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PROFESSIONAL ENGINEERING SERVICES

ABOUT KPEG

Korean Plant Engineering Group (KPEG) was established in May 2019 through the collaborative efforts of four reputation Korean engineering companies: Woobyung Engineering, Sejin Plant Engineering, CES, and Duhan Technology.

Our mission is to provide comprehensive technical services throughout the entire project life cycle, from initial consultation and engineering design to procurement and project management. With a team of experienced and skilled engineers proficient in innovative software applications for design and project management, KPEG is committed to delivering high-quality products within tight schedules, ensuring maximum benefits for our clients.

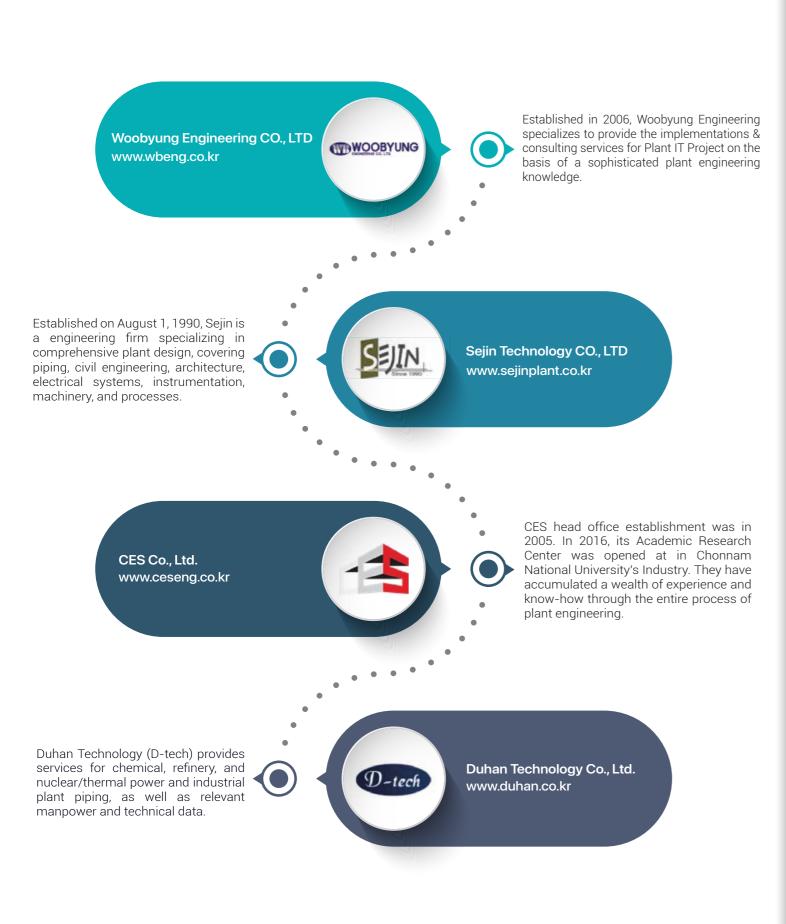


OUR EXPECTATIONS

SHAREHOLDERS



COMPANY ORGANIZATION







FRONT END ENGINEERING

BASIC & DETAIL ENGINEERING

PROCUREMENT MANAGEMENT

CONSTRUCTION SUPERVISION &

DEVELOPING AID DESIGN & CONSTRUCTION SOFTWARE



BUSINESS AREAS

While KPEG's core operations revolve around the oil and gas sectors, covering areas like oil, natural gas, and petrochemicals, the company is also involved in various infrastructure ventures, including those within the energy and industrial domains.



OIL & GAS PETROCHEMICAL

Oil & Gas Production Gas Processing - Offshore Facilities Oil Refinery Petrochemical Fertilizer & Chemicals Oil Terminal & Distribution

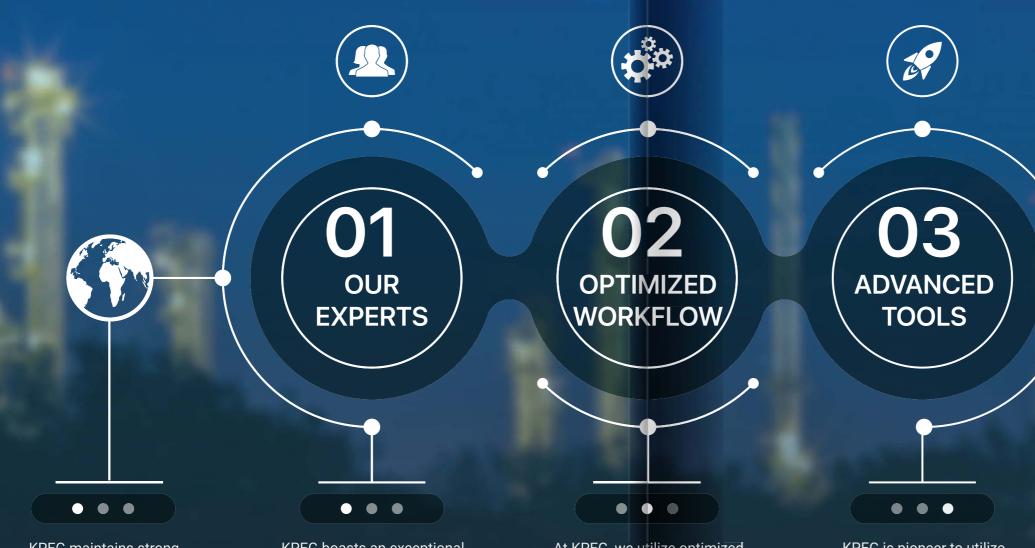
ENERGY-RELATED

Thermal Power Plant Hydro Power Plant LPG/LNG Power Plant Solar Power, Waste-to-Energy Power Plant Combined Cycle Power Plant Clean Hydrogen Generation.

INDUSTRIAL

HVAC/MEP System Waste Water Treatment Plant Food/Beverage Processing Plant Fire Fighting and Fire Prevention System Industrial Gas Production (Nitrogen, Argon, Oxygen)

OUR STRENGTH



KPEG maintains strong connections within a network of Korean engineering companies, providing valuable access to potential partners and collaborators. Leveraging these connections, KPEG can forge strategic alliances that enhance our capabilities and broaden our reach. KPEG boasts an exceptional team of Vietnamese and Korean professionals with extensive experience garnered from world-leading Engineering corporations such as Wood, JGC, Technip, Hyundai E&C, Samsung E&C and CTCI. These individuals have contributed to numerous mega projects globally, bringing diverse industry knowledge and technical excellence to KPEG's projects. At KPEG, we utilize optimized workflows tailored to meet specific project needs, guaranteeing top-notch quality and swift turnaround times from pre-bid stages to detailed design phases. KPEG is pioneer to utilize advanced engineering softwares to augment our capabilities and ensure efficient project execution.



EXPERTISE AND CAPABILITIES

KPEG's strength lies in its capability to assemble outstanding project execution teams, comprising various specialized groups. These groups include:







package, etc.).

Process simulation.

biological processes.

units, buildings, etc.

• Pipe thickness calculation, PMS (Piping Material Specification) & VMS (Valve Material Specification).

• Prepare specifications for insulation, painting, wrapping, and coating. • Equipment general arrangement drawing/layouts such as nozzle and platform orientation, ladders, overhead crane, monorail arrangement. • Pipe rack & structures general arrangement (height, width, tier, etc),

loading calculation.

· Modeling foundation, equipment, structure, building, piping, electrical, instrument and other facilities by advanced software such as S3D, E3D, AutoCAD Plant 3D. Conduct model review to resolve clashes and confirm safety, construction, operation, maintenance ability.

• Piping isometrics and shop drawings.

• Take off material (BOM), prepare requisition, conduct vendor inquiry and technical/commercial evaluation.

• Responsible for the process control/monitoring system of the plant. Complete the definition requirements, including final sizing and vendor selection from the preliminary data sheet originated by process.

- · Layout the central control room arrangement.
- configuration.

connection.

 Detailed design layout and installation/assembly of field instrument such as sensing elements, transmitters, local indicators, fire and gas devices, etc...

· Defining signal cables, designing cable/tubing system such as main cable routing, instrument air/hydraulic tubing layout, instrument cable terminal

· P&ID/PFD/UFD with heat & material balance.

• Process data sheet preparation (column, vessel, H/E, compressor, pump,

• Hydraulics, line sizing, material selection, Int. & piping process data. • Design, operation, control and optimization of chemical, physical and

• Pre-FEED, FEED, detail design, construction, operation consultancy.

Overall plot plan for various process units, tank farms, offsite, package

· Piping layouts showing all the piping and equipment.

· Piping stress analysis for the critical lines using CAESAR-II.

Prepare control/monitoring system philosophy and hardware

· Control/monitoring system software development.

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• Design electrical systems includes: Power supply system, lighting, lightning, earthing systems.

• Prepare detailed design drawings and related documents for design stages, such as: Concept design, basic, detail and construction design.

• Make cable schedule, calculations, single line diagram, schematic diagram and layout drawings.

· Provide technical documents such as specification and system description.

- Prepare bill of materials (BOM) and MTO.
- Design in accordance with International Codes and Standards.
- Conducting 3D electrical modeling.



- Analysis/design: dynamic/vibration; structural components (roofs, walls, floors, etc.); steel connections
- Architectural/civil/structural specification preparation

• Drawing preparation: architectural plans elevations; civil; construction detailing; site layout/topography; structural plans/sections.

- Seismic and wind loads calculations according to the local regulations.
- Design of equipment ranging from tank, vessel, tower, internal tray and support.
- Design of furnace/fired equipment and thermal rating of shell and tube heat exchanger.
- Design of platforms, ladders, sliding guides and foundations.

• Provide project and technical support to operations and maintenance. This includes equipment testing, "troubleshooting", routine equipment surveillance, startup activities, training, and developing permanent solutions to equipment and system problems

• Give technical consultant for the design of new facilities, including the development of systems, equipment specifications, operating procedures, and inspection/maintenance programs

• Develop cost estimates, evaluate equipment, review bids, perform economic analysis, and make recommendations on selection of equipment

 Analyze equipment and system performance and find solution for energy saving, operating efficiency, reliability and profitability improvement.



3D ADMIN AND DEVELOPMENT SERVICES

· Project setup and customization for popular plant design software: PDS, SP3D, PDMS, E3D, AutoCAD Plant 3D, etc. to fit with project requirement: Cad environment setting, authorization, Spec & Catalog development, ISO and GA drawing generation, Report, etc.

- standard.
- faster and more accuracy.



SOFTWARE AND SERVICES FOR PLANT CONSTRUCTION MANAGEMENT

• PAMS: Automatic management system for Plant's Construction works: Create and manage the progress of welds, packages, etc. along with inspection and quality control processes. • PCVM: 5D program support for construction planning, visualization and simulation construction progress, etc.





MECHANICAL INCLUDING **HVAC**

• Training for design team to familiar with the design software.

• Develop pipe/equipment symbols, support library, etc. follow project

• Develop aid software that support the design work more convenient,

· Other software development as per client requirement.

At KPEG, we employ two cutting-edge software solutions for conducting Feasibility Studies (FS), Front End Engineering Design (FEED), and EPC estimation. This strategic utilization enhances both productivity and quality across our projects when comparing conventional methods



SmartMTO is a comprehensive AutoCAD-based software suite equipped with AI (Artificial Intelligence) capabilities, facilitating faster and more accurate material take-offs during the proposal stage of plant projects. With a range of productivity tools, SmartMTO empowers users to execute projects with precision, rapidly creating cost-effective deliverables.



SmartMTO helps users save time up to 60% when working with a normal working flow.

Increase Accuracy

Using AI technology, SmartMTO helps to reduce errors, increase accuracy.



Save cost

Implement your job in a short time with a large amount of drawings. Increase efficiency and cost as well

Speed up

This is the productivity of material takeoff on P&ID drawings, simple and easy to use. Make your work being faster and happier



PlantStream is an "Auto-design 3D CAD system" that boasts innovative design performance. The vast know-how of the skilled engineers who have played a central role in plant design has been converted into algorithms to realize the World's First Amazingly Automated Design that combines high accuracy and speed. From Feasibility Study (FS) to detailed design, can be utilized in all phases of the engineering process.



ENGINEERING SOFTWARES

PIPING TOOLS

Material Take Off, 3D Modeling, Piping Drawing (GAD/ISO)



AVEVA EVERYTHING3D" PDMS (AVEVA Everything 3D)



AUTODESK AUTOCAD' PLANT 3D





AutoDesk AutoCAD Plant 3D

Plant Stream

INTERGRAPH **PDS[®]** PDS



AutoDesk Revit

AUTODESK

REVIT

Piping Stress & Dynamic Analysis



Intelligent CAD



CIVIL TOOLS

Steel & Concrete Structure Analysis

Bentley STAAD.Pro STAAD Pro



Structure Design



PROCESS TOOLS

Computational Fluid Dynamics

S SOLIDWORKS Solidworks Flow Simulation

Process Simulation

PRO/II PRO II



EQUIPMENT TOOLS

Pressure Vessel Sizing & Stress Analysis

COMPRESS® Smarter Pressure Vessel Designing Compress

Storage Tank

OPTIMA TANK650 Optima TANK 650

Heat Exchanger Thermal Rating & Design

HTRI. HTRI

Equipment GA & Fabrication drawings

AUTODESK' AutoDesk AutoCAD

ELECTRICAL/INSTRUMENTATION TOOLS

Electrical Single Line/Datasheet

etap Arc Safety ETAP Power Station (Power System Analysis)

Instrument Schedule /Hook-up Design

SmartPlant Instrumentation SmartPlant Instrumentation



HIGHLIGHTED PROJECTS

By Jan 2024, KPEG has successfully serviced 42 engineering packages globally. Known for our unwavering dedication to quality, adherence to timelines, and exceeding client expectations, KPEG humbly strives to maintain a standard of excellence in the engineering sector.



01 RDMP NITROGEN GENERATOR PACKAGE

- Owner: PT Pertamina (Persero)
- Client: Hyundai E&C/ DIG
- Location: Balikpapan, Indonesia

This package is to provide nitrogen package for RDMP Project. KPEG was tasked with providing comprehensive detail engineering design services for the piping system, steel structure, civil, MTO and generated drawings for construction. This included meticulous planning and execution of engineering designs to ensure the efficient and safe delivery of nitrogen to meet the project's requirements. The package was modelled and managed by S3D system.

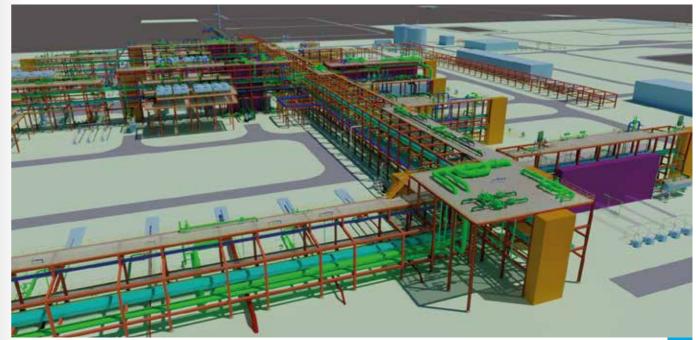
02 JAFURAH GAS PLANT PROJECT (PACKAGE 1,2 AND 3)

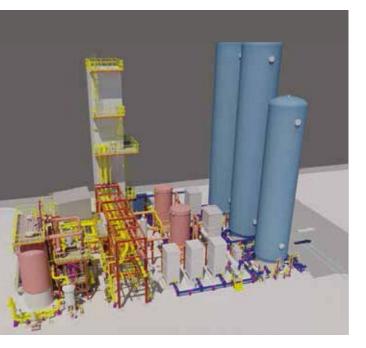
- Owner: Saudi Arabian Oil Company (ARAMCO)
- Client: SEJIN Plant Engineering / Hyundai E&C
- Location: Al Jouf Province, Saudi Arabia

Aramco's Jafurah Gas Plant Project involves constructing a greenfield plant to process unconventional gas from Saudi Arabia's Jafurah onshore field. Package 1 entails the installation of gas compression facilities, comprising three sub-packages (HZEM1, HYMY3, HYMY4), with a value exceeding \$1 billion.

Jafurah Gas Package. 2&3, represent the largest EPC contracts within the Jafurah gas plant project, with an estimated value of \$2 billion. They encompass six main units: Gas Processing Train 1 and Train 2, Sulfur Recovery & Tail Gas, Sulfur Storage and Export, Inlet Storage & Export, Utilities, and Common Facilities

Together with SEJIN Plant Engineering, KPEG provided pre-bidding engineering services for Hyundai E&C, including plot plan development, equipment modelling, structure configuration proposes and modelling, piping layout modelling and material take-off. KPEG modelled and managed the package by S3D system including software admin and catalog generation.





03 CLEAN HYDROGEN PLANT

- Owner: Doosan
- Client: CES
- Location: Korea

The initial project design for a clean hydrogen plant linked with a nuclear power source includes two options: a 12 MW H2 Alkaline Electrolysis Plant and a 10 MW H2 PEM Electrolysis Plant.

KPEG effectively delivered Front End Engineering Design (FEED) data including Plot plan development, design engineering including piping, structure, civil, electrical and Instrumentation, 3D model for both two cases of plant.





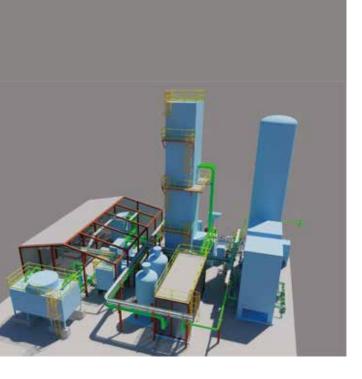
04 COMPLEX AIRGAS PLANTS

- Owner: DIG Airgas Co., Ltd
- Client: DIG Airgas Co., Ltd
- Location: Korea

Leveraging its renowned design team, KPEG has become a preferred engineering contractor of DIG AIRGAS CO., LTD. We have provided whole Detail Piping and Structure Engineering Services for a series of industrial gas production plants. These plants include: HJN3P, VSA O2, CDA, COSMO.





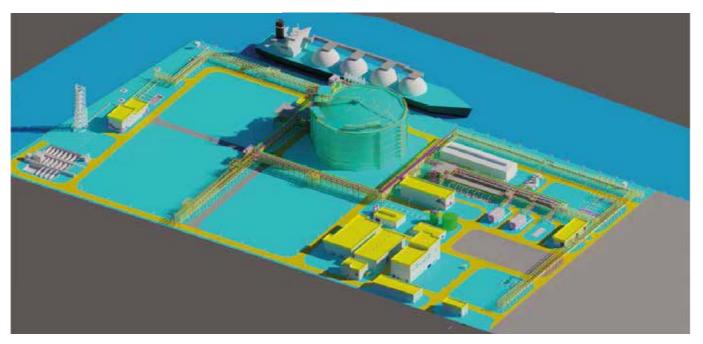




ULSAN LNG TERMINAL PROJECT

- Owner: Korea Energy Terminal
- Client: Byucksan Engineering Co.,Ltd.
- Location: Dangjin, South Chungcheong, Korea

This project is a large-scale tank terminal for petroleum, natural gas and petrochemical products as part of the Port of Ulsan project, the construction is a 215,000 kiloliters LNG tank and additional facilities. KPEG played a crucial role in delivering pre-bid piping engineering services for the entirety of project.



06 RHOURDE EL KHROUF FIELD (RKF) RE-DEVELOPMENT

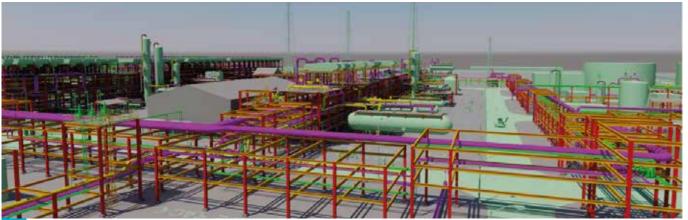
- Owner: Groupement RKF
- Client: Hyundai E&C
- Location: Algeria

With an \$800 million budget, the project involves developing the Rhourde El Khrouf Field (RKF) and constructing the Central Processing Facility (CPF-1). This includes:

Gas Oil Separation Plant (GOSP) for 24,500 bbl/d oil production. Producing 12,000 bbl/d of LPG.

Implementing a Gathering System and Gas/Water Reinjection facilities. Integrating Oil/LPG Export tie-in facilities.

During the pre-bid engineering stage, KPEG was responsible for layout design, modeling, Material Take-Off (MTO), and Isometric extraction for the whole project.

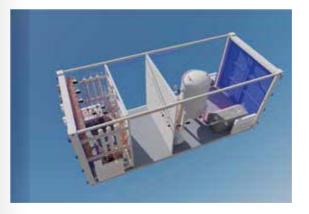


KPEG VIET NAM PROFILE



- Owner, INNOSPACE
- Client: INNOSPACE
- Location: Korea

With a team of highly skilled Piping experts, KPEG is entrusted with the responsibility of conducting the Piping Detail Design and delivering BOM, Plan, Iso & Support for the Propellant Supply Facility of a Satellite launch system. The project was executed using Autocad Plant 3D.



GREEN ENERGY PROGRAM(GEP) 08 PHASE II PROJECT

- Owner: SK E&S / SK Energy (PMC)
- Client: Huyndai E&C
- Location: Boryong, Chungchung Nam Do

The project encompasses two significant packages aimed at advancing industrial processes and environmental sustainability.

Package 1: Auto Thermal Reformer with ASU & CO2 Capture & PSA → 125,000 TPA × 2 Trains Utility & Offsite

Package 2: Hydrogen Liquefaction Unit (LH2) → 50 TPD × 3 Trains (50,000 TPA) CO2 Liquefaction Unit (LCO2) → Captured CO2 Gas 1,100,000 TPA × 2 Trains Marine Loading Terminal (CO2).

With our team of experienced engineers, KPEG has meticulously prepared Front End Engineering Design (FEED) data including Plot plan development, Piping Structure & Civil design engineering, 3D model for the whole project.



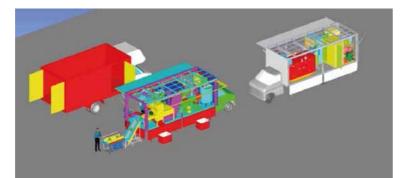






- Owner: SAMBI JUICE KOREA
- Client: SAMBI JUICE KOREA
- Location: Ho Chi Minh, Vietnam

KPEG partnered with Sambi to bring to life a revolutionary project: a mobile juice factory mounted on a truck, capable of producing 1000l/h (Total 10 trucks). This innovative venture, fueled by the investor's commitment to freshness, delivers the freshest juice products directly to customers. Responsible for the entire EPCOM process (Engineering, Procurement, Construction, Operation, and Maintenance), KPEG ensured flawless execution from concept to delivery.



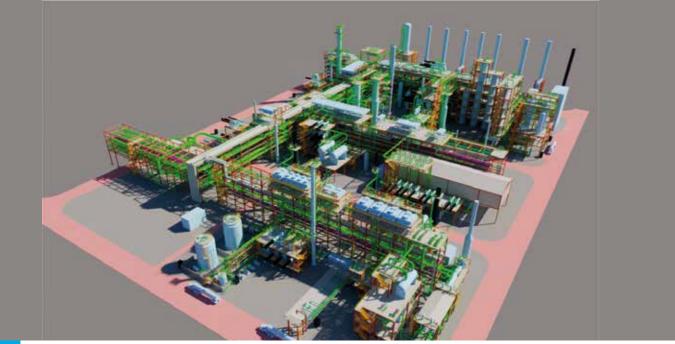


10 OIL SHAHEEN PROJECT

- Owner: S-OIL Corporation
- Client: Hyundai E&C
- Location: Korea

The Shaheen Project, a significant petrochemical venture underway in Ulsan, South Korea, is spearheaded by S-Oil Corporation, backed by Saudi Aramco. With a goal to convert crude oil into 3.2 million tons per year of vital petrochemical feedstock like ethylene, propylene, and butadiene, the project aims to meet growing industry demands. This ambitious endeavour represents a monumental investment of \$7 billion, marking it as Aramco's largest-ever investment in South Korea.

KPEG has been entrusted with providing Pre-Bidding Engineering Services for the Main Unit TC2C (feed rate of 45,500 BSPD). This significant undertaking serves as a strategic opportunity for KPEG to solidify its partnership with Hyundai.



1 SAFANIYAH CPF PROJECT PKG.1 & 2

- Owner: Saudi Aramco
- Client: Hyundai Engineering Co, Ltd
- Location: Saudi Arabia

SAFA comprises Central Processing Facilities (CPF) designed to produce 700 MBCD AH crude oil by receiving crude oil from oil wells, along with utilities required for CPF operations and Treated Water Injection to Oil well. This encompasses Package 1(CPF Unit), Package 2(Utilities and Water treatment & Injection), and the Revamp area.

KPEG takes pride in delivering Pre-Bidding Engineering services for Package 1 during the of the EPC proposal process.

12 ZONF PROJECT (ZULUF ONSHORE OIL FACILITIES PJ)

- Owner: Saudi Aramco
- Client: Hyundai Engineering Co, Ltd.
- Location: Saudi Arabia

As part of the Zuluf AH Development Program, the project entails constructing a Central Processing Facility (CPF), Water Treatment Plant, and Injection facility to process 600 MBCD AH crude oil. It consists of two main packages: Package 1 (Hydrocarbon Processing Facilities) and Package 2 (Utilities, Water Treatment, and Injection). The budget amount for both packages combined is approximately \$2.7 billion.

KPEG takes pride in delivering Pre-Bidding Engineering Services Both PKG1&2 during the proposal stage of the EPC process.





PROJECT LIST

as Compression s (Pkg 2&3) as Compression nts (Pkg1) Treatment Unit J) 99 Project	Pre-bid engineering Pre-bid engineering	ARAMCO	SAMSUNG E&C	Nov-19	
nts (Pkg1) Treatment Unit	Pre-bid engineering	ARAMCO		Nov-19	
			Hyundai E&C	Apr-20	
	Pre-bid engineering	KUWAIT NATIONAL PETROLEUM COMPANY		May-20	
oly improvement	Detail engineering	Daesung	Daesung	Jun-20	
ARKF-1	Pre-bid engineering	Groupement RKF (SONATRACH & CEPSA)	Hyundai E&C	Sep-20	
je-4 Utilities & site Project	Pre-bid engineering	AHU DHABI POLYMER Co., Ltd.	Hyundai E&C	May-21	
CO-7 Project	Pre-bid engineering	Qatar Fertiliser Company (P.S.C)	Hyundai E&C	Aug-21	
Project (ZULUF OIL FACILITIES PJ)	Pre-bid engineering	ARAMCO	Hyundai E&C	Sep-21	
ject (North Field n Project-PKG4)	Pre-bid engineering	Qatargas Operating Limited	Hyundai E&C	Nov-21	
roject (Russian d Gas Treatment)	Detail engineering	Noviy Potok Oil LLC	Hyundai E&C	Dec-21	
igin-1 LNG	Detail engineering	KOREA GAS CORPORATION	BYUCKSAN ENGINEERING	Dec-21	
I/PP PROPOSAL	Pre-bid engineering	Sonatrach, Total Enterprise Polymers	SAMSUNG E&C	Jan-22	
IP Nitrogen ator Package	Detail engineering	PT PERTAMINA (Persero)	Hyundai E&C	Mar-22	
I3P Project	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Mar-22	
EEN - (Steam Polymer Complex)	Pre-bid engineering	S-OIL Corporation	Daewoo E&C	Apr-22	
nosphate3 Phase1 RAK Area),MPC3	Pre-bid engineering	ARAMCO	Hyundai E&C	Apr-22	
EN - TC2C UNIT	Pre-bid engineering	S-OIL Corporation	Hyundai E&C	Jul-22	
P 02 VSA 0/S KCC2P) project	Detail engineering	ARAMCO	DIG AIRGAS CO., LTD	Jul-22	
ject (Ultra Clean iesel Euro V)	Detail engineering	iRPC Public Company Limited	Hyundai E&C	Sep-22	
ne Torrefaction Plant	Pre-bid engineering	IAE and CGT	IAE and CGT	Oct-22	
ie ne	sel Euro V) Torrefaction	e Torrefaction	e Torrefaction Pre-bid engineering LAE and CGT	e Torrefaction Pre-bid engineering LAE and CGT LAE and CGT	

Categories	PJ Name	KPEG's Service	Owner	Main Contractor /Client	Completion date
Petrochemical	HYOSUNG PP PILOT PROJECT	Detail engineering	HYOSUNG CHEMICAL	CES	Oct-22
Petrochemical	VSA 02 Project	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Dec-22
Petrochemical	LINE Project	Detail engineering	LOTTE CHEMICAL	Hyundai E&C	Dec-22
Petrochemical	SAFA project	Pre-bid engineering	ARAMCO	Hyundai E&C	Dec-22
Petrochemical	GEP Phase II Project	Pre-bid engineering	SK E&S / SK Energy (PMC)	Hyundai E&C	Dec-22
Food/ Beverage	Mobile Juicing Plant Project	Detail engineering	SAMBI KOREA	KPEG	Mar-23
Petrochemical	Y-project (CDA)	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Jul-23
Petrochemical	CJ(9P) GOX15000 project	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Jul-23
Petrochemical	VSA 02 Project_Backup area	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Aug-23
Petrochemical	VSA 02 Project_Plant Part	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Aug-23
Petrochemical	Hansol Chemical Nitrogen Plant	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Aug-23
Petrochemical	GN2-30.000N project	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Sep-23
Petrochemical	KCC PID Redrawing Work	Detail engineering	KCC Corporation		Oct-23
Oil & Gas	Pipe Support Calculation	Detail engineering	SK Air Gas	PIELDS Engineering	Dec-23
Petrochemical	LITHIUM HYDROXIDE CONVERSION PLANT PFD	Detail engineering	SAYONA	POSCO	Dec-23
Petrochemical	COSMO project	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Dec-23
Petrochemical	SKH-M15	Detail engineering	DIG AIRGAS CO., LTD	DIG AIRGAS CO., LTD	Jan-24
Chemical	Clean Hydrogen Project(CHP)	Detail engineering	DOOSAN	CES	Jan-24
Petrochemical	STA1 project	Detail engineering	Saudi Aramco and Total Energies	Saudi Aramco and Total Energies	Mar-24

MANA

/ NPANZ

ALC: NO

OUR TRUSTED PARTNERS AND CLIENTS

With a track record of delivering high standard deliverables, ensuring customer satisfaction, KPEG has earned the status of strategic Clients and partners of many prominent engineering companies, including

STRATEGIC PARTNERSHIP.



EXPERTISE

Benefit from our team's extensive experience from top engineering firms, ensuring unparalleled knowledge and proficiency.

ADVANCED TOOL USE

At KPEG, we utilize the most advanced tools to ensure high guality and minimize spending hours. Our commitment to leveraging cutting-edge technology guarantees efficient and precise project execution.

SUPERIOR OUTCOMES

Our commitment to quality, innovation, and professionalism guarantees exceptional project results.

COMPREHENSIVE SOLUTIONS

From start to finish, we provide integrated services tailored to your project needs, streamlining the process for efficiency.

INDUSTRY CONNECTIONS

Leveraging our network of Korean engineering companies, we access valuable resources and partnerships to enhance project delivery.

EXCELLENCE

With KPEG, expect nothing less than excellence in every aspect of your project.

