



# Specialist Materials & Maintenance Services

## SMMS - THE SPECIALIST DIVISION



## The Company



Engineers India Ltd (EIL) is one of the leading design and engineering organizations in South Asia. Established in 1965, EIL provides engineering consultancy and EPC services principally focused on the oil and gas, petrochemicals, fertilizer and LNG industry segments in India and internationally. The Company has also diversified into sectors like Infrastructure, Water and Waste Management, Solar & Nuclear Power and Fertilizers to leverage its strong technical competencies and track record. EIL is also a primary provider of engineering consultancy services for the GoI's energy security initiative under its Integrated Energy Policy for strategic crude storages.

Today, EIL is a 'Total Solution' 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 & maintenance and plant operations & safety services.

Over the years, EIL has developed a track record of working on landmark projects with various Indian and global energy majors. The Company has provided engineering consultancy and project implementation services for several refinery projects including 10 greenfield refinery projects, 7 petrochemical complexes, 37 oil and gas processing projects, over 40 offshore process platforms, 42 pipeline projects, 13 ports and storage and terminals projects, 8 fertilizer projects and 29 mining & metallurgy projects. EIL has also executed 17 turnkey projects, including refinery and petrochemicals projects and offshore platforms.

EIL has leveraged its strong track record to successfully expand its operations internationally. The Company has earned recognition for jobs executed in several countries of Middle East, North Africa and South East Asia. Most of the major oil & gas companies in these regions like Sonatrach, GASCO, ADCO, ZADCO, KNPC, BAPCO, BANAGAS etc. have utilized EIL's services for their prestigious projects.

EIL's technological excellence is driven by 2950 engineers with a competent employee base of over 3370 employees. The availability of technical resources per annum is about 5.4 million man-hours in EIL's Design Offices along with 7200 man-months of Construction Management Services.

EIL is a technology driven organization which believes that investment in technology is imperative for maintaining its leadership position. The Company's sophisticated R&D center in Gurgaon has developed more than 30 process technologies which include various technologies for petroleum refining, oil and gas processing and aromatics. EIL currently holds 14 patents and has 16 pending patent applications relating to various process technologies.

## The Specialist Division

Specialist Materials and Maintenance Services (SMMS) Division of EIL provides specialist services to the operating plants and Projects in the fields of material selection, welding/fabrication, quality control, failure analysis, corrosion control, cathodic protection and refractories. SMMS undertakes Inspection, Intelligent Pigging, Plant Health Study, Fitness for Service, Remaining Life Assessment (RLA) and Due Diligence of operating Refineries, Petrochemicals and related Industries. SMMS Division is composed of highly qualified and experienced professionals in various specialist disciplines.

SMMS Division is Industrial Member of a number of reputed International Technical Institutes and avail of their expertise, as and when needed, for solving critical problems faced by the EIL clients. These institutes are: -

- **Material Technology Institute (MTI), USA.**
- **National Association of Corrosion Engineers (NACE), USA.**

In addition, SMMS has the unique advantage of availability of in-house expertise in various fields from Process Design Division (PDD), Heat and Mass Transfer Division (HMTD), Pressure Vessels, Piping, Operation & Safety, Engineering Technology Development Division (ETDD) and a vast pool of engineers experienced in different disciplines of Engineering.

In order to provide these services to the clients more effectively at a faster pace, SMMS interacts directly with the client or through our marketing department as per client's need. SMMS services are, therefore only a phone call away! SO CALL US FOR FULL RANGE OF SERVICES AND YOUR SPECIFIC NEEDS.

## Technology Based Solutions to the Process Industries Metallic Material and Corrosion

Materials and corrosion play an important role in Chemical Process Industry. In line with the requirement of the industry, EIL offers specialist services in the following areas:

- Recommend material of construction (MOC) for equipment, piping, pipelines in offshore oil and gas productions and installations, petroleum refineries, petrochemical and gas processing plants. Study the metallurgical aspects of various metals and alloys covering their entire spectrum of fabrication, heat treatment, welding, and corrosion. Development of specifications for carbon steel, duplex stainless steel (DSS), super duplex stainless steel (SDSS) for sour service application, specification for clad piping for refinery application and procedure for hot tapping for installation of branch pipe with the main crude oil pipeline. Carry out failure analysis of material for equipment.
- Material characterization and material degradation evaluation of in-service equipment, pipelines and piping.
- Defect assessment based on most modern and emerging technologies.
- Failure analysis of Equipment, Piping and Pipelines.
- Advice on and assist in the execution of hi-tech welding, fabrication, heat treatment, manufacturing, quality assurance, repair procedures and residual stress evaluation.
- Development of procedures and supervision of hot tapping operation.
- Trouble shooting in the areas of welding, material processing and fabrication, during the phases of procurement, construction and operation of plants.
- Quality audit
- Assimilation and dissemination of latest advancements in materials and welding technologies.
- Evaluation and certification of manufacturing procedure, manufacturing facilities, vendor capabilities and materials.
- Assistance in underwater wet/dry welding repairs of offshore structures and pipelines.



## Cathodic Protection & Pipeline Integrity Assessment



Cathodic Protection (CP) group of SMMS Department provides services for Cathodic protection (CP) of process plants and equipment as well as for cross country pipelines, submarine pipeline, large storage tanks, mounded storage vessels, exchangers, offshore platforms, SPM, jetty piles, Crude oil terminal & RCC structure. Cathodic Protection specialist are NACE International, USA, certified personnel. The services include:

- CP system design & detailed engineering.
- Continuous potential logging.
- DCVG & Current Attenuation Test (CAT).
- Coating Resistance Test.
- In line inspection of oil and gas trunk lines by Corrosion Detection Pigging (CDP) for assessing corrosion and mechanical defects at the internal and external surfaces of pipelines.
- External / Internal Corrosion Direct Assessment (ECDA/ICDA).
- Carbon Dioxide corrosion rate prediction.
- Caliper Pigging (Electronic Geometry Pigging) of Oil and Gas Pipelines.
- Data Interpretation and assessment by using state of the art softwares.
- Cathodic Protection Audit.
- Cathodic Protection System Operation, Maintenance trouble shooting.
- AC and DC Interference Mitigation.

## Asset Integrity Studies & Solutions

Maintenance & Inspection (M&I) group carries out Integrity Studies for static equipment, piping & pipelines and provide solutions for enhanced life of the asset. M&I group also provides:

- Residual Life Assessment (RLA) of Process plants including critical equipment such as columns, reactors, furnaces, vessels, spheres and pipings, employing state of the art non-destructive testing techniques and using internationally reputed softwares.
- End-to-end survey and plant health assessment, by in-depth study of the process, the maintenance and the operational parameters, employing conventional as well as advanced NDT techniques.
- Due Diligence of Refineries, Petrochemicals, Fertilizers and other Chemicals Process Plants.
- Assessment, Reconstruction and Certification of Plants damaged due to Fire and/or Explosions.

## Maintenance and Inspection

- Assessment of Fitness For Service (FFS) of in-service equipment such as pressure vessels, columns, reactors, mounded bullets, Horton spheres, heat exchangers, heaters, boilers and piping of process plants.
- Inspection and recertification of in-service equipment as a competent person authorized by the Chief Controller of Explosives (CCE)/Petroleum and Explosives Safety Organization (PESO), Government of India.
- Development of inspection and maintenance philosophies/system and methodologies for onshore and offshore process units.
- Participation in turn-around inspection of Process industries.
- Advice on maintenance and repair of critical equipment like Horton spheres, pressure vessels, reactors, mounded bullets, heaters, storage tanks, heat exchangers, columns, etc.
- Development of customized PC based inspection systems for recording, retrieval and corrosion trending of plant equipment inspection data and history.
- Advice on moth-balling of plant and equipment.
- Advice on Risk Based Inspection (RBI) and reliability study for Industries.



## Corrosion Prevention and Control

Corrosion Prevention and Control activities demand a thorough knowledge of corrosion mechanisms, materials and latest technological developments. With proven experience and knowledge, EIL offers services in the following areas:

- Specifications, Quality Assurance, Failure Analysis of Industrial Protective, coatings and lining system.
- Design and Engineering of online corrosion monitoring system, both for old and new installations.
- Specifications and assistance during implementation of Industrial Chemical Cleaning System.
- Development of specification of Corrosion Inhibition system.
- Design basis generation and upgradation of all Cooling Water Treatment systems.
- Development of specifications related to qualities of DM water, BFW, Steam & Condensate.



## Refractories and Non-metallics

Refractory & Non metallic group provides specialist services in Refractory, Fireproofing and Insulation. The group can be contacted for trouble shooting services concerning refractory problems and corrosion under insulation (CUI). The group also conducts customized training program in the fields of refractory, insulation and fireproofing. The specialists also have API 936 certification. The services offered include:

- **Design of Refractory Lining System** and detailed engineering
- Material selection and specification
- Design and modification of low thermal mass lining system
- Improvement of refractory lining design for higher efficiency
- Chemical resistant material selection and design
- Drying-out schedule and monitoring
- Quality Assurance services during application
- **Pre-and post drying-out lining inspection**
- Trouble shooting
- Furnace/equipment lining inspection and evaluation during plant shut down.
- Inspection of refractory materials.

### Insulation and Fire Protection

- Cold and hot thermal insulation material selection
- Design of thermal insulation system
- Insulation audit
- **Fire proofing materials selection and engineering**
- Trouble shooting
- Inspection and testing of insulation and fire proofing materials

The group also provides services for indigenisation of refractory/insulation materials and engineering.



## Partial List of Our Valued Customers

### Domestic Clients

- Indian Oil Corporation Limited (IOCL) all Refineries, Marketing and Pipelines
- Oil and Natural Gas Corporation Limited (ONGC), Pipelines, Offshore, Uran, Hazira & Assam
- Hindustan Petroleum Corporation Limited (HPCL), Mumbai and Visakh Refineries
- BPCL Refineries, Kochi, Mumbai
- Numaligarh Refinery Limited (NRL)
- GAIL India Ltd./PATA, Vijaypur, Usar & other Installations
- Haldia Petrochemicals Limited (HPL)
- Mangalore Refinery and Petrochemicals Limited (MRPL)
- Indo Gulf Fertilizers Limited (IGFL)
- Nagarjuna Fertilizers and Chemicals Limited (NFCL), Kakinada
- Chambal Fertilizers and Chemicals Limited, Kota
- Zuari Agro Chemicals Limited (ZACL), Goa
- Union Carbide India Limited (UCIL), Mumbai
- Coromandal Fertilizer Limited (CFL), Vizag
- Indian Farmers and Fertilizers Co-Operative (IFFCO)
- Hindustan Organic Chemicals Ltd., Kochi
- FACT Engineering and Design Organization, Kochi
- Krishak Bharati Co-operative Limited (KRIBHCO), Surat
- South Asia LPG (SALPG)-A Joint Venture of HPCL & Total
- Oil India Limited
- HMEL, HMPL, Cairn Energy, CSTL, GSPL & GSPC



### International Clients

- Kuwait National Petroleum Company (KNPC), Kuwait
- Ceylon Petroleum Corporation (CPC), Sri Lanka
- ENIP, Skikda, Algeria
- Qatar General Petroleum Corporation (QGPC)
- Tupras Refineries, Turkey for IOCL
- Naples Refinery, Italy for MRPL
- QAFCO, Qatar
- Kenya Petroleum Refinery Limited
- GASCO
- NPCC
- ADCO
- SUDAPET-Sudan
- Takreer-Abudhabi
- Indo Rama, Nigeria
- PVSA, Venezuela



## EIL OFFICES

### Registered & Head Office

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