

Dynamic & Innovative
ZENTECH E & C





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C.E.O's Message

Zentech E&C Co., Ltd. has established in November 2012 for performance of global engineering to advance technology of onshore and offshore engineering that require high technology.

Our company does service an advanced technology to client based on the many engineering experiences for extensive business field such as offshore-onshore platform, offshore wind. Wave/current power plant, pipeline and SPM, LNG Plant and LNG FSRU, oil tank farm, harbor, shipyard, marina etc.

Our company members have good dream for offshore and civil engineering to achieve the top of world engineering company with endless passion, development of new idea, spirit of progressive challenges. We are promise to you that any requirement of client will meet with good quality time.

I ask for your constant interest and support.
Thank you!

Zentech is always ready to meet an new challenge



Choi, Byeong Ryeol / CEO

A handwritten signature in black ink, consisting of stylized, fluid strokes that represent the name Choi, Byeong Ryeol.

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ZENTECH E & C

History

■ Establishment & Business Build-up

Oct. 2003	Establishment of Korea Constructuion Appraisal Institute Research
Nov. 2012	M&A of KCAIR and Company was changed to Corporation Limited - CREST E&C Co., Ltd.
Mar. 2013	Establishment of Company Research & Development Center
Jan. 2014	Certified ISO 9001 from URS(United Register of Systems) Certified ISO 14001 from URS(United Register of Systems)
Nov. 2015	Certified as Venture Business Company
Dec. 2015	Registered as Engineering Activities
Dec. 2015	Registered as International Contractor
May 2016	Company Name Changed to ZENTECH E&C Co., Ltd.

■ Business Diversification & Global Expansion

Mar. 2015	Business Agreement with "PGN LNG" in Indonesia.
Oct. 2015	Business Agreement with "MECON" in India.
Jul. 2017	Business Agreement with "Bashundhara Group" in Bangladesh.



Vision

Zentech aims to become a world leader in technology by securing technological excellence, safety and integrity through bold technological innovation and research and development and solving technical difficulties. By combining eco-friendly energy technology, we aim to design an affluent future where nature and people coexist.

Values

Innovation

Zentech has been continuously developing new technologies and improving the completeness of the project by combining new technology with the change of the times.

Globalization

Zentech is continuously striving to develop technology and human resources to pioneer the world market, and is leading the way to promote domestic technology to the world.

Integrity

Zentech is committed to fairness and transparency in all its business with its customers and partners, in a sincere manner.

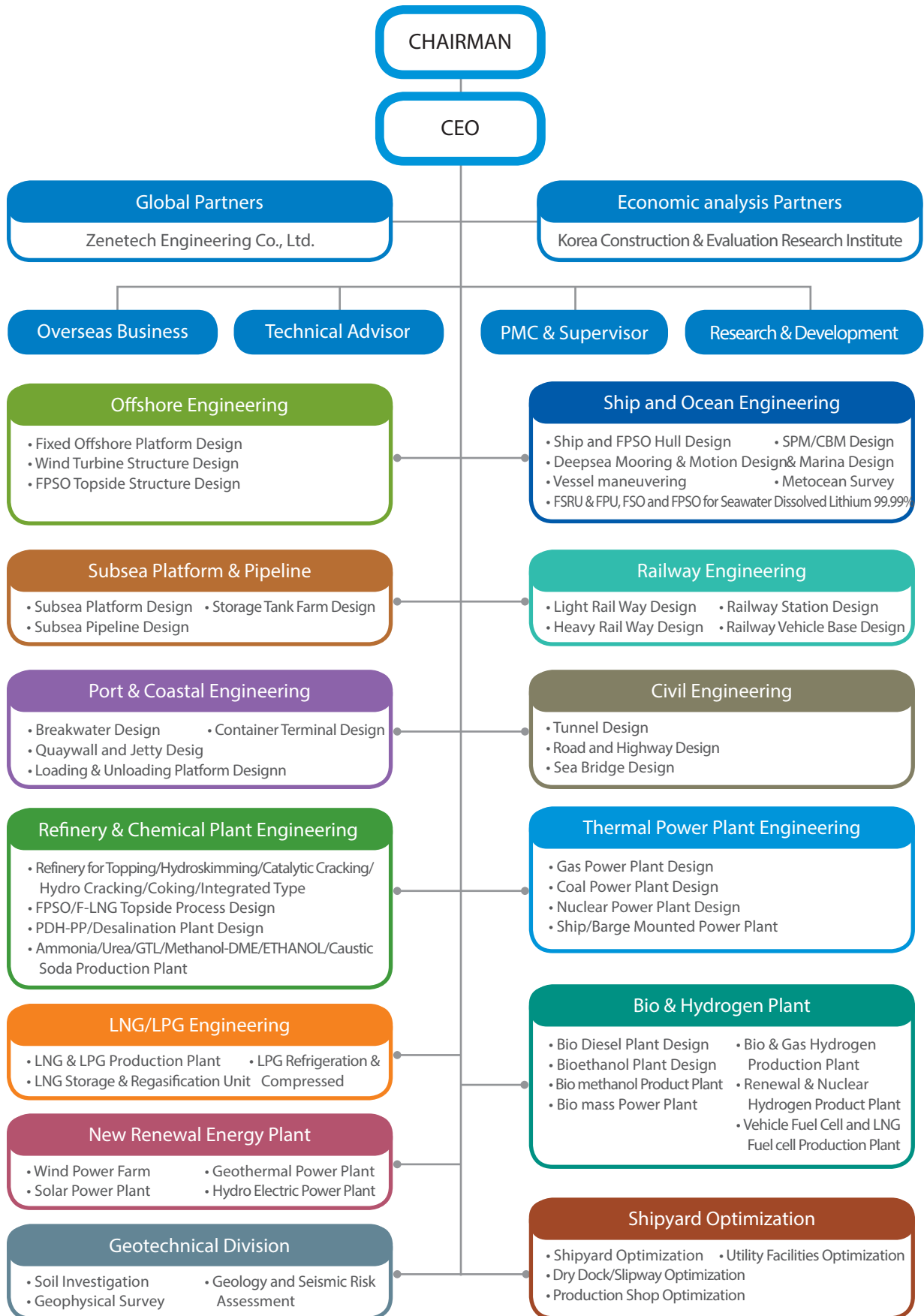
Originality

Zentech's employees are moving away from the stereotypical thinking, analyzing customer needs with new perspectives and finding ways to perform for project more efficiently.

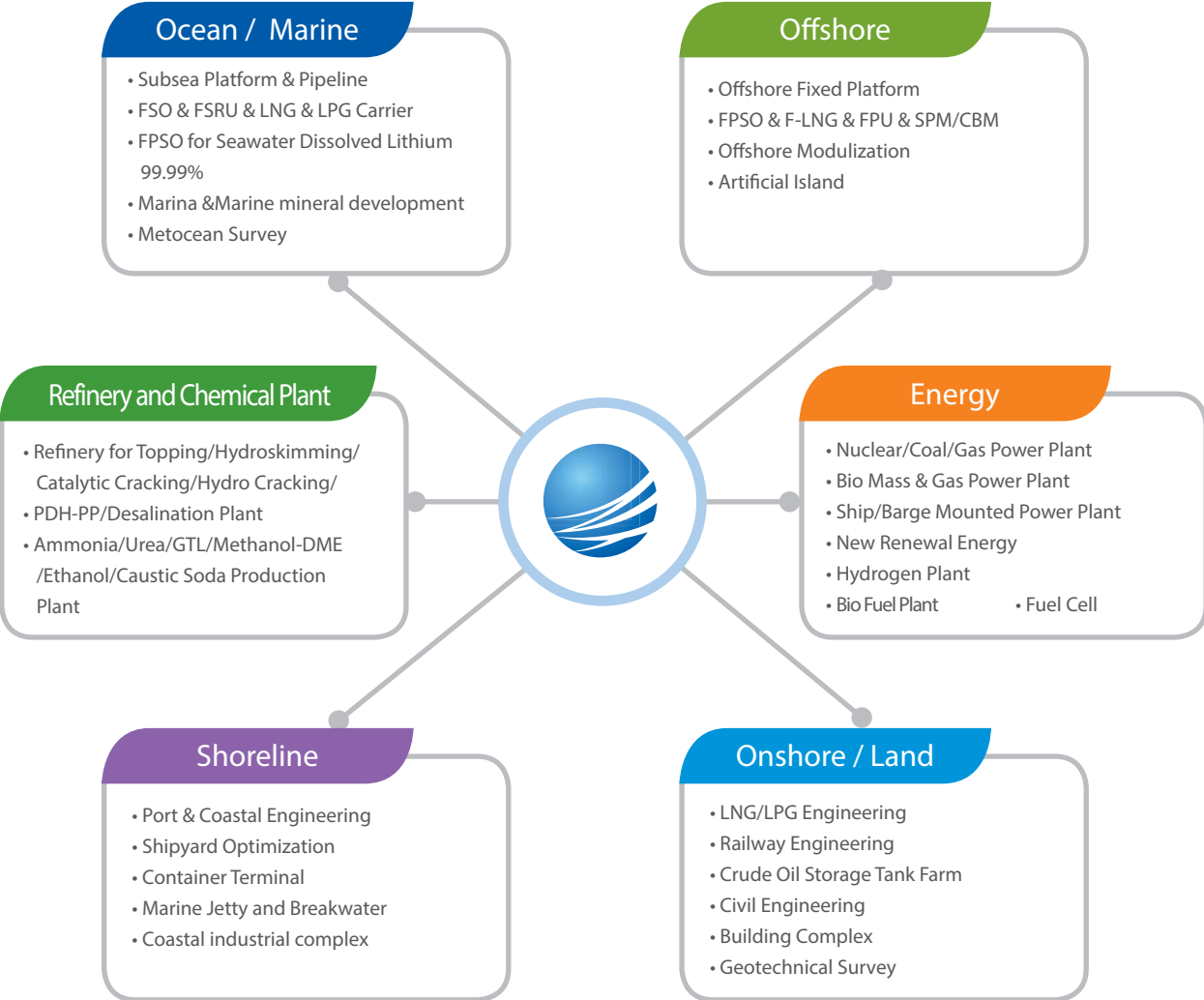
Challenge

Zentech is not satisfied with reality, has been challenging new fields and has created opportunities for itself.

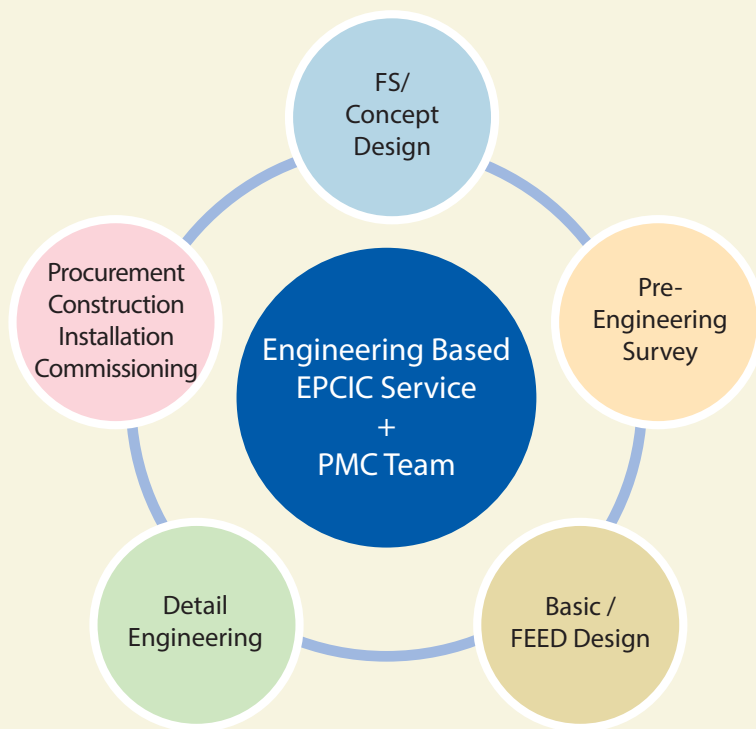
Organization of ZENTECH



Chain for Services Organization

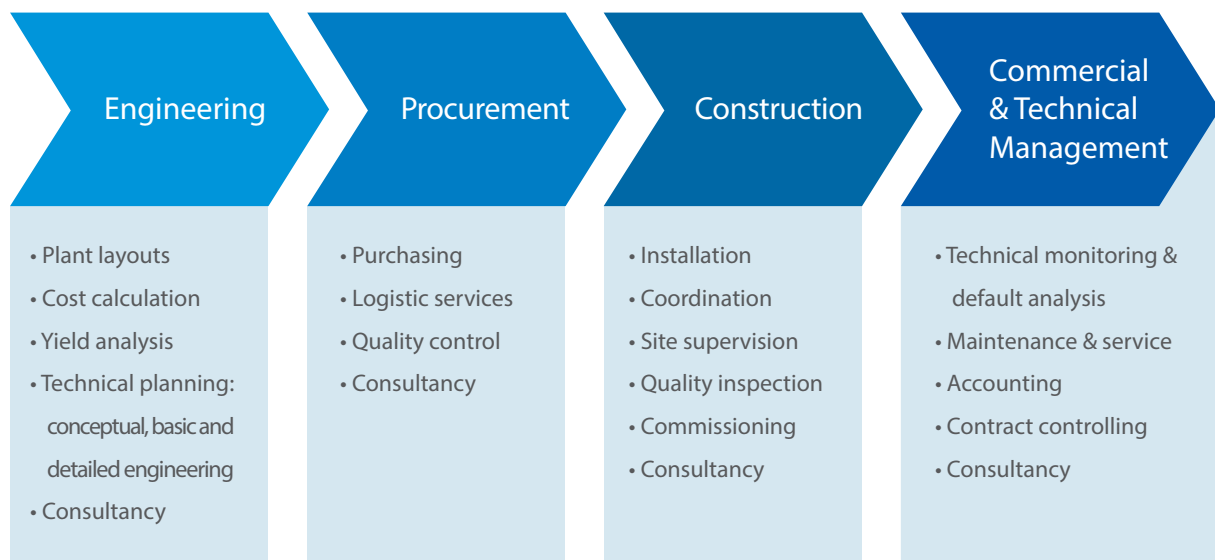


Engineering Based EPCIC Service



- Concept Design should be performed for Determination of Suitable Type for Marine Facilities
- Pre-Engineering Survey (Bathymetry, Geo-physical/ technical, Topography and Metocean Survey) to be performed for Actual Site Information
- Basic & FEED Design should be performed for determination of optimum type of LPG Receiving Terminal and Reasonable Construction Cost Estimation.
- Detail Engineering need to be performed for successful construction.
- PCIC can be managed by Own Strong PMC team considering cost effective PCIC since Engineering based EPCIC Service is very flexible to use a local contents.

Project Management Consulting Service



Offshore Engineering

Our division of Offshore Engineering Provides a variety of design solutions for all types of offshore structures, including fixed and floating structures.

We offer a solution to optimize safety of structures in order to increase customer satisfaction after examining various design ways about all conditions occurring in the sea.

We can provide one-stop solution for all processes such as manufacturing, transportation, installation and operation of offshore structures using minimizing time and costs.

We also services of optimization solution for Fixed Offshore Platform, Wind Turbine Structure and FPSO Topside Structure for our clients.

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.



Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Pre-services and In-place Design
 - Helideck Desig
 - Seismic and Fatigue Design
 - Blasting Simulation
 - Collision Analysis
 - Blade Simulation for Wind Turbine
 - Corrosion Assessment
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - Production Topside Process Simulation, E&I and Communication System Design
- Construction Design
- Construction Engineering for Fabrication and Installation



- Heat & Material Balance Analysis
- PFD and P&ID Design
- HSE Design
- Risk and EIA Assessment
- Related Specification
- Transportation and Installation Procedure for Float-Over and Float-Off
- RFQ and Procurement Services
- Drawings

Engineering Services & Major Experiences



NASR Project (Abu Dhabi)



Bergading Project (Malay)



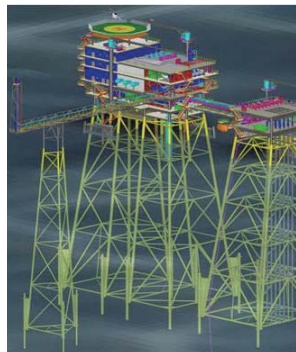
Badamyar Project (Myanmar)



Ichtys Project (Malay)



Leodo Project (Korea)



Maersk Oil Project (Qatar)



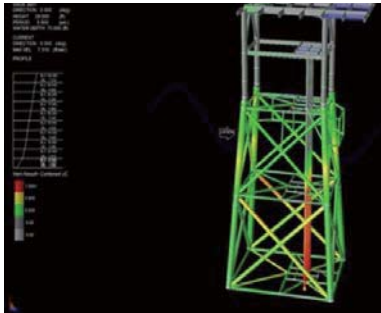
Moho-Nord Project (Congo)



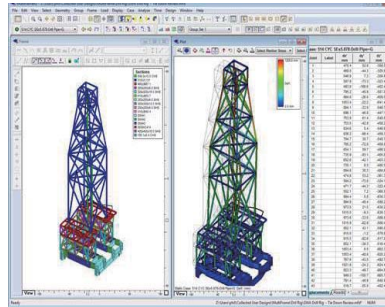
Moho-bilondo Project (Congo)

Specialized Analysis

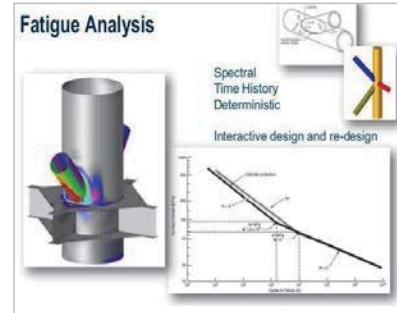
In-Service Analysis



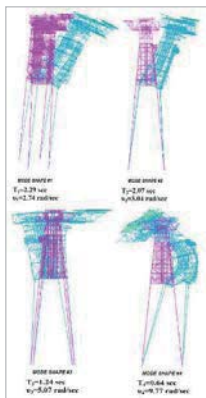
Static safety analysis



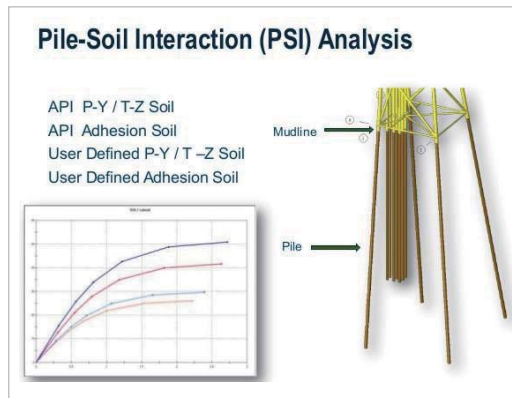
Seismic analysis



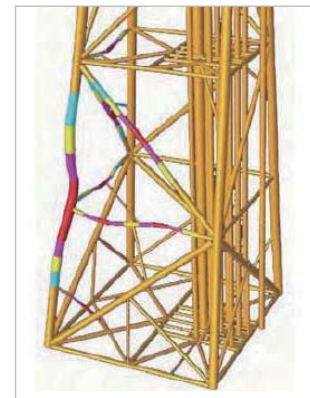
Fatigue analysis



Modal analysis

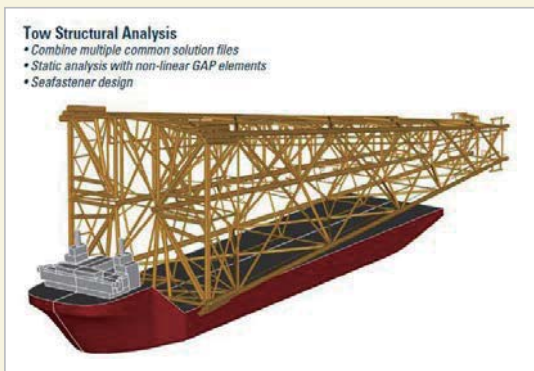


PSI(Pile-Structure Interaction) analysis



Collapse analysis

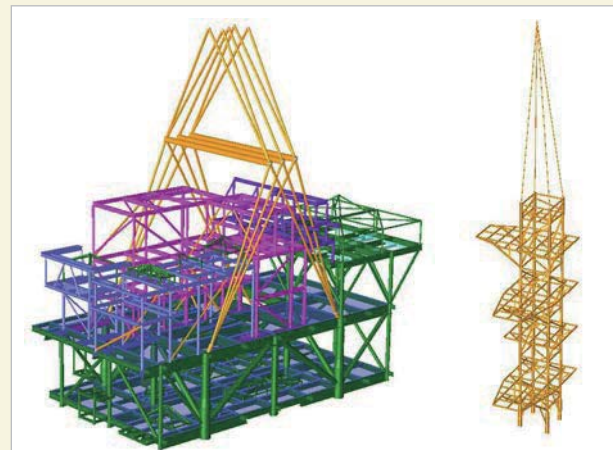
Pre-Service Analysis



Tow structural analysis



Lifting analysis

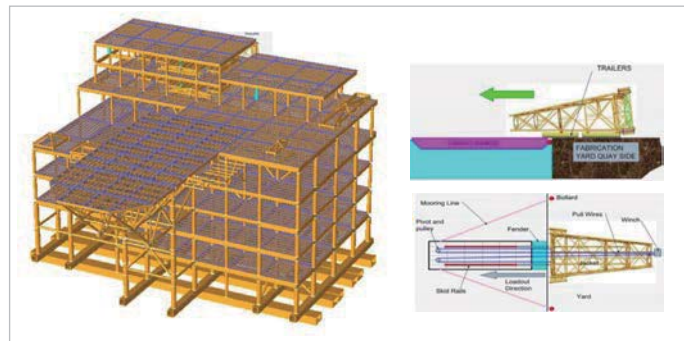




Launching analysis

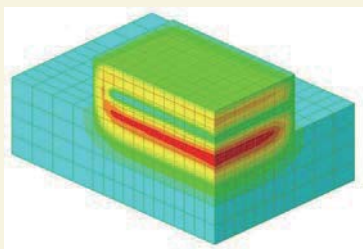


Roll-up analysis

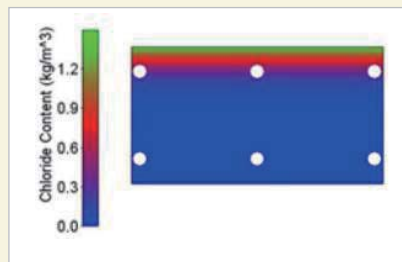


Loadout analysis

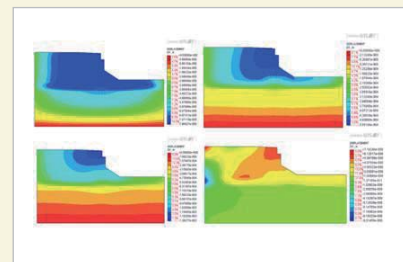
Special Analysis



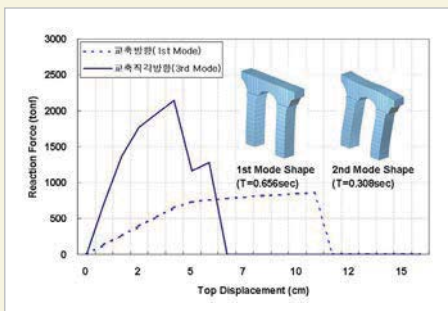
Hydration heat analysis



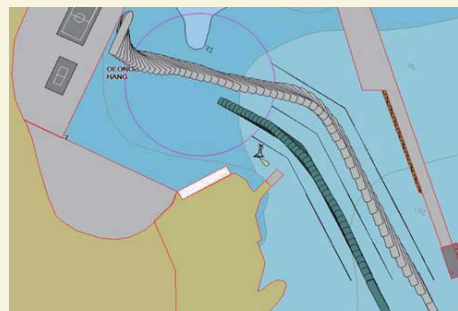
Salt penetration analysis



FSSI analysis



Seismic performance evaluation



Ship navigation simulation

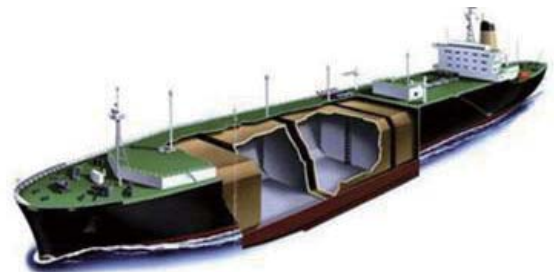
Ship and Ocean Engineering

This Division of Ship and Ocean Engineering proved total engineering service for LNG and LPG Ship and FPSO Hull, Deepsea Mooring and Motion, Vessel Maneuvering, FSRU, FPU and FSO as well as SPM/CBM, Marina, FPSO for Seawater Dissolved Lithium 99.99% and Metocean Survey.

We offer a solution to optimize safety of Project in order to increase customer satisfaction after examining various design ways about all conditions occurring in the site sea.

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.



Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Metocean Simulation of Wave, Current and Wind for Design Life
 - Hull Scantling and Detail Design
 - Ballasting Plan and Sea trial Test
 - Deck House
 - Helideck Design
 - Pump and Piping System
 - Fatigue Design due to hydrodynamic Loads
 - Process of Regasification Unit, Equipment, Electric Power & Cable, Communication and Instrument of FSRU
 - Process of FPSO for Seawater Dissolved Lithium 99.99%
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - LNG/LPG or Chemical Storage Tank and System Design
 - Storage Tank CTMS Design
 - LNG/LPG BOG Simulation

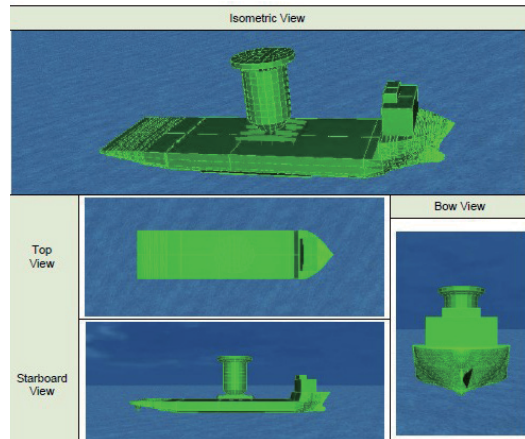


- Cargo Sloshing Simulation in Tank
- N2 Production Plant
- Piping and Insulation Design
- Operational Procedure and Related Philosophy
- HSE Design
- Risk and EIA Assessment
- Related Specification
- RFQ and Procurement Services
- Vendor Technical Evaluation
- Drawings
- Construction Design
- Construction Engineering for Fabrication and Installation

Engineering Services & Major Experiences



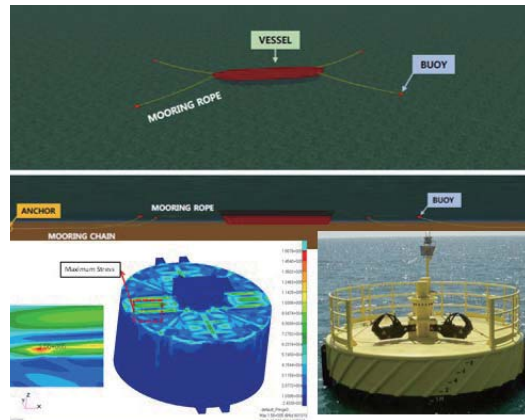
FSRU Pomala Project (Indonesia)
Ballasting Analysis, Mooring Analysis, Tow Analysis, stability Check for FSRU & LNGC



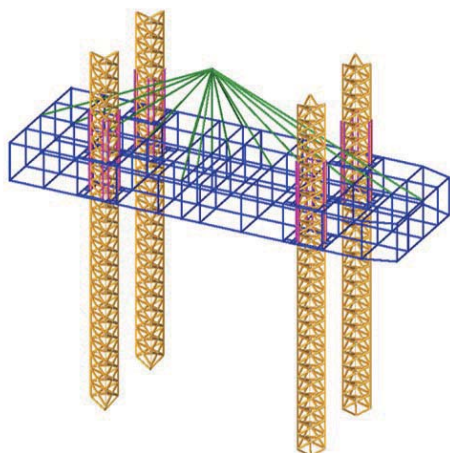
ICHTHYS Gas Field Development Project (Malaysia)
- Turret Transportation / Motion Study



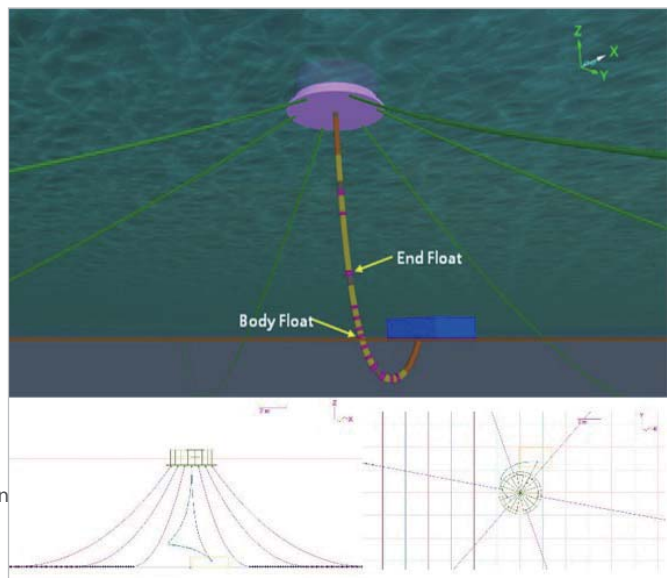
Gumusut Kakap FPSO Project (Malaysia)
- Super-lift, Float-off Design and Hull FEM Analysis, Motion Analysis, Hydrodynamic Analysis, Float-Off, Transportation Detail Design and Pipeline and Flexible Riser



CBM Re-Design (Bangladesh)
- CBM (Conventional Buoy Mooring) System Design, Pile Anchor Design, Stability Check, Mooring Analysis



WTIV Design(SHI) Wind Turbine Installation Vessel(Jack Up Rig Type)



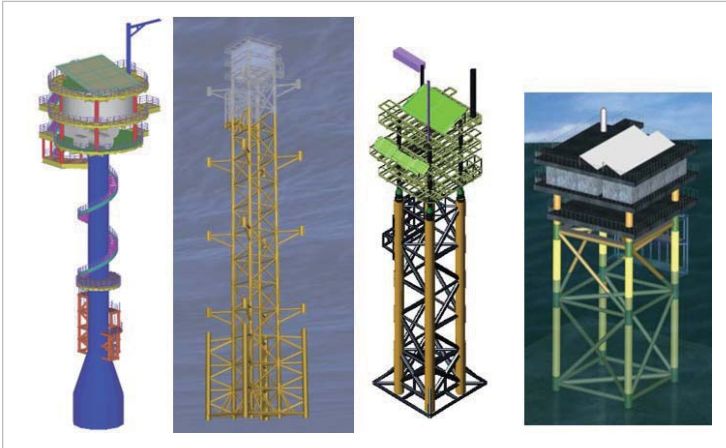
Colombo Port Expansion Project (Sri Lanka)
Lantern Type SPM & Under-buoy Hose Design



NASR PKG2 Project (Abu Dhabi)
- Spectral Tow Fatigue Analysis



TUAS TERMINAL PHASE 1 Project (Singapore)
- Caisson Self-Float, Transportation, Float-off, Towing



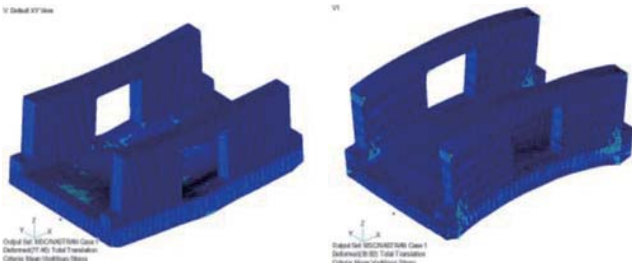
Ocean Research Station (Korea)
- Ilhayng-Cho, Back-ryung Do, Saemangeum, Wangdolcho



VASAI East Development (India)
- Topside Installation

Specialized Analysis

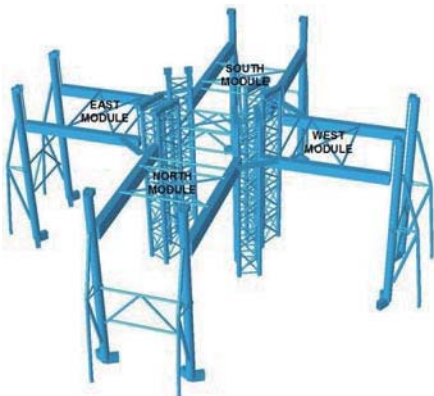
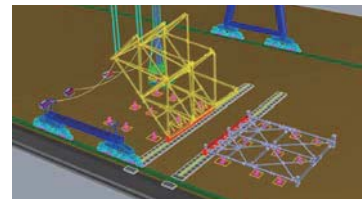
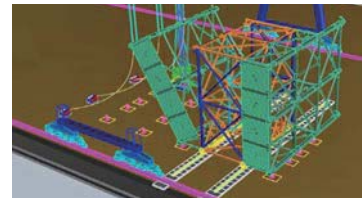
Structural Analysis



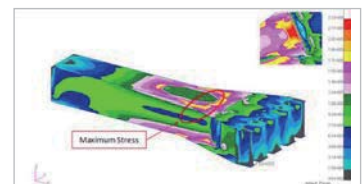
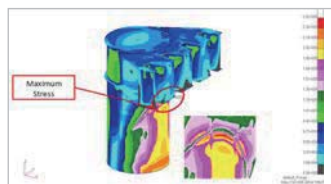
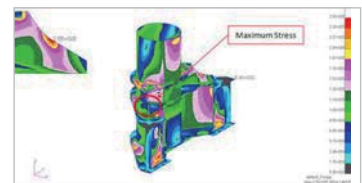
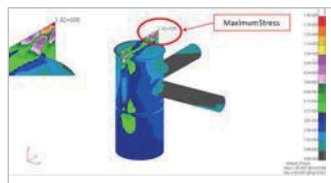
Floating Dock Design & Verification

- ▲ Block Method
- ▼ Roll-Up Method

Block-Handling

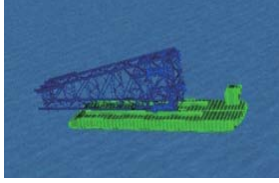


Super-Lift Structure



Local Analysis for Super-Structure

Installation Analysis

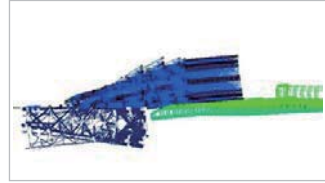


Jacket

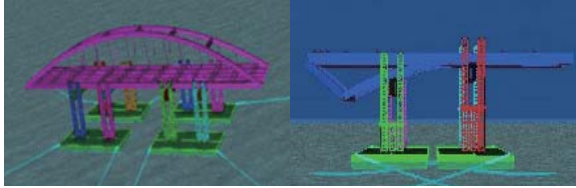


Caisson

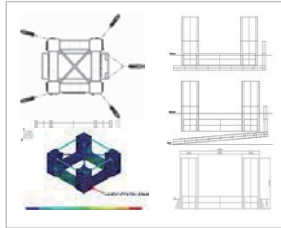
Launching and Up-ending Analysis



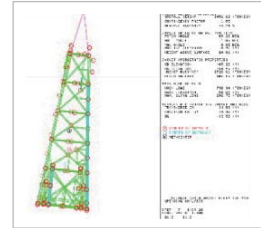
Jacket Launching



Bridge (Amsa / Magok / Yangsu / World-Cup Grand Bridge)

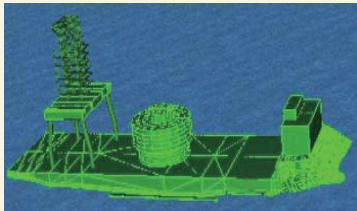


Float-Off

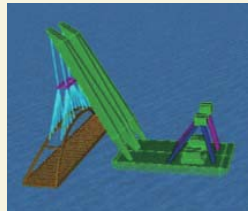


Jacket Upending

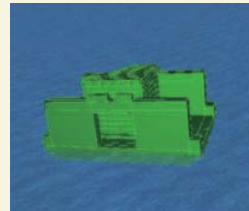
Transportation Analysis



Module



Bridge (Gun-Jang)

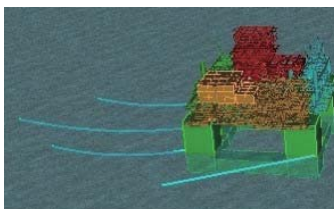


Caisson



Topside

Mooring Analysis



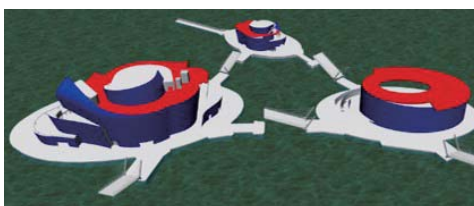
Station Keeping



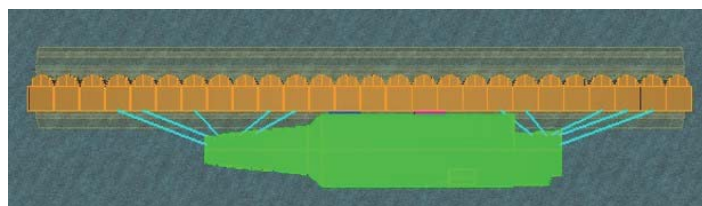
Light Buoy



Yeo-Su Expo – Fishing Pontoon / Store Building



Han-River Sevit Island(DoongDoong)



Je-ju Naval Port - Vessel / Aircraft

Subsea Platform & Pipeline

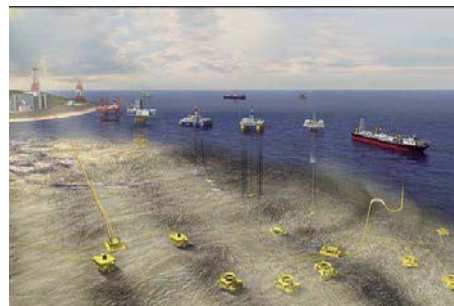
Full service subsea pipeline and Subsea Platform system consulting firm with the expertise to manage and implement any part of a pipeline or associated facility projects. From concept through commissioning, we have the personnel to consistently deliver high quality services

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.

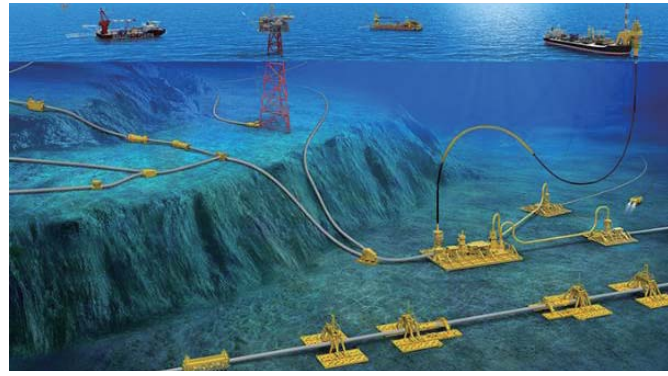
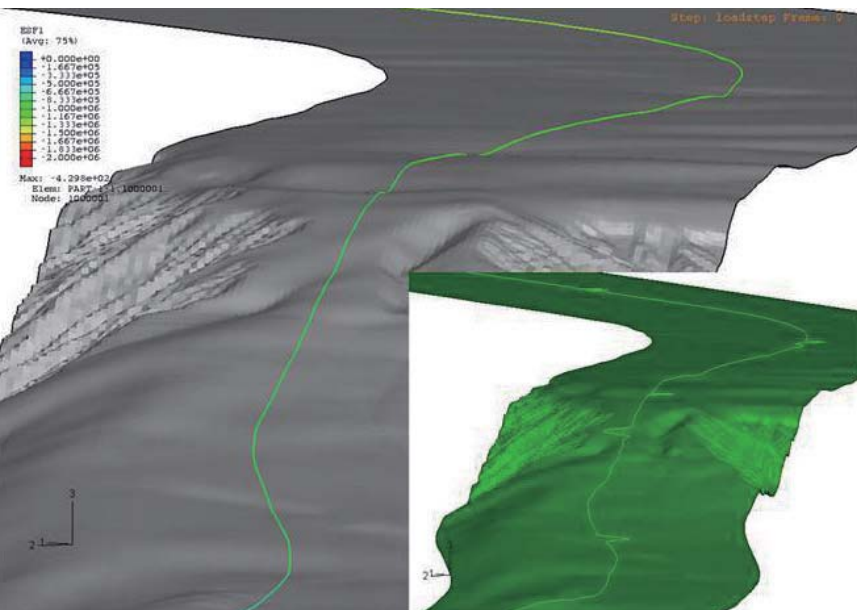
Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project.

We have extensive experience in subsea pipeline, Storage Tank Farm, Subsea Platform, FOC, cables, risers and flowlines design.

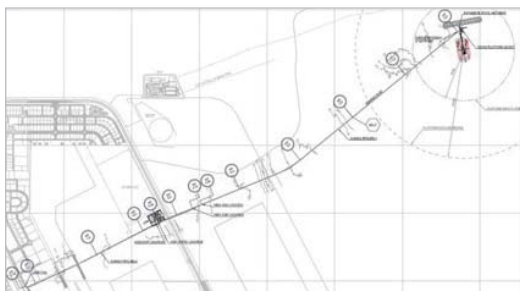


Business Fields

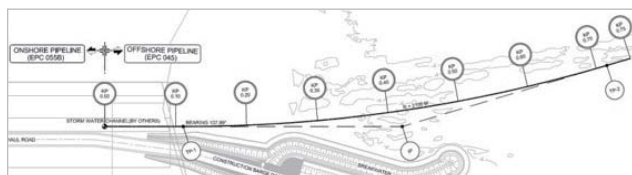
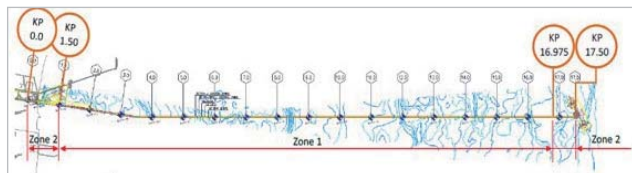
- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Route Selection Design
 - Pipeline and Cable Onbottom Stability due to hydrodynamic Loads
 - Hydraulic and 3 Phase Simulation
 - Wall Thickness and Expansion Design
 - Upheaval and Anchor Block Design
 - P-Y Curve
 - Cable and FOC Design
 - Riser Design
 - Outfall and Intake Design
 - Underwater Explosion
 - Corrosion Assessment
 - Storage Tank Farm and related Process, E&I and Buildings
 - Soil Interpretative Review
- Risk and EIA Assessment
- Material Selection and Philosophy
- Foundation Design and Subsea Platform
- Related Specification
- RFQ and Procurement Services
- Vendor Technical Evaluation
- Drawings
- Construction Design
 - Construction Engineering for Fabrication and Installation



Engineering Services & Major Experiences



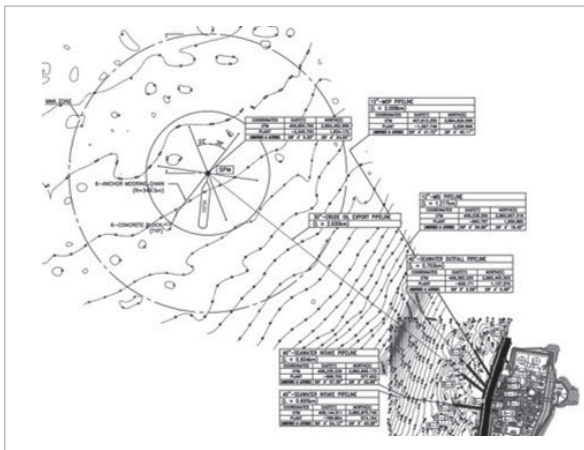
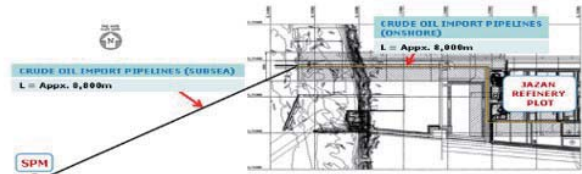
Bahrain Offshore LNG Terminal Project (Bahrain)
Detail Engineering for 24" OD 4.3km Subsea Gas Pipeline



ZOR Project (Kuwait)
Detail Engineering for 5-Lines 30" OD 17km Subsea Pipeline
Detail Engineering for 1-Line 36" OD 0.7km Outfall Pipeline (HDPE)



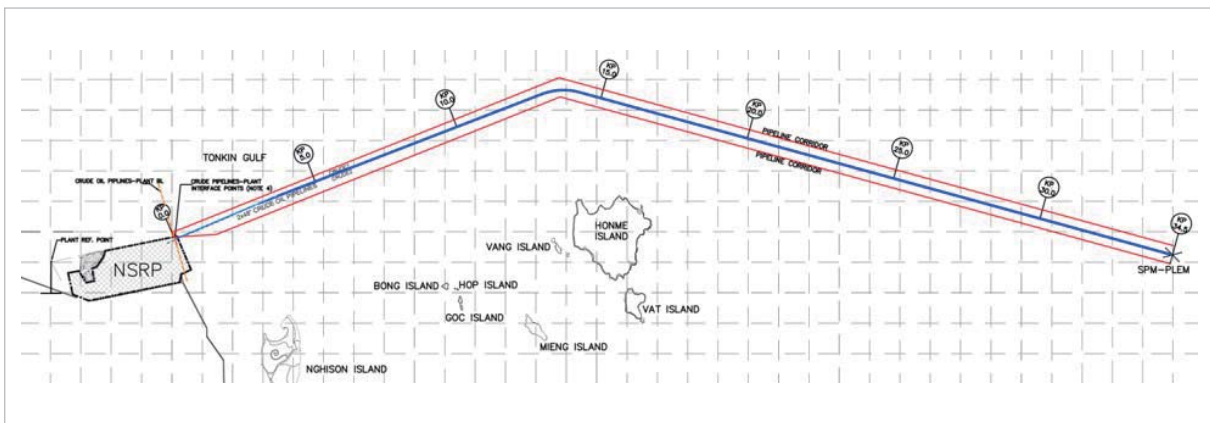
JAZAN Refinery and Marine Terminal Project (Saudi)
 Detail Engineering for Offshore Pipeline 2-Lines 48"-8km and PLEM/SPM & 2ND SPM (2-Line x 2.5km)



Musandam Gas Plant Project (Oman)
 Detail Engineering for 40" Intake, Outfall and Submarine Pipeline
 30" - 3.0 km (In-service, Installation, and Material Specification)

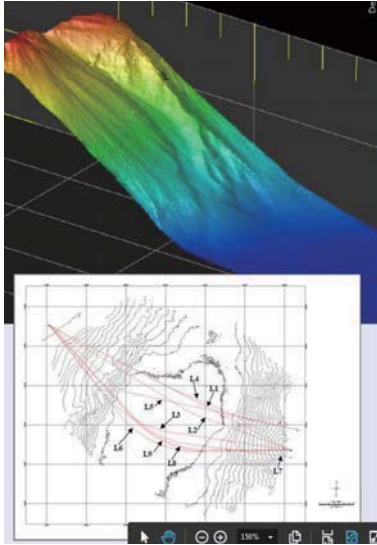


S-OIL New SPM and Pipeline Project (Korea)
 Basic & Detail ENG-42"-7km Submarine Pipeline and
 PLEM, SPM Refurbish, Detail Engineering

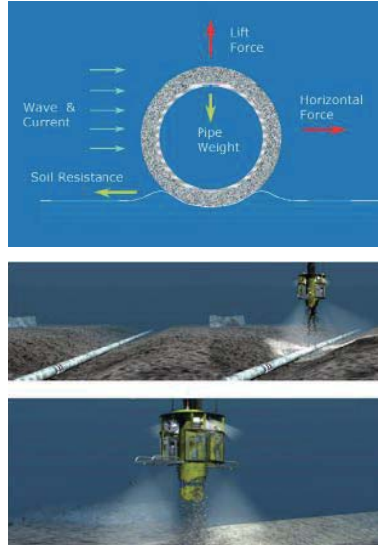


NSRP Project (Vietnam)
 2-48"-34.5km Pipeline and FOC Detail Design

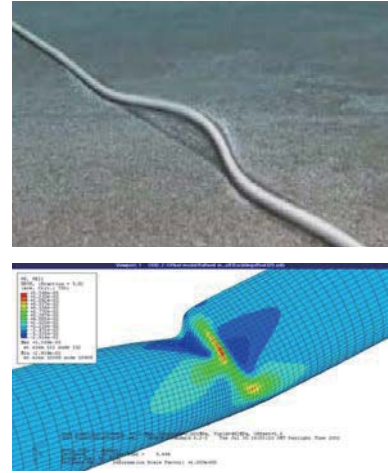
Specialized Analysis



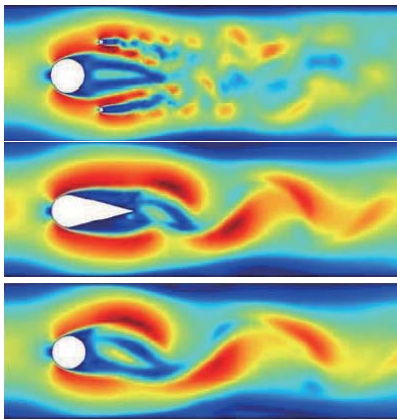
Route Selection



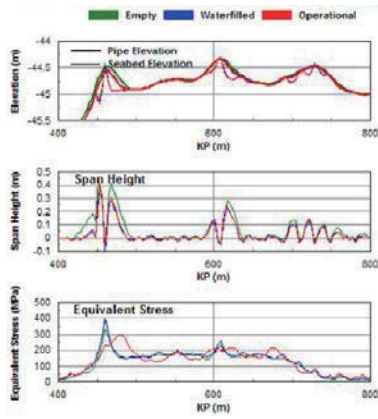
On-Bottom stability



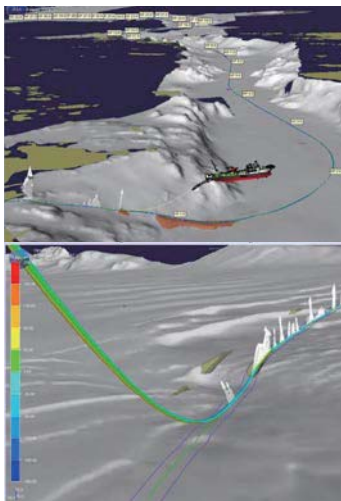
Global & Upheaval Buckling



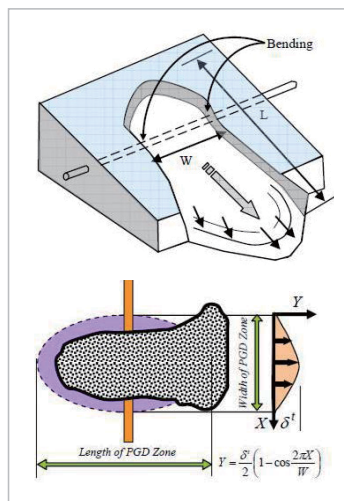
Free span & roughness



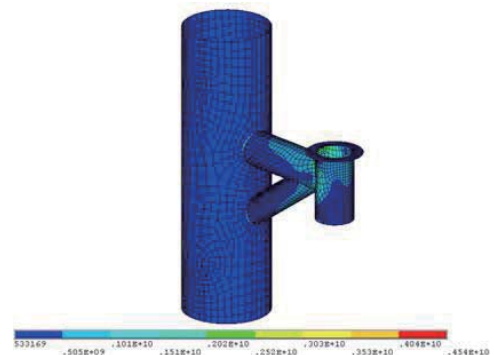
Cathodic Protection (Anode)



Constructability



Seismic



Expansion Loop & Riser

Railway Engineering

This Division of Railway Engineering proved total engineering service for Heavy Railway, Light Railway as well as Railway Bridge, Vehicle Base Architecture and Station. Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.



Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Railway Route Selection Design
 - Vehicle & Traffic Operating Simulation
 - Railway Curvature Simulation
 - Railway Bridge and Tunnel Design
 - Seismic and Fatigue Design
 - Substation Design
 - Pile-Soil- Structure Interaction Design
 - Vibration and Noise Analysis
 - Wind Flow Simulation
 - Soil Interpretative Review
 - Risk and HSE Assessment
 - Related Specification
 - RFQ and Procurement Services
 - Vendor Technical Evaluation
 - Drawings
- Construction Design
- Construction Engineering for Fabrication and Installation



Engineering Services & Major Experiences



Master Plan for Construction of Busan Urban Railway (Korea)
- Feasibility Study and Master Plan



Gangnam New Transit Project New Project (Korea)
- Total Length : 6.707km, Station : 10ea, Depot : 1ea



Basic Design for Construction of Honam High-Speed Railway (Korea)
- Total Length : 2.9km, Station : 2ea, Underground Road : 1ea



Gwang-myeong LRT Project (Korea)
- Total Length : 10.243km, Station : 8ea, Depot : 1ea, Tunnel : 2ea



Railway Bridge and Box for Western Line (Korea)
- Bridge and Tunnel Box Detail Design for Western Railway



Yong-in LRT Project (Korea)

Port & Coastal Engineering

This Division of Port & Coastal Engineering proved total engineering service for Breakwater, Quaywall as well as Container terminal, Marine Jetty for Chemical Plant
Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project.

Major Features

Full services Port & Coastal consulting firm with the expertise to manage and implement any part of a Coastal or associated facility projects. From concept through commissioning, we have the personnel to consistently deliver high quality services.

Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Berthing Layout Selection Design
 - Optimization for Container Terminal Layout Selection Design
 - Ship & Vessel Manuevering
 - Sedimentation and Scouring Simulation due to Wave and Current
 - Topside Process Simulation, E&I and Communication System Design
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - Substation Design
 - Risk and HSE Assessment
 - Caisson T&I Design
 - Seismic and Fatigue Design
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - Risk and EIA Assessment
 - Corrosion Assessment
 - HSE Design
 - Related Specification
 - RFQ and Procurement Services
 - Vendor Technical Evaluation
 - Drawings
- Construction Design
- Construction Engineering for Fabrication and Installation



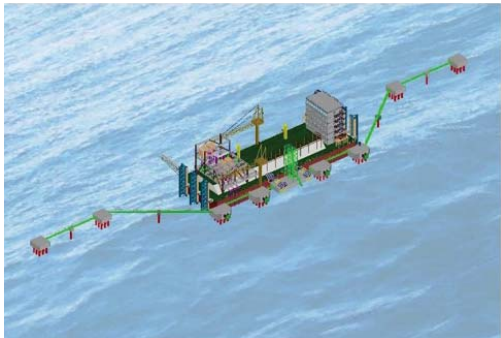
Engineering Services & Major Experiences



Jazan refinery terminal Project (Saudi Arabia)
- Dolphin : 2 Berths, Quay : 000m, Pontoon : 4set
- Intake facility : 1set



Feasibility study for multi-purpose port development project near Chittagong (Bangladesh)
- Dolphin : 3 Berths, Trestle : 1,000m, Embank : 500m



Feed for FSRU Polmala project (Indonesia)
-25,000cbm FSRU : 1 set, Mooring system : 1 set



Yeongil new port breakwater project (Korea)
- Length : 800m



Sebitseom substructure redesign (Korea)
- Floating structure : 1 set



MMHE west finger pier Basic & Detail Design (Malaysia)
- Quay wall : 665m, Seawall : 210m



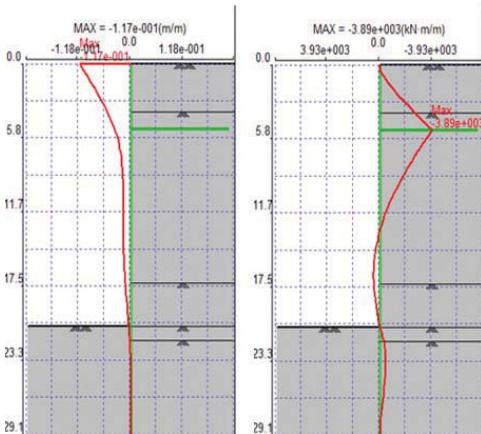
BM Energy LPG jetty project (Bangladesh)
 - Jetty : 1set, CBM : 4 Buoys, PLEM : 1set



PTT LNG receiving terminal project (Thailand)
 - W/ P : 1set, BD: 3set, MD : 6set, Trestle : 250m
 - Design Vessel : 266,000m² Carrier

Specialized Analysis

For Port



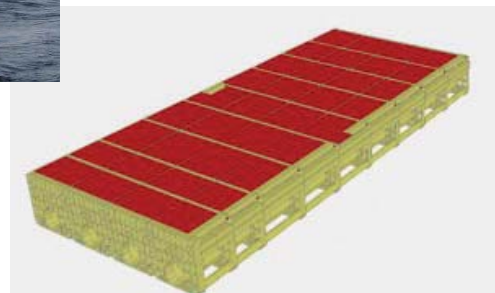
Sheet pile quay Detail design



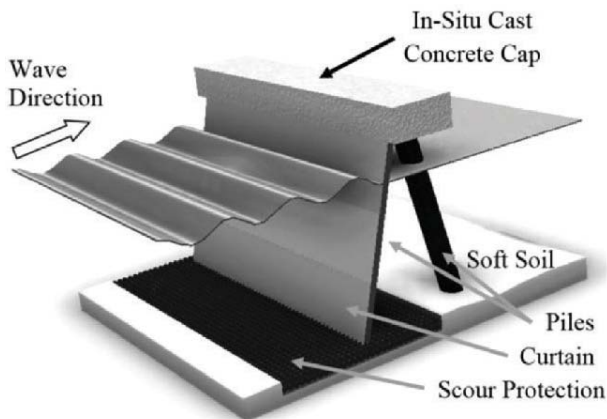
Marine structure for Lighthouse



Dolphin Basic & Detail design

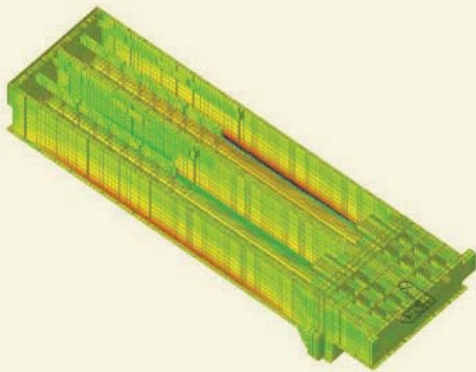


▲ Floating Structure Basic & Detail design
 ▼ Marine structure for Lighthouse



Non-Gravity Breakwater Detail design

For Plant

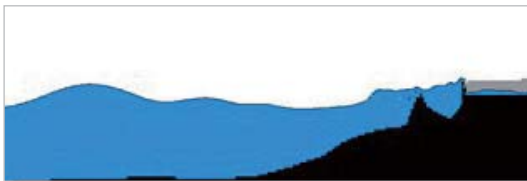


Sheet pile quay Detail design

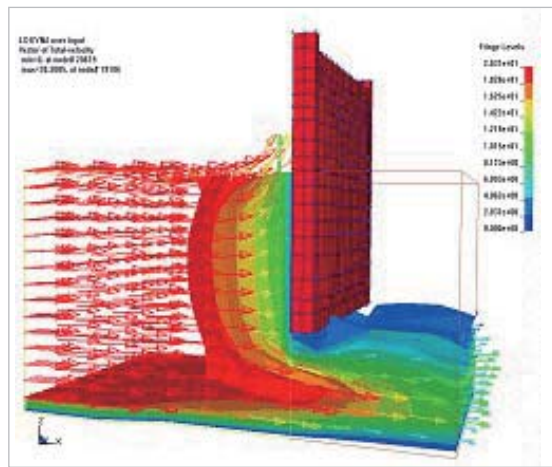


Floating Solar Power Plants

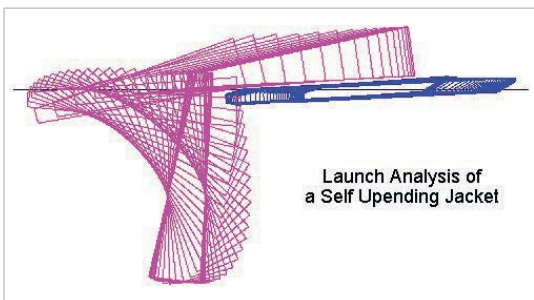
For Simulation



Numerical modeling simulation of 2D (CADMARS-surf, ANSYS-Dynamic, Euro Top)
- Over topping, Run-up of wave and etc.



Fluid analysis by Flow 3D
- Current velocity, Scour check and etc.



Installation simulation of huge floating structure
- Flotation, Upending & Launching



Ship navigation simulation
- Ship route plan, Berthing check

Refinery & Chemical Plant Engineering

This Division of Refinery & Chemical Plant Engineering proved total engineering service for Refinery for Topping/Hydroskimming/Catalytic Cracking/Hydro Cracking/Coking/Integrated, FPSO/F-LNG Topside Process Design as well as PDH-PP/Desalination Plant and Ammonia/Urea/GTL/Methanol-DME/ETHANOL/Caustic Soda Production Plant

Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.

Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Plant Layout Design
 - Topside Process Simulation, Equipment, E&I and Communication System Design
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - H2 Production Plant
 - Substation Design
 - Risk and EIA Assessment
 - Consumption of water and electric power
 - Piping and Insulation Design
 - Operational Procedure and Related Philosophy
 - Soil Interpretative Review
 - Corrosion Assessment
 - HSE Design
 - Related Specification
 - RFQ and Procurement Services
 - Vendor Technical Evaluation
 - Drawings



- Construction Design
Construction Engineering for Fabrication and Installation

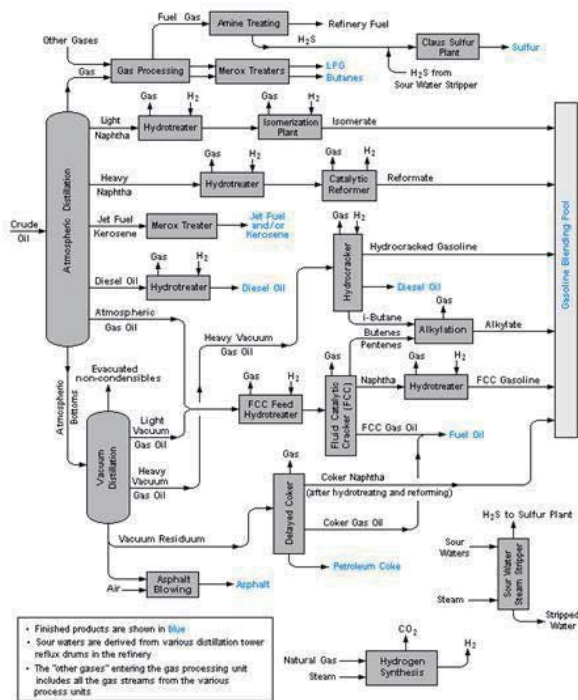
Engineering Services & Major Experiences



Seawater dissolved Lithium Deportation Plant



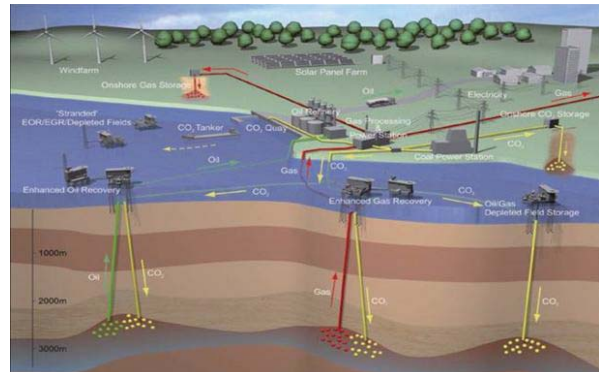
10MMSCMPD REFINERY PLANT (RAW GAS RETREATMENT) FOR YPFB (Bolivia)



Refinery Plant General Layout



NSRP Project (Vietnam)



CO2 Capture and Storage Field General Layout



Nakhodka Mineral Fertilizer Plant (Russia)

Civil Engineering

This Division of Civil Engineering proved total engineering service for Tunnel, Road and Highway as well as Sea Bridge and Foundation.

Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project.

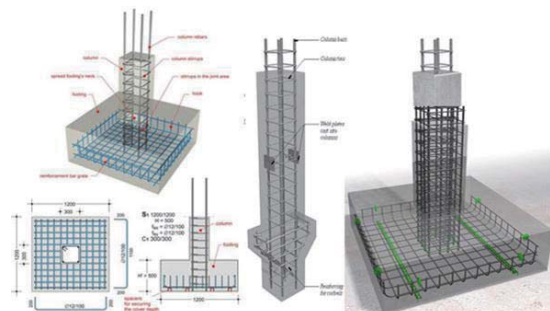
Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.



Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - In-place and Construction Engineering Design using Zentech's High Technology of Patent
 - Seismic and Fatigue Design for Steel or Concrete Structure
 - Blasting Simulation for Tunnel
 - Collision Analysis for Pier
 - Corrosion Assessment
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - E&I and Communication System Design
 - HSE Design
 - Risk and EIA Assessment
 - Related Specification
 - RFQ and Procurement Services
 - Drawings
- Construction Design
- Construction Engineering for Fabrication and Installation



Engineering Services & Major Experiences



Underground Roadway (3 place)
Underground roadway in front of cargo terminal,
Yeomgog Underpass, Guryong Underpass



Gangnam Sunhwa City Expressway(8 zone) (Seoul Korea)
Scope : Length= 7.96km, 4~10 lanes

Main Line Overpass
Juam Bridge



Jeju International Airport (Daewoo Engineering)
Culvert, Paving, Retaining wall etc. Detail Design for Railway



Banpo Bridge Analysis (Daewoo Engineering)
Final Design(Considering the additional load of
the fountain facility)



Bridge & Tunnel, Culvert Detail Design for Railway

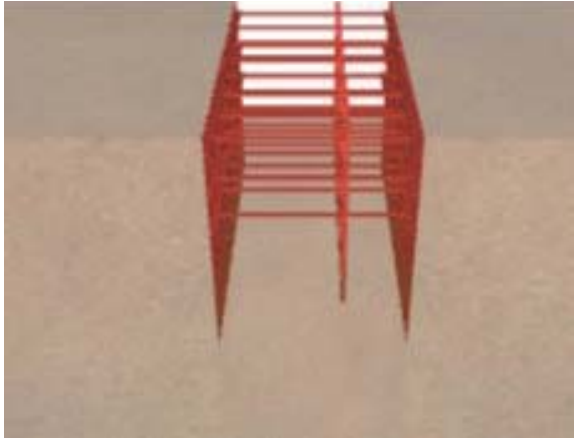


Seohaehyeon Highway (Hongseong~Songshan) 6 Zone (KD ENG)

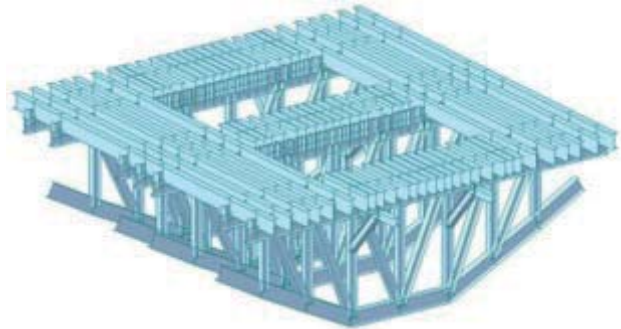


Hwayang~Jeokgeum 2 Zone
 (Iksan Regional Construction and Management Administration)
 Scope : Length = 854.0m , Main Tower Height= 170.7m , Interval = 500.0m

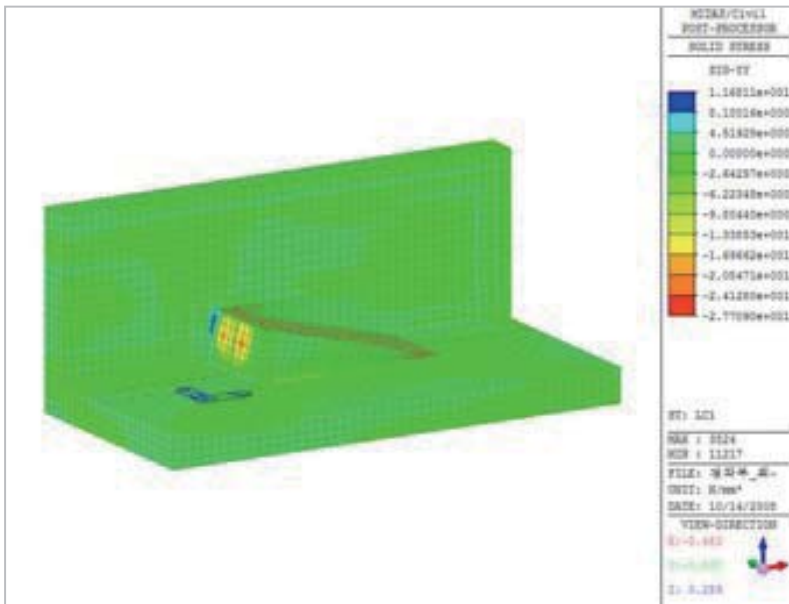
Specialized Analysis



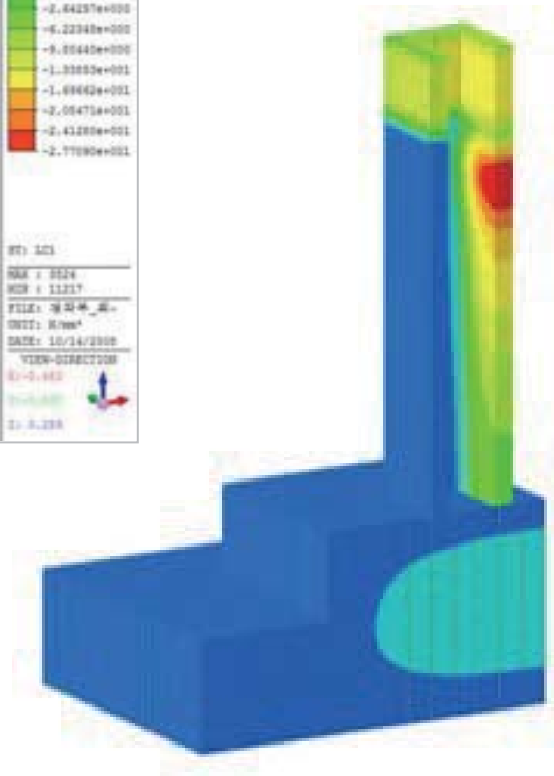
Spread Beam Detail Analysis



Temporary Structure FEM Analysis
Upper Bridge Temporary Structure



FEM Analysis (Anchorage device design)



Hydration Heat Analysis (Column and Foundation)

Thermal Power Plant Engineering

This Division of Thermal Power Plant Engineering proved total engineering service for Gas Power Plant, Coal Power Plant as well as Nuclear Power Plant and Ship/Barge Mounted Power Plant.

Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.



Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Plant Layout Design
 - Topside Process Simulation, Equipment, E&I and Communication System Design
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - Single line Diagram
 - Substation Design
 - Risk and EIA Assessment
 - HSE Design
 - Consumption of water and electric power
 - Piping and Insulation Design
 - Operational Procedure and Related Philosophy
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - Corrosion Assessment
 - Related Specification
 - RFQ and Procurement Services
 - Drawings
- Construction Design
- Construction Engineering for Fabrication and Installation



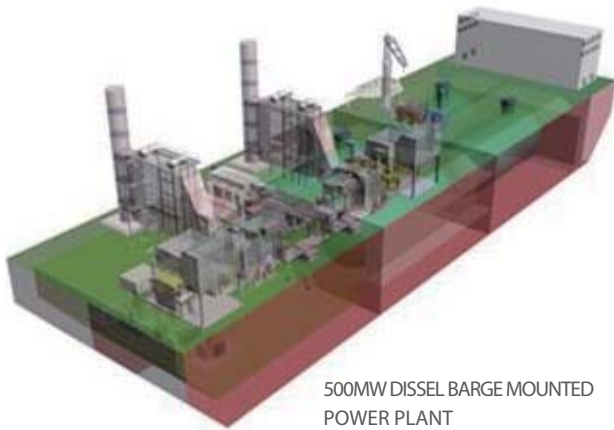
Engineering Services & Major Experiences



Manjung Power Plant (Malaysia)

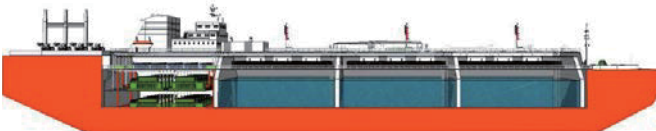


Uljin #3, 4 Nuclear Power Plant (Korea)



500MW DIESEL BARGE MOUNTED POWER PLANT

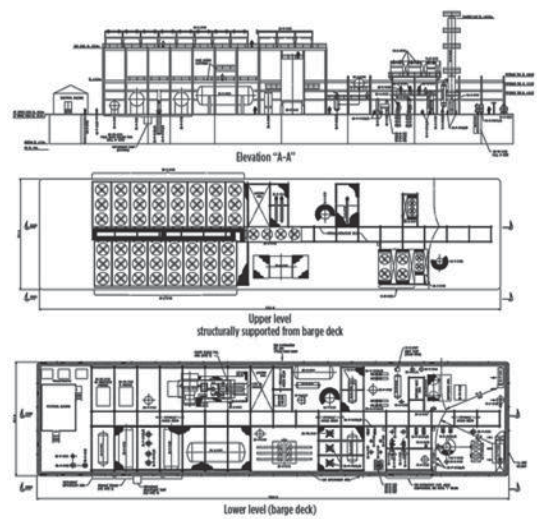
- Length : approx. 276.0 m
- Breadth : 44.0 m
- Depth : 26.0 m
- Generator Engine : 24 Gas Engines
- Endurance : abt. 68days (for 200MW)
- Cargo Containment System : Membrane Type, GTT NO96 (or equivalent)
- Nominal Voltage : 132kV (Can be adapted to cater for national grid)
- Frequency : 50 or 60Hz
- Complement : 17 persons
- Construction Terms : 30 months (From Contract to Sail Away)



Floating LNG Power Plant Mounted on Barge



New Gori #3, 4 Nuclear Power Plant (Korea)



Floating LNG Power Plant Layout

LNG/LPG Engineering

This Division of LNG/LPG Engineering proved total engineering service for LNG & LPG Production Plant, Onshore LNG Storage and Regasification Terminal as well as LPG Refrigeration & Compressed Storage and Transportation Terminal

Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.

Business Fields

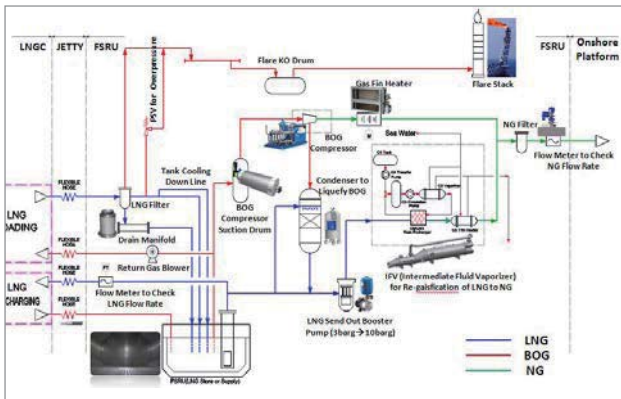
- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Plant Layout Design
 - Topside Process Simulation, Equipment, E&I and Communication System Design
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - Single line Diagram
 - N2 Production Plant
 - Substation Design
 - LNG/LPG BOG Simulation
 - Storage Tank CTMS Design
 - Risk and EIA Assessment
 - Consumption of water and electric power
 - Piping and Insulation Design
 - Operational Procedure and Related Philosophy
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - Corrosion Assessment
 - HSE Design
 - Related Specification



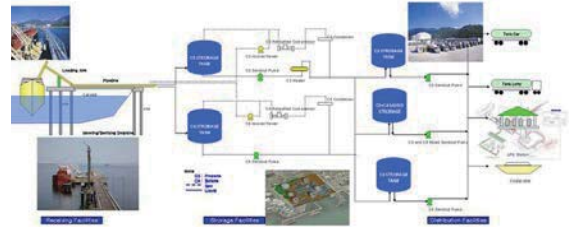
- RFQ and Procurement Services
- Vendor Technical Evaluation
- Drawings

- Construction Design
- Construction Engineering for Fabrication and Installation

Engineering Services & Major Experiences



PFD for FSRU



PFD for LPG Terminal



LPG Terminal Layout (Jamaica)



Detail Engineering for PTT LNG Terminal (Thailand)



FEED & Basic Design for LPG Terminal (Indonesia)



General Storage Tank



Bahrain LNG Terminal Project (Bahrain)

Bio & Hydrogen Plant

This Division of Bio & Hydrogen Plant Engineering proved total engineering service for Bio Diesel Plant, Bioethanol Plant, Bio methanol Product Plant, Bio Mass & Gas Power Plant as well as Bio & Gas Hydrogen Production Plant, Renewal & Nuclear Hydrogen Product Plant and Vehicle Fuel Cell and LNG Fuel cell Production Plant.

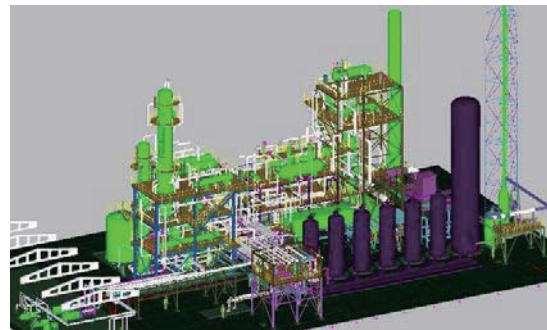
Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

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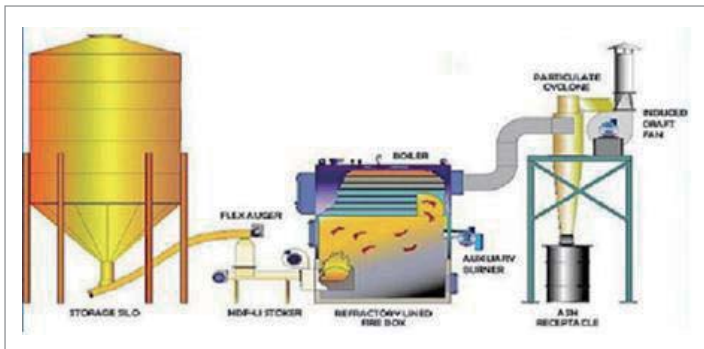
Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Plant Layout Design
 - Topside Process Simulation, Equipment, E&I and Communication System Design
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - Single line Diagram
 - Substation Design
 - Risk and EIA Assessment
 - HSE Design
 - Consumption of water and electric power
 - Piping and Insulation Design
 - Operational Procedure and Related Philosophy
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - Corrosion Assessment
 - Related Specification
 - RFQ and Procurement Services
 - Vendor Technical Evaluation
 - Drawings

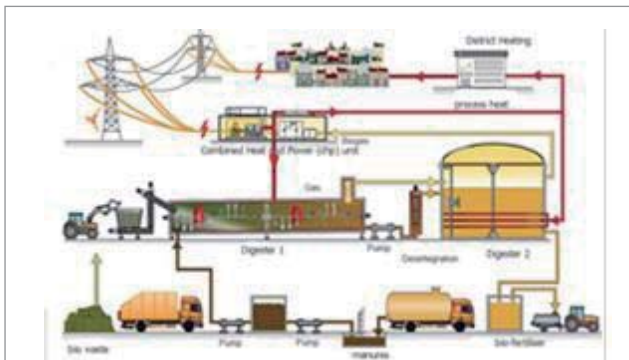


- Construction Design
Construction Engineering for Fabrication and Installation

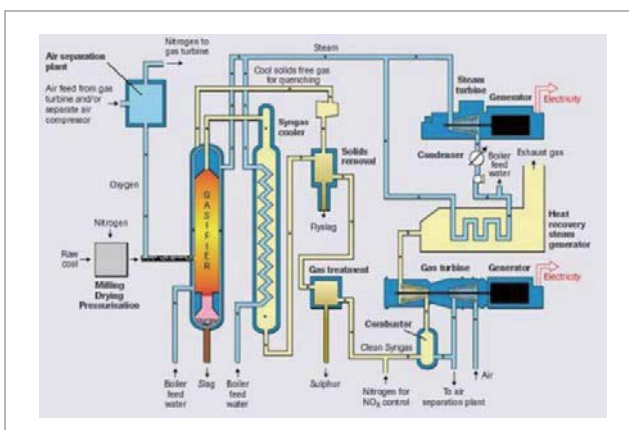
Engineering Services & Major Experiences



PFD for Biogas



PFD for Biomass



PFD for Hydrogen

New Renewal Energy Plant

This Division of New Renewal Energy Plant Engineering proved total engineering service for Offshore Wind Power Farm, Solar Power Plant as well as Geothermal Power Plant and Hydro Electric Power Plant

Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.

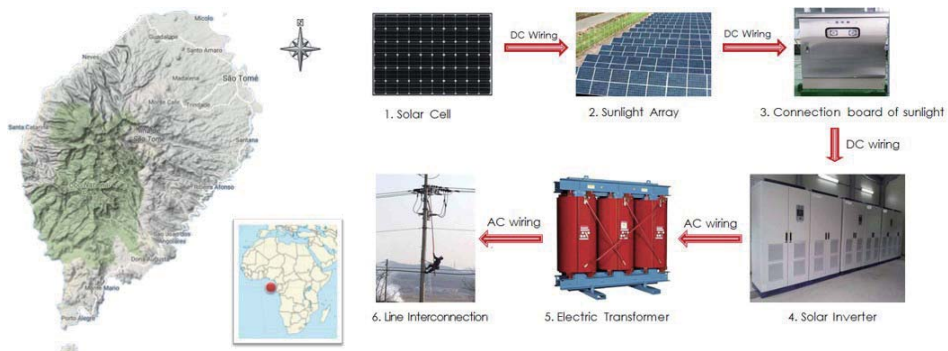
Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Plant Layout Design
 - Topside Process Simulation, Equipment, E&I and Communication System Design
 - Heat & Material Balance Analysis
 - PFD and P&ID Design
 - Single line Diagram
 - Substation Design
 - Risk and EIA Assessment
 - HSE Design
 - Consumption of water and electric power
 - Piping and Insulation Design
 - Operational Procedure and Related Philosophy
 - Pile-Soil- Structure Interaction Design
 - Soil Interpretative Review
 - Corrosion Assessment
 - Related Specification
 - RFQ and Procurement Services
 - Vendor Technical Evaluation
 - Drawings

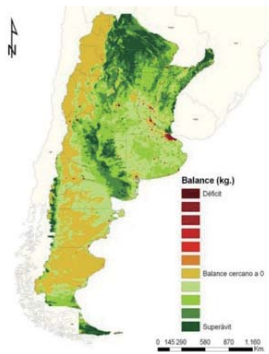


- Construction Design
- Construction Engineering for Fabrication and Installation

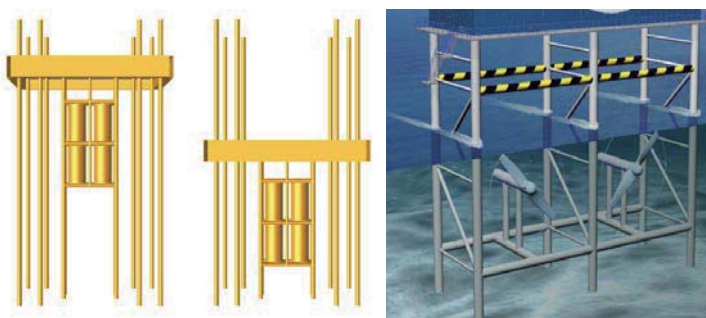
Engineering Services & Major Experiences



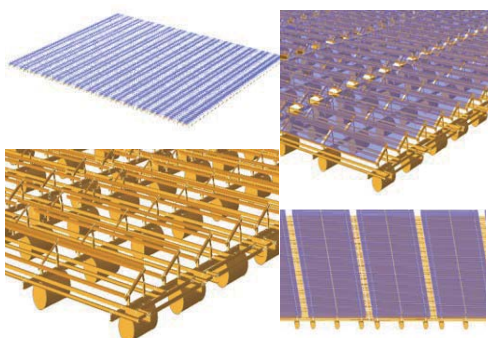
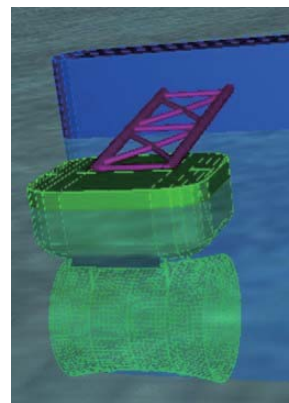
10MW solar power generation farm development in Saotome



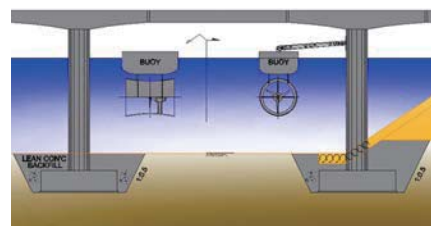
100MW Wind power generation farm development in Argentina (Argentina)



New type of tidal current power generation development (Korea)



100MW Floating solar power generation development (Korea)



New type of tidal current power generation development (Korea)

Shipyards Optimization

This Division of Shipyards Optimization Engineering proved total engineering service for Yard Optimization, Drydock, Slipway as well as Production Shop and Facilities. Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

Major Features

Full services Shipyards Optimization consulting firm with the expertise to manage and implement any part of a Drydock, Slipway and Production Shop with associated facility projects. From concept through commissioning, we have the personnel to consistently deliver high quality services



Business Fields

- Project Development
- Feasibility Study with Economic analysis Partners(Korea Construction & Evaluation Research Institute)
- Conceptual Design
- FEED Design for EPCIC Bidding Documents
- Detail Design
 - Optimization for Shipyards Layout Design
 - Facilities for Equipment, E&I and Communication System Design
 - CO2 and O2 Production Plant
 - Drydock and Slipway Design
 - Gantry Crane and Railway Design
 - Quaywall and Breakwater Design
 - Power Generator Design
 - Substation Design
 - Risk and EIA Assessment
 - HSE Design
 - Consumption of water and electric power
 - Production Shop & Building and Substation Design
 - Soil Interpretative Review
 - Related Specification
 - RFQ and Procurement Services
 - Vendor Technical Evaluation
 - Drawings



- Construction Design
- Construction Engineering for Fabrication and Installation

Engineering Services & Major Experiences



MMHE Shipyard Optimization (Malaysia)



Subic Shipyard Optimization (Philippine)



Ramunia Offshore Yard Project (Malaysia)



Gantry Crane Design (Korea)



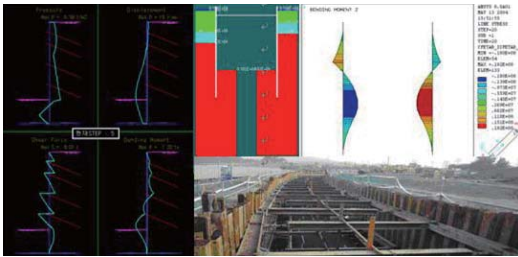
HHI H-Dry Dock Project (Korea)

Geotechnical Division

This Division of Geotechnical Engineering proved total engineering service of any required Soil Investigation for Soil Foundation. Our approach ensures that we provide accurate and complete analysis and documentation to support technical and procurement decisions for the project

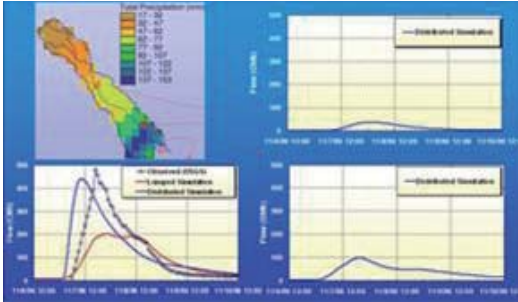
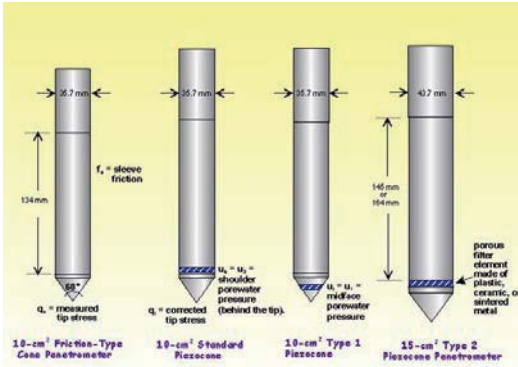
Major Features

Our engineers work in a thorough and systematic manner to provide high-quality, bespoke engineering solutions. Our success is underpinned by working closely with clients to ensure practical, cost-efficient and safe strategies are developed from the outset.



Business Fields

- Geology and Seismic Risk Assessment
- Soil Investigation
 - Exploratory Boring
 - Cone Penetration Test (CPT)
 - Standard Penetration Test and Samples
 - Undisturbed Samples
- Lab Test
 - Grain Size Distribution By Sieve Analysis
 - Wet and Dry Density
 - Moisture Content Test
 - Consolidation Test for Embankment
 - Direct Shear Test
 - Lab CBR Test
 - Atterberg Limits
 - Specific Gravity Test
 - Unconfined Compression Test
 - Unconsolidated un-drained Tri-Axial Test
- Hydrology Test
 - Erosion Potential Test
 - Chemical Analysis of Soil
 - Electric Conductivity
 - Chloride and Sulphate Content
 - Electrical Resistivity of Soil
 - Thermal Resistivity of Soil
 - pH Value



■ Engineering Services & Major Experiences



Skikda Refinery Project (Algeria)



Ulsan Oil Hub Project (Korea)



Yeosu Thermal Power Plant Project (Korea)



Oil Storage Tank for ATB (Malaysia)

Overseas Business

Region of Completed Project



Business Fields

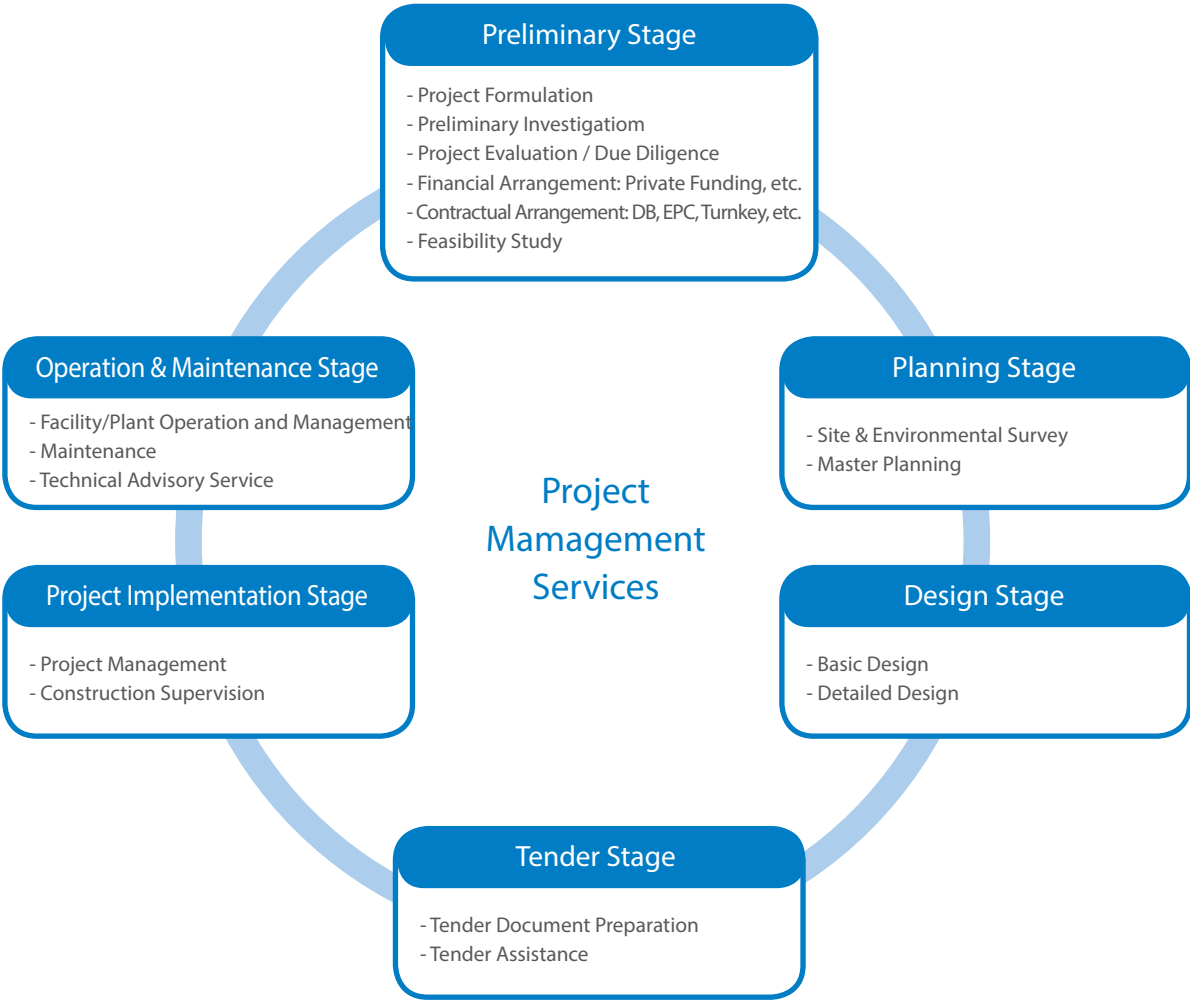
- Port & Harbor Design
- Shipyard Design
- Coastal Industrial Complex Design
- Road and Bridge
- Rail-Way and Light-rail
- Offshore/Onshore Platform for Oil and Gas
- Onshore Power Plant
- Onshore Refinery Plant for Oil and Gas
- Offshore Wind/Wave/Current Power Plant
- Pipeline and SPM
- LNG/LPG Plant and LNG FSRU/GSRU
- Ship and Floater
- Jack-up Barge
- Oil Tank Farm Design
- Turnkey Solution Project
- Marina and Resort Project
- Hydro Electric Power Project
- Geotechnical Project
- Project Management Consulting
- Supervision for Construction

Engineering Services & Major Experiences

Project Name	National	Client
BOGCL Petrochemical Complex Plant Project	Bangladesh	Bashundhara Oil & Gas Company Ltd.
Design of Gangway Including Pipelines	Bangladesh	BM Energy
Total Engineering Service of LPG Marine Terminal	Bangladesh	UNITEX LP Gas Ltd.
Feasibility Study Dominica 360MW Solar Power Project	Dominica	BEATCO
BM LPG/LNG Terminal Project	Bangladesh	BM Energy
Feasibility Study LNG 1,000MW Power Plant	Malaysia	SPC
Concept Design LNG Terminal in Indonesia	Indonesia	SPC in China
CAMBODIA 311Km Road Project	Cambodia	CAMBODIA Ministry of Road & traffic
Basic & FEED Engineering for FSRU POMALA Project	Indonesia	PGN LNG
ZOR-New Refinery Project	Kuwait	HSS JV
NSRP Package E Project	Vietnam	TOYO E&C
LPG 84K Carrier PROJECT	China	China Chiu Sing Petroleum Holding Limited
40,000 BPD Refinery Plant IN MONGOLIA Project	Mongolia	EMFMOC Mongolia
CANADA-Sand Oil Modulization and Transportation Project	Canada	EXPEDITE
1250MW Wind Farm at Santa Cruz in Argentina	Argentina	Vertek S.A
Monitoring Settlement in Entrance Structures to Main, North & West Grandstands Project	UAE	ADMM
Construction of Oil Storage Tanks Phase 2 for ATB.	Malaysia	Ingress
GUMUSUT KAKAP FPU -Offshore Refinery Project	Malaysia	MMHE
MMHE Shipyard Optimization Project	Malaysia	MMHE
Feed and Basic Design for Onshore Plant/LNG Barge/ LNG FSRU	Bolivia	YPFB BOLIVIA
Study for RAMMUNIA Offshore Yard(Shipyard)	Philippine	Ramunia International Service Limited
UTC Brazilian Offshore Yard Optimization	Brazil	UTC Brazil
Concept Design for CNG Ship Project	Malaysia	MISC

PMC & Supervision

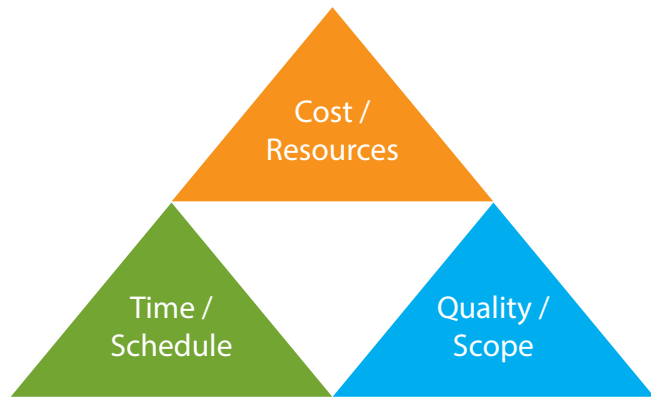
PMC & Supervision Division can provides Expertise Services for Project Management and Consultant and Supervision of Offshore Division, Ship and Ocean Division, Subsea Platform & Pipeline Division, Railway Division, Port & Coastal Division, Refinery & Chemical Plant Division, Civil Division, Thermal Power Plant Division, LNG/LPG Division, Bio & Hydrogen Plant Division, New Renewal Energy Division, Shipyard Optimization Division



Business Fields

- Financial Part
- Schedule Part
- Document Control Part
- Structure and Hull Part
- Geotechnical Part
- Chemical Process Part
- E&I Part
- Harbor Part
- HSE Part

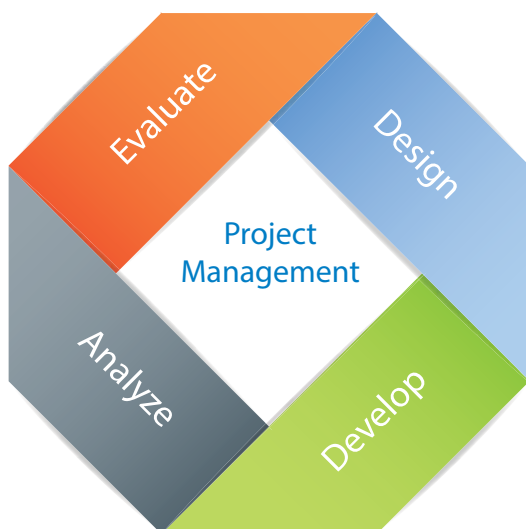
Triple Constraint



Work Scope

- Project feasibility report
- Preliminary working and estimate cost
- Detail project report with pay back period calculation
- Techno-Economical viability (TEV) study of project
- Detail engineering
- Plant engineering
- Procurement support for plant and machinery
- Project management
- Installation and commissioning support
- Operational support
- Contract manufacturing support
- Plant construction

3 Different level Service



Senior Project Management Consultant

Our consultants lead large cross-functional project teams on challenging projects.

Project Management Consultant

Our consultants lead cross-functional project teams on small- to medium-sized projects.

Project Management Coordinator

Our Project Coordinators(Supervisor) work under the direct supervision of the onsite Senior Consultant.

Research & Development

The R&D department aim is to enable innovative development of engineering technology to improve company capability as well as closely provide engineers and designers with the best technical solution for increased and complicated demands, needs and requirements from customer to meet up-to-date technology.

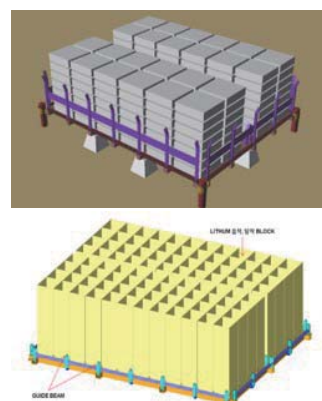
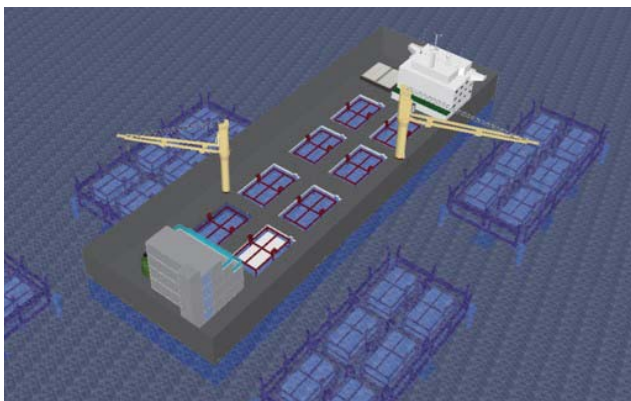
Our scope of research covers

- Fixed structure (Jacket, Jetty, etc.)
- Floating offshore structure (FPSO, Semi-submersible, etc.)
- Mooring system (Quay mooring, Catenary, etc.)
- Renewable energy (Offshore wind power, Tidal power, etc.)
- CFD (Computational Fluid Dynamics)
- FSI (Fluid-Structure Interaction), PSI (Pile-Soil Interaction), etc.

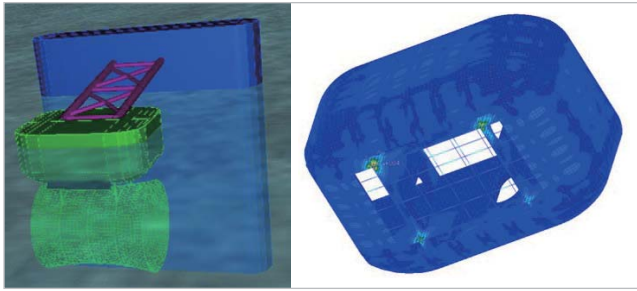
Engineering Services & Major Experiences



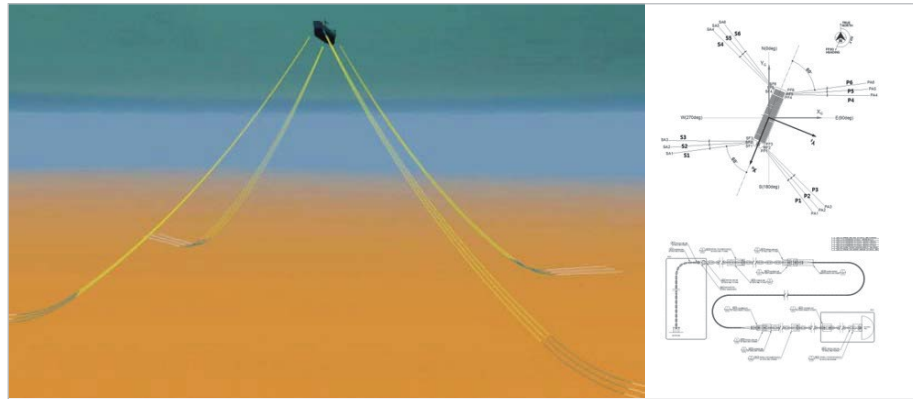
Development of Hybrid Substructure Systems for Offshore Wind Power, Korea Evaluation Institute of Industrial Technology (KEIT)
- Design of hybrid type substructure of offshore wind power to improve structural performance



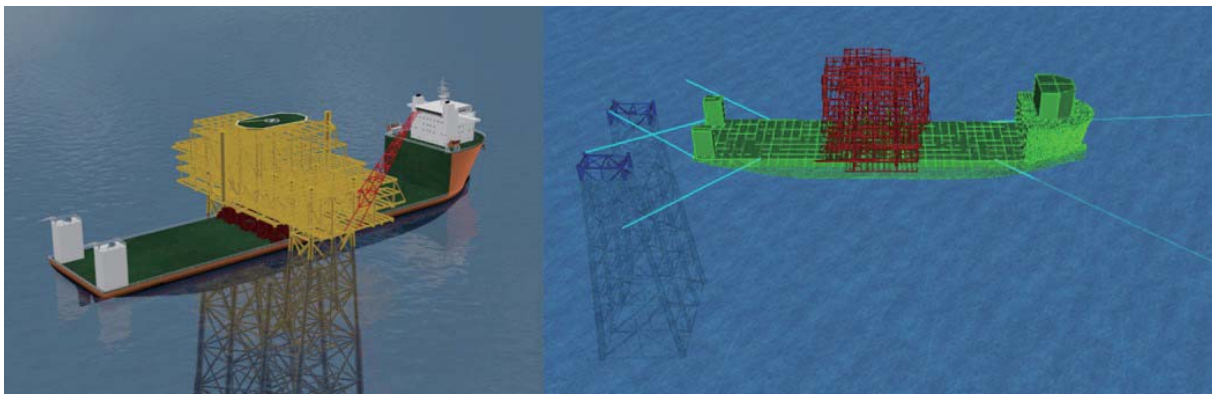
Lithium Absorption, Desorption Station Advancement Plan Research, Korea Institute of Geoscience and Mineral Resources (KIGAM),
- Development of seabed-laying plant and study of lifting system for lithium absorption blocks



Development of Floating Tidal Power System for Bridge for Self-sufficient Energy of Bridge, Korea Institute of Energy Technology Evaluation and Planning (KETEP)
 Design and structural analysis of connector between bridge and floater
 - Design and hydrodynamic analysis of buoy for tidal power system



Development of Multi-point Mooring System Engineering Package with Core Design and Installation Technology for Deep Sea Floating Structures, Korea Evaluation Institute of Industrial Technology (KEIT)
 - Design of catenary and taut type mooring system for deep sea floating structures



Development of Core Installation Technologies for Float-over, Korea Institute of Marine Science & Technology Promotion (KIMST)
 - Development of the installation and structural safety evaluation technology for float-over method



Development on integration design and construction method of the jacket structure of offshore wind turbine for cost savings of marine construction, Korea Institute of Energy Technology Evaluation and Planning (KETEP)
 - Integration design and construction method of the jacket substructure for offshore wind turbine to save installation cost

Certificate of ZENTECH

111

발급번호 Issuance number: 9930-030-6026-475

사업자등록증명 Certificate of Business Registration (법인사업자) (Corporate Taxpayer)

주식회사 엔지니어링 Zentech E&C Co., Ltd.

사업자등록번호 Business registration number: 100-08-4760

명칭 (대표자) Name of representative: 최병열 Choi Byoung Ryoul

주원(법인)등록번호 Resident(Corporation) registration number: 110111-4994673

사업장소재지 Address: 서울특별시 강남구 역삼로 159, 7층(역삼동, 쎄타워) W, Zentech Tower, 159, Yeoksam-ro, Gangnam-gu, Seoul

종업원 Date of business: 2012년 11월 02일 (Day)

국립공인등록 Date of business: 2012년 11월 09일 (Day)

업종 Business type: 시비스 Professional, scientific and technical activities

종 Business item: 토목감리설계, 엔지니어링 Civil Engineering Services

대표이사명/ Name of company: 최병열/ Choi Byoung Ryoul

주원(사업자)등록번호 Resident(Business) registration no. 해당사항 없음이다 (No Data)

발급번호 Receipt No.: 10042200294

발급부서 Taxpayer Service Center

담당자 Staff in Charge: 노미향

전화번호 Telephone No.: 02-3011-9427

2016년 6월 23일 Year Month Day

약삼세무서장 (인) Head of Yeoksam District Tax Office

국세청 국세청

* 본 증명은 국세청 홈페이지(www.hometax.go.kr)에서 "연속운영 원본확인, 제출용 증명"을 클릭하여 발급받을 수 있으며, 제출용 증명만 발급 가능합니다. * 본 증명은 홈택스(www.hometax.go.kr)에서 "연속운영 원본확인, 제출용 증명"을 클릭하여 발급받을 수 있으며, 제출용 증명만 발급 가능합니다.

Business Registration

20180712-00-00000288579

엔지니어링사업자 신고증

명 칭: 주식회사 엔지니어링

대표자명: 최병열 생년월일: 1964.03.01

소재지: 서울특별시 강남구 역삼로 159, 7층(역삼동, 쎄타워) 전화번호 (FAX, E-Mail): 02-556-5076, 02-556-0750

신고번호: 제 E-09-004208 호

엔지니어링업: 기술부문: 건설 등 1개 부문, 전문분야: 구조 등 1개 분야

엔지니어링 전문업: 기술부문: 등 1개 부문, 전문분야: 등 1개 분야

신고연월일: 2015-12-04

「엔지니어링산업 진흥법」 제21조제1항 및 같은 법 시행규칙 제7조에 따라 위와 같이 신고하였음을 증명합니다.

2019년 07월 12일

한국엔지니어링협회장 (인) Chairman of Korea Association of Engineers

본 증명서는 한국엔지니어링협회(http://www.kae.or.kr)에서 발급된 증명서의 출력결과를 이용하여 증명서로 출력하여 사용할 수 있습니다.

Independent Engineering Company

해외건설협회 시행규칙 제33조제1항 (제2014. 2. 14)

제 978 호 No. 978

해외건설업 신고확인증 (Certification of International Contractor)

상 호: (주)엔텍이앤씨 (Name of Company) Zentech E&C Co., Ltd.)

대 표 자: 최병열 (Name of Company Representative) (Choi Byoung Ryoul)

법인등록번호 (생년월일): [110111-4994673] (Corporation registration number (date of Birth))

신고업종: 건설엔지니어링업 (Type of Business) (Engineering)

주관 사무소의 소재지: 서울특별시 강남구 역삼로 159, 7층 (Address of Company) (T/F: 159 Yeoksam-ro, Gangnam-gu, Seoul, Korea)

「해외건설촉진법」 제6조 제1항에 따라 해외건설업의 신고를 하였음을 증명합니다. This is to certify that the above mentioned company is an enrolled international contractor in compliance with Clause 1 under Article 6 of Overseas Construction Promotion Act.

2015년 12월 11일

해외건설협회장 (Chairman of International Contractors Association of Korea)

해외건설업신고사실(상호, 대표자, 영감소재지)이 변경된 경우 사무발령일로부터 30일 이내에 반드시 변경신고를 하시기 바랍니다. 210602016 (보존용지) 10g/㎡

International Contractor

제 : 201701145038

벤처기업확인서

업 체 명: (주)엔텍이앤씨

대 표 자: 최병열

소재지: 서울특별시 강남구 역삼로 159, 7층(역삼동, 쎄타워)

확인유형: 연구개발기업

평가기관: 기술보증기금

유효기간: 2017년11월30일 ~ 2019년11월29일

위 업체는 벤처기업육성에관한특별조치법 제25조의 규정에 의하여 벤처기업임을 확인합니다.

2017년 11월 30일

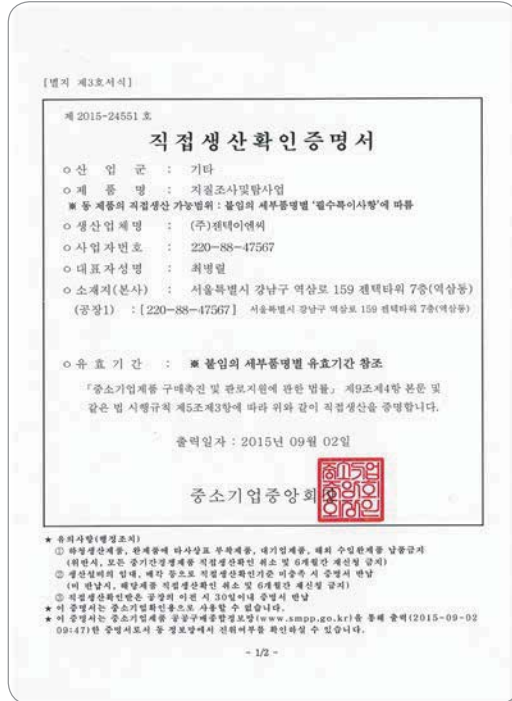
KIBO 기술보증기금 이사장 (인) Chairman of KIBO

Venture Business Company

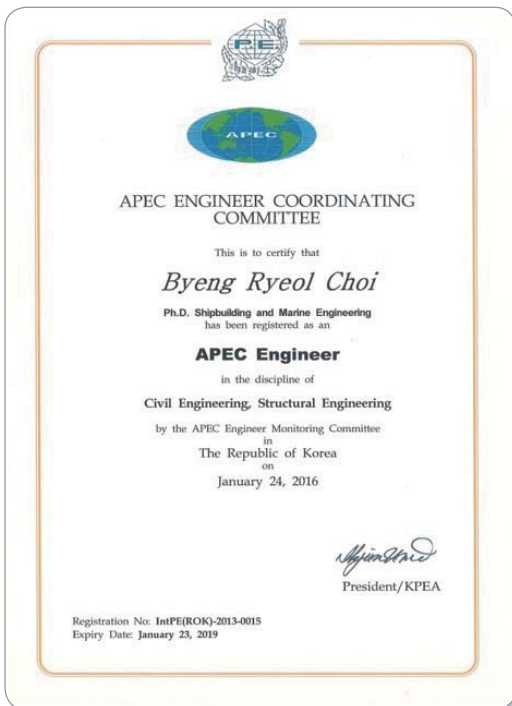
Certificate of ZENTECH



Research & Development Center



Geological Survey



APEC Engineer



International Professional Engineer

Certificate of ZENTECH



Achievement of PTT LNG Project



Achievement of Satrah Project



Achievement of Ruwais Refinery Project



Achievement of Offshore Wind Turbine Project

Certificate of ZENTECH



Advance Substructure for Offshore Wind Turbine



Zentech E & C ISO9001:2015



Zentech E & C ISO14001:2015

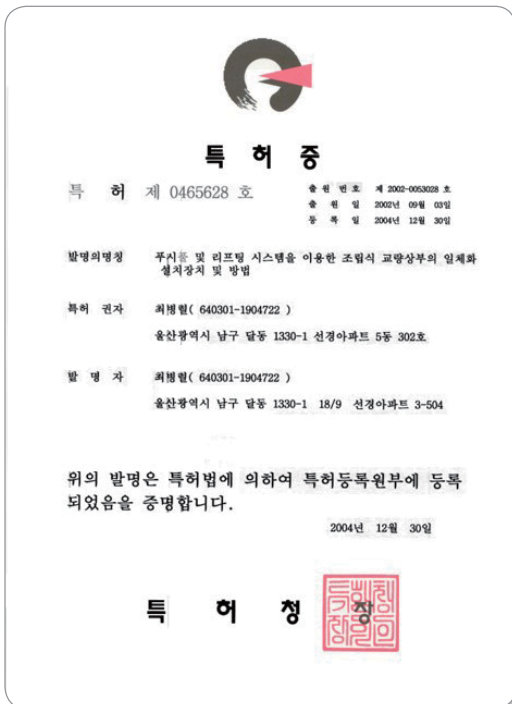
Patent of ZENTECH



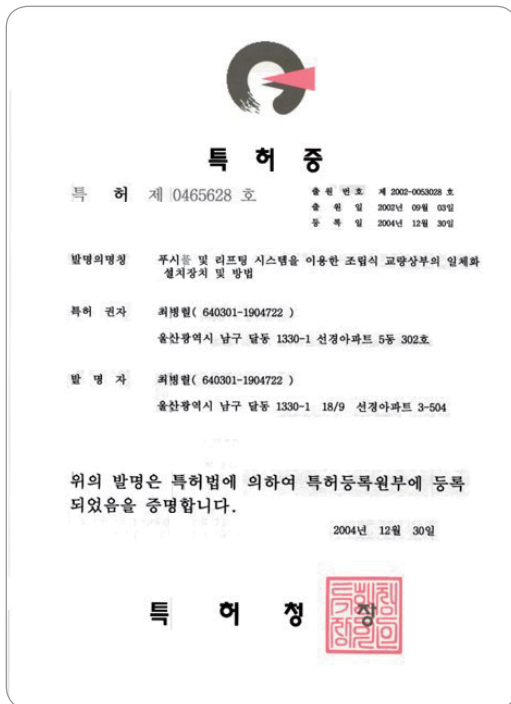
Hybrid Support Structure for Offshore Wind Power Generation and Method of Construction Thereof



International Professional Engineer



Superlift Method for Heavy Topside & Grand Bridge



Pre-Fabrication Method for Grand Bridge Deck Slab



Zentech Tower, 159 Yeoksam-ro, Gangnam-gu, Seoul #06246, Korea
Phone +82-2-556-5076~7 Fax +82-2-556-5075
<http://www.zentechenc.com>