeneration steam and power plant, Refinery Project	PMC	Algiers, Algeria	Sonatrach (NAFTEC), Algeria
In progress	55 MW Combined cycle cogeneration steam and power plant, Petrochemical Project	PMC	Lepetkata, Assam, India	BCPL
In progress	196 MW Combined cycle cogeneration steam and power plant, Petrochemical Project	PMC	Dahej, India	OPaL
In progress	430 MW Combined cycle cogeneration steam and power plant, Refinery Project	PMC	Paradip, India	IOCL
In progress	Captive Power Plant for Refinery Expansion Kochi BPCL project (3x33 MW GTG + 3x 110 TPH HRSG + 2 x 210 TPH UB )	FEED & PMC	Kochi, India	BPCL

**System study jobs executed:**

Year of Completion	Project	Type of Services	Location	Client
<b>Grass Root Refineries</b>				
1993	System Studies for Panipat Refinery	System Studies	Panipat, India	IOCL
1978	Bongaigaon Refinery	System Studies	Assam, India	BRPL
2001	Mahul Refinery	System Studies	Mumbai, India	BPCL
2001	Haldia Refinery	System Studies	Haldia, India	IOCL
2010	Bina Oman Refinery	System Studies	Bina, India	BORL
2011	Guru Govind Singh Refinery	System Studies	Bhatinda, India	HMEL

Year of Completion	Project	Type of Services	Location	Client
<b>Grass Root Petrochemicals &amp; Aluminium Complexes</b>				
1989/1994	MGCC Nagothane	System Studies	Nagothane, India	IPCL
2001	Dahej Petrochemical Complex	System Studies	Dahej, India	IOCL

Year of Completion	Project	Type of Services	Location	Client
<b>Expansion Projects with system constraints for Electrical System studies as part of expansion Projects</b>				
2005	Panipat Refinery Expansion	System Studies	Panipat, India	IOCL
1983	Guwahati Refinery Expansion	System Studies	Guwahati, India	IOCL
1978/1993	Gujarat Refinery Expansion	System Studies	Gujarat, India	IOCL
1980	Vizag Refinery Expansion	System Studies	Vizag, India	HPCL
2001	Dahej Petrochemical Expansion	System Studies	Dahej, India	IPCL
1982/1986	ONGC Uran Expansion	System Studies	Uran, India	ONGC
2005	Haldia Refinery	System Studies	Haldia, India	IOCL

Year of Completion	Project	Type of Services	Location	Client
<b>Major System Studies jobs executed as independent assignments for third party plants/existing plants engineered by others</b>				
1996	Reliance Industries	System Studies	Hazira, India	IOCL
1997	Reliance Industries	System Studies	Patalganga, India	IOCL
2000	Reliance Petroleum Limited	System Studies	Jamnagar, India	Reliance
2015	Aditya Aluminium Smelter Plant CPP	System Studies	Lapanga, Sambalpur, Orissa, India	Hindalco
2014	Hirakud Aluminium Smelter Plant	System Studies	Hirakud, Orissa, India	Hindalco
Under Execution	TAKREER Abu Dhabi Refinery Abu Dhabi Oil Refinery Co.	System Studies	TAKREER Abu Dhabi, Middle East	TAKREER







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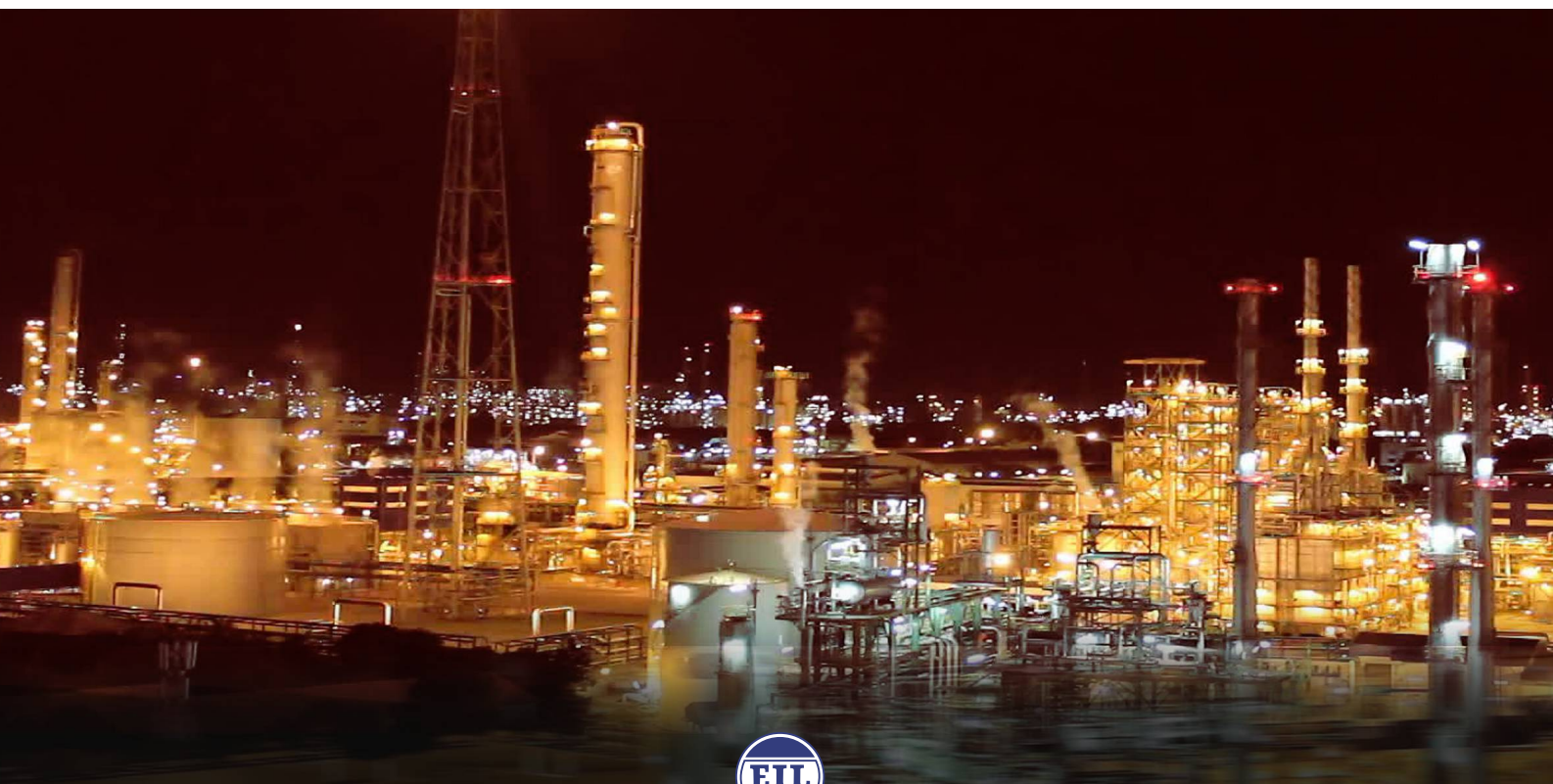
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**Delivering Excellence through People**