



Engineers India Limited



# Offshore Projects

*High End Technical, Engineering and Project Execution Capabilities Across the Offshore Project Lifecycle*



# PROFILE

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.

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**

# PROFILE

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 green field 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

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 IN OFFSHORE

EIL is a leading service provider of Project Management & Engineering Consultancy services to the offshore business sector. Our services cover the full offshore asset spectrum from new assets to services that sustain and manage operating facilities.

EIL's Ocean Engineering Division was formed in 1971 and has been involved in the development of offshore oil and gas fields in India and abroad since then. Engineers India has wide capabilities for providing full range of services needed to plan, design, engineer, construct and commission offshore projects.

EIL Offshore design experience covers full range of port & offshore concepts such as fixed platforms, light weight structures for marginal fields, utilities & accommodation facilities, TG modules, single buoy mooring system, subsea production system, and Port & Jetty structures.

EIL has worked extensively with ONGC, GSPC and other clients in developing and executing offshore oil and gas projects including various revamp/ reconstruction in India. EIL has provided services for design and development of several submarine pipelines for well fluid, water injection and gas lift.

EIL has been associated with clients in Middle East, Kuwait, Qatar, Vietnam, Norway and Turkey for preparation of FEED and Detail Engineering of new offshore assets and revamping of existing facilities.

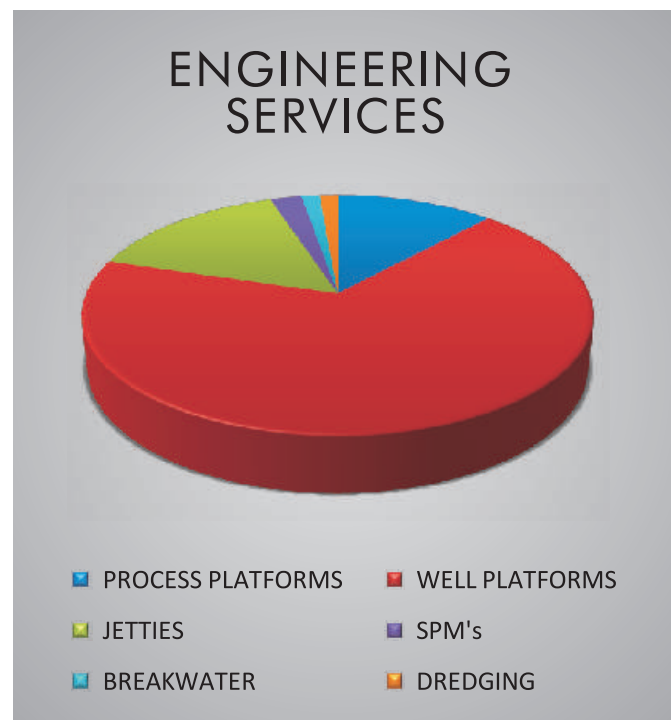
# AREA OF OPERATIONS

## Offshore

- Fixed Platforms
- Oil & Gas Processing Facilities
- Oil & Gas Compression facilities
- Accommodation & GTG facilities
- Utilities & Packages
- Sub-sea production system
- Platform reconstruction and modifications
- SPM

## Ports & Harbour

- Oil, Product & LNG Jetty Marine Facilities
- Oil & Gas Loading & Processing Facilities
- Dredging & Reclamation works
- Breakwater & Shore protection works



# OFFSHORE SERVICES

EIL's global project delivery capabilities brings together high-end technical & engineering skills along with extensive practical experience in project execution to deliver best in class offshore consultancy services. Our offshore services cover the entire gamut of offshore project lifecycle.

## CONCEPT

- Pre-feasibility
- Feasibility Study including conceptualization of facilities
- Process Design and Optimisation
- Basic Engineering
- Front End Engineering Design
- Preliminary Cost Estimates
- Yard facilities assessment and development

## EXECUTE

- Tender Preparation
- Detailed Engineering
- Engineering for Procurement
- Project Management Consultancy Services
- Inspection services
- Supervision during Fabrication and Installation
- Assistance during Commissioning
- Safety Studies & Risk Analysis
- Third Party Inspection & Certification services
- LSTK

## OPERATE

- Topside Revamping & addition of new facilities
- Facility development plan for enhanced recovery
- Developing & implementing special solutions (zero flaring, modular rig)
- Health check & safety audits (life assessment studies)
- Requalification of Offshore Jackets
- Underwater Jacket repairs & strengthening
- CFD studies
- Certification services
- Trouble shooting

Offshore Engineering brings together high-end technical skills alongside extensive and proven practical experience in project execution to deliver best in class engineering solutions for both Greenfield & Brownfield projects. Based on the available diverse global skill sets and drawing on the available experience in multi-disciplinary offshore engineering team gained through involvement in offshore projects across a diverse range of locations and environments, EIL's Offshore Engineering has strong technical competencies providing services to offshore asset owners & operators.

EIL has a dedicated Offshore Construction wing for carrying out construction supervision services at Fabrication yards and during offshore installations.

EIL's Offshore services are supported by a diverse, multi-disciplinary and experienced offshore design team comprising of

- Process Engineering
- Structural Engineering
- Piping Design
- Pipelines Engineering
- Instrumentation & Electrical Engineering
- Mechanical Design: Static, Rotating and Packaged Equipment
- Civil & Architectural Engineering
- Material Science
- Health, Safety and Environment
- Planning and Scheduling
- Cost Engineering
- Project Management
- Safety Studies including Pre-commissioning & Commissioning

## STRUCTURAL ENGINEERING

Offshore structural team comprises of dedicated and experienced engineers fully conversant with all applicable international codes and standards related to offshore industry. Engineers India uses SACS to perform inservice and pre-service analyses of the fixed offshore platforms and jetty structures.

### FIXED PLATFORMS

#### IN-SERVICE

- Inplace
- Dynamic
- Fatigue
- Earthquake
- Ship Impact
- Collapse
- FEA

#### IN-SERVICE

- Pre-service
- Load-out
- Transportation
- Lift
- Launch
- Floatation/Upending
- On-bottom Stability

### PORT & HARBOUR

- Structural design of Jetty Structures
- Structural design of Port Berths
- Supervision of Marine Modelling Studies
- Metocean Design parameters

## GEOTECHNICAL ENGINEERING

- Pile design
- Pile Remedial measures
- Breakwater & Shore Protection Works
- Supervision of Marine Geotechnical Investigations

## GEOPHYSICAL SURVEYS & DREDGING

- Geophysical and Oceanographic investigations.
- Pipeline route & seabed surveys.
- Monitoring and supervision of the site works for Dredging projects
- Review of numerical modeling for obtaining Environmental Design Parameters

# CAPABILITY OVERVIEW



### Green Field Fixed Platforms

Engineers India has an extensive and proven track record in the design of fixed offshore well head and process platforms with piled steel jackets and top side facilities including PGC module, TG module and LQ module. Engineers India is fully conversant with the detail design challenges, safety aspects, fabrication and installation methods for Jackets by launch/lifting methods and topsides using heavy lifts vessels.

200 + Fixed Platforms

### Brown Field Projects

Engineers India's has vast experience in providing engineering services for modification / revamp projects of existing well and process facilities. Modification / revamp include Developing & implementing special solutions for zero flaring and modular rig, Facility development plan for enhanced recovery, debottlenecking, upgrades and Health check & safety audits

Engineers India carries out brown field projects with the same strength and ingenuity as that of green field projects to drive cost and schedule certainty.

50 + Brownfield Projects



### SPM

Execution of SPM projects and associated subsea pipelines through PMC services or LSTK mode including design review, fabrication, installation supervision and commissioning assistance for single point mooring system and associated subsea pipeline for offloading crude from VLCC tankers.

7+ SPM's



## Ports & Terminals

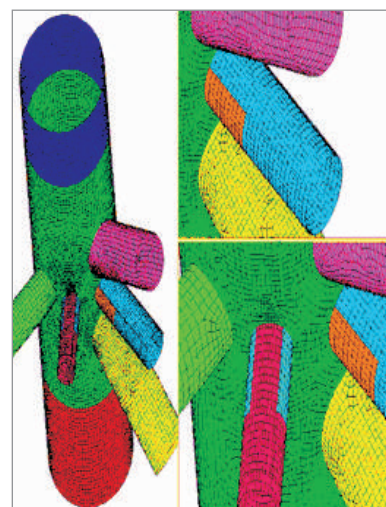
Engineering consultancy and PMC services for Site Selection, Geo physical & Geotechnical Investigations, Feed & Detail Engineering and Construction Management of Jetties and associated facilities for port & Terminal facilities like jetties, tug berths, cargo loading berths & terminal facilities for LNG, Crude, Gas and bulk cargo handling.

13 + Ports

## Specialised Services

Engineers India renders specialized services to clients for

- Requalification study of existing jackets for their "Fit for Purpose".
- Conceptualization and Implementation of zero flaring scheme in offshore process platforms to reduce Flare gas burning based on specific process requirements
- Centralized monitoring & control and Disaster recovery center
- Under water repair solutions to joints/members of jacket structure including FEM analysis of members/joints.
- CFD studies for TG exhaust



Requalification Studies of 90 + Platforms



## INSPECTION, INSTALLATION SUPERVISION and HOOK UP & COMMISSIONING

Engineers India provides inspection & supervision services for fabrication of jackets, topside facilities, SPM, PLEM and port & terminals.

Engineers India also provides hook up & commissioning services for offshore green field and brown field projects including management, supervision and development of detailed commissioning documents.



# CAPABILITY OVERVIEW



<b>PROJECT :</b>	<b>DDW1 &amp; PLQP</b>
<b>Client :</b>	<b>Gujarat State Petroleum Corporation</b>
<b>Location :</b>	<b>KG 8 Basin, India</b>
<b>EIL Role :</b>	<b>Preparation of detail FEED &amp; PMC</b>

Deen Dayal field is located in KG Basin about 15 km offshore from Yanam-Kakinada Coast of Andhra Pradesh. EIL ushered in a new era of technological innovation for High Pressure and High Temperature (HPHT) reservoir in Indian seas

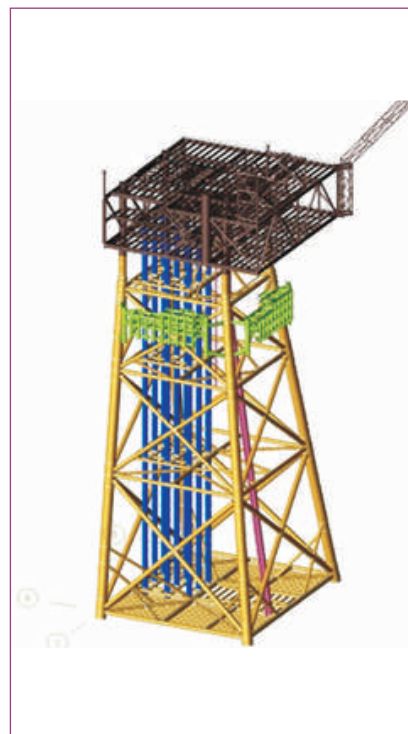
DDW1 is a well head platform with a platform mounted modular rig of 6000 tons installed on a 6 legged jacket.

PLQP is a process platform with a topside weight of 12000 MT consisting of living quarter, TG module and deck in two parts (North and south) installed on 4-legged Jacket.

<b>PROJECT :</b>	<b>Advanced FEED for 2 no. of offshore platforms for Kuzey Marmara Field.</b>
<b>Client :</b>	<b>TPAO</b>
<b>Location :</b>	<b>Turkey</b>
<b>EIL Role :</b>	<b>Engineering Consultant for preparation of Advanced FEED</b>

Advanced FEED includes detail engineering and design to generate an extended FEED for lining up an EPCI Contract for two nos shallow water fixed unmanned offshore platforms, DP-1 and DP-2, and associated subsea pipelines in north of Sea of Marmara off the coast of Silivri/Istanbul.

The project has been challenging as same gas injection platform will work in injection mode from April to October when the domestic gas consumption is low and in withdrawal mode from November to March when the consumption is at much higher levels. Moreover key challenge was to configure appropriate pile design on rock strata. Two staged drilled & grouted pile i.e. drilled insert piles within driven casing pile, are adopted for safe load transfer to the rocky layer.





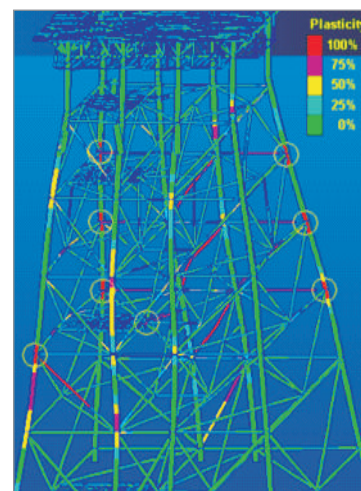


**Location :** Bassien Field, India  
**EIL Role :** Engineering Consultant

Vasai East development project consists the installation of a new 8 legged process platform with HP compressor module, DB compressor module, SB compressor module, building module and deck which are installed on an 8 legged jacket which is bridge connected to existing BPA and BCPA platform. EIL role was preparation of FEED and Engineering Consultant for the execution of the project.

**PROJECT :** Requalification study of 50 platforms  
**Client :** ONGC Ltd.  
**Location :** Mumbai High, India  
**EIL Role :** Engineering Consultant

EIL performed reassessment study for 50 no. existing offshore platforms to ensure that they were "Fit for Purpose" and are safe in operation beyond their design life of 25 years. Push over analysis considering material & geometrical nonlinearity has been performed to evaluate reserve Strength Ratio of jacket structure. Fatigue analysis was carried out to assess the residual life.



**PROJECT :** MNW Process Platform  
**Client :** ONGC Ltd.  
**Location :** Mumbai High, India  
**EIL Role :** LSTK

Detail Engineering and installation of a new eight legged Process Platform having water injection cum gas compression facilities with a topside weight of 8000 MT consisting of MSF, TG module, PGC module, living quarter in Mumbai High North.

Related modifications on BHN and NQO process platforms were also executed under this project.

## Offshore Projects



<b>PROJECT</b>	:	<b>South Oil Jetty</b>
<b>Client</b>	:	<b>IOCL</b>
<b>Location</b>	:	<b>Paradip, Orissa, India</b>
<b>EIL Role</b>	:	<b>PMC</b>

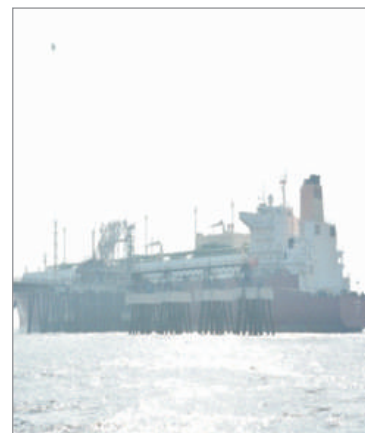
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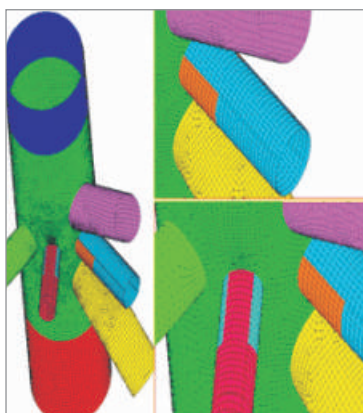
<b>PROJECT</b>	:	<b>Stand By LNG Jelly</b>
<b>Client</b>	:	<b>Petronet LNG.</b>
<b>Location</b>	:	<b>Dahej, Gujrat, India</b>
<b>EIL Role</b>	:	<b>PMC</b>

Stand by jetty at Dahej is exposed to large tidal range & high currents along with rough sea state & wave breaking in intertidal zone. The jetty consists of a service platform with 4 unloading arms, four Berthing Dolphins, eight mooring dolphins, two marine gangways and approach trestle of 2.4 km. The berth caters to tankers from 125,000 to 266,000 DWT.



<b>PROJECT</b>	:	<b>DJ Well Cum Water Injection Platform</b>
<b>Client</b>	:	<b>ONGC Ltd.</b>
<b>Location</b>	:	<b>Mumbai High, India</b>
<b>EIL Role</b>	:	<b>LSTK</b>

Detail Engineering and installation of a new 4-legged well-cum water injection platform "D1", bridge connected to rig Sagar Lakshmi and associated modifications on rig Sagar Lakshmi in Mumbai high field. The well fluid from the production manifold of the D-1 WWI Platform was supplied to Sagar Lakshmi through hose connection at Platform Bridge landing area for well testing and processing. The Processed crude oil is returned back to D-1 WWI Platform for transporting it through sub- sea pipeline to SPM for further off loading.



<b>PROJECT</b>	:	<b>Under Water Welding</b>
<b>Client</b>	:	<b>ONGC Ltd.</b>
<b>Location</b>	:	<b>Mumbai High, India</b>
<b>EIL Role</b>	:	<b>Detail Engineering</b>

EIL as detail engineering consultant for the repair of weld cracks in jacket of IJ, NP, HC, BA & EB platforms performed the FEM analysis of the joints to recommend the strengthening of affected joints to be repaired by Wet welding methodology.

<b>PROJECT</b>	:	<b>SPM Project of MRPL</b>
<b>Client</b>	:	<b>MRPL Ltd.</b>
<b>Location</b>	:	<b>Mangalore, West Coast, India</b>
<b>EIL Role</b>	:	<b>EPC</b>

The project involved of Installation of SPM System, PLEM, Laying of 17.4 km of Sub Sea Pipelines, Onshore Pipelines and Construction of Booster Station, 3 Nos. of Building, Modification of Coastal Terminal Works, laying of onshore pipeline from ISPRL Cavern to Refinery and integration with existing crude tanks.

Installed system is capable of handling VLCC tanker upto capacity of 320000 DWT. With successful commissioning of SPM System, the installed crude handling SPM facilities can handle total capacity of 18 MMTPA crude requirements for refinery at Mangalore.



<b>PROJECT</b>	:	<b>N11/N12 well Head Platform</b>
<b>Client</b>	:	<b>ONGC Ltd.</b>
<b>Location</b>	:	<b>Mumbai High, West Coast, India</b>
<b>EIL Role</b>	:	<b>LSTK</b>

Detail Engineering and installation of 2 new 4-legged wellhead platforms N-11 & N-12 located in the Mumbai High North Field. These platforms are drilling cum production platforms designed to cater for jack up as well as modular rig drilling. The processed oil fluid from these platforms is then transferred to process complex by subsea pipelines for further processing.

Related modifications on 14 no. of well head platforms and 2 no. of process platforms were also executed under this project.

## Offshore Projects



<b>PROJECT</b>	:	<b>Central Compression Platform</b>
<b>Client</b>	:	<b>SHI</b>
<b>Location</b>	:	<b>Vietnam</b>
<b>EIL Role</b>	:	<b>Detail Engineering</b>

Detail engineering for a new six legged Process Platform with a top side weight of 7000 MT consisting of MSF, 5 compressor modules and LQ module

## CLIENTS

### OFFSHORE FIXED PLATFORM

#### DOMESTIC

- ONGC
- GSPC
- BG INDIA
- ENRON OIL & GAS INDIA LTD
- NSTL

#### INTERNATIONAL

- TPAO, TURKEY
- SHI
- QATAR GENERAL PETROLEUM CORPORATION
- ZADCO, ABU DHABI
- ADMA-OPCO, ABU DHABI

### SPM

#### DOMESTIC

- MRPL
- HMEL
- IOCL
- BORL

### PORT & TERMINALS

#### DOMESTIC

- PETRONET LNG LTD.
- IOCL
- GAIL
- HSEL
- BPCL
- HPCL
- KAMARAJAR PORT
- MUMBAI PORT TRUST
- PARADIP PORT TRUST
- GCPTCL
- COCHIN PORT TRUST

#### INTERNATIONAL

- KNPC
- EQUATE
- BRASS FERTILIZER, NIGERIA



# SELECT OFFSHORE PROJECTS

CLIENT /COUNTRY	PROJECT	TYPE	YEAR	DFR	FEED	BID PACKAGE	DETAIL ENGINEERING	EPC	PMC/ Engineering Consultant
ONGC, India	Revamping of unmanned platforms Phase-II	Platform	Ongoing		•	•			•
ADMA-OPCO, Abu Dhabi	Upgrade of SLOPS and Drains at USSC	Platform	Ongoing				•		
Brass fertilizer, Nigeria	PMC services for Brass fertilizer	Jetty	Ongoing						•
TPAO, Turkey	Kuzey Marmara Advanced Feed	Platform	Ongoing		•	•			
HSEL, India	FEED for 5MMTPA LNG Terminal	LNG Jetty	Ongoing		•	•			
ONGC, India	BPA, BPB Reconstruction Project Phase-II	Platform	Ongoing		•	•			•
IOCL, India	South Oil Jetty Project	Oil Jetty	Ongoing					•	
PLL, India	Dahej expansion Project(Phase-IIIA)	LNG Jetty	Ongoing						•
ONGC, India	Water Injection South (WIS) Revamp Project-1 no new process platform	Platform	2015		•	•			
GAIL, India	Ethane Import facility for PATA plant	Jetty	2015	•					
ONGC, India	D-1C platform, Pile remedial measures	Platform	2014		•	•	•		•
ONGC, India	Requalification of Jackets	Platform	2014						
GSPC, India	PLQP	Platform	2014		•	•	•		•
GSPC, India	Wellhead platform DDW1	Platform	2014		•	•	•		•
ONGC, India	WIN REVAMP	Platform	2013		•	•			•
ONGC, India	NQ-RC Ph-II project	Platform	2013		•	•			
PLL, India	FEED for 5MMTPA LNG Terminal, Gangavaram	LNG Jetty	2013		•	•			
IOCL, India	SPM & Associated Facilities	SBM	2012		•	•			•
MRPL, India	SPM and Associated Facilities	SBM	2013		•	•		•	•
NSTL, India	MAINAK Platform	Platform	2012	•	•				
ONGC, India	Cluster-7/WO-16 Well Platform Project	Platform	2011		•	•			
ONGC, India	Vasai East Development Project	Platform	2009		•	•			•
ONGC, India	D1 Well head Platform	Platform	2005					•	
ONGC, India	MNW Process Platform	Platform	2004					•	
ONGC, India	N11/N12 Well head Platforms	Platform	2003					•	



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**Delivering Excellence through People**