

Transforming
Resources
into **Value**



LNG

KBR



Gas Monetization

Liquefied Natural Gas (LNG)

A World Leader in LNG Liquefaction

We continue to be the leading international contractor for natural gas liquefaction plants, as evidenced by our unparalleled success in the design, engineering and construction of large projects in challenging locations. Alone or with our joint venture partners, we have designed and built over half the global LNG liquefaction capacity in operation between 1976 and 2006.

KBR, along with our joint venture partners, provided project management, engineering, procurement, construction and commissioning for Nigeria LNG, one of the world's largest capacity LNG facilities.

A History of Technological Innovation and Schedule Optimization

Through our “process technology neutral” approach, we have developed expertise with many of the commercially proven liquefaction processes. Our history of design innovations allows us to consistently challenge technical limitations while managing the typical risks of industry evolution. These innovations translate to optimum plant performance with the lowest life-cycle cost. Our liquefaction projects are designed with sustained, long-term operability in mind.

As demonstrated in our record-setting SEGAS project, schedule optimization and early purchase commitments of long-lead items ensure timely project completion and first LNG shipment.

Expertise Across the Entire LNG Value Chain

Our tradition of technical innovation extends to LNG terminals, where we have developed a history of leading-edge designs for safety and efficiency including cold energy integration, efficient liquid/vapor handling systems and the KBR Natural Gas Recondenser.

The KBR recondenser was the first vessel ever designed to fully condense boil-off gas for a terminal. The co-current liquid/vapor design has the longest operating experience of any available in the industry. To date, 14 KBR-designed recondensers are operating in ten terminals worldwide.



KBR's record-setting SEGAS project, located in Egypt, achieved one of the shortest project development schedules for a grassroots LNG facility.

Ing

KBR Liquefaction Complexes (1976-Present)

Client, Project	Location	LNG Production Capacity (MPTA)	LNG Storage Capacity (MPTA)	KBR Scope of Work	Notes
ANGOLA LNG One-Train Grassroots	Soyo, Angola	5.0	2 x 150,000	FEED in JV with JGC, Technip	2, 5, 6
GASSI TOUIL LNG One-Train Grassroots	Arzew, Algeria	4.0	2 x 160,000	FEED in JV with JGC	2, 5, 6
GORGON LNG Two-Train Grassroots	Barrow Island, Western Australia	10.0	2 x 160,000	FEED in JV with JGC, Clough, Hatch	2, 5, 6
MALAYSIA LNG SATU Three-Train Grassroots	Bintulu, Malaysia	7.8	4 x 65,000	EPC in Joint Venture (JV) with JGC	2
MALAYSIA LNG DUA Three-Train Expansion	Bintulu, Malaysia	7.8	1 x 65,000	FEED, EPC in JV with JGC, Sime	2, 6, 7
MALAYSIA LNG TIGA Two-Train Expansion	Bintulu, Malaysia	7.8	1 x 120,000	EPC in JV with JGC, Sime	2, 5, 6
NIGERIA LNG Two-Train Grassroots	Bonny Island, Nigeria	5.9	2 x 84,200	FEED, EPC in JV with Technip, Snamprogetti, JGC	2, 6, 8
NIGERIA LNG Two-Train Grassroots	Bonny Island, Nigeria	4.5	2 x 84,200	FEED in JV with Technip	3, 6, 8
NIGERIA LNG One-Train Expansion	Bonny Island, Nigeria	2.9	1 x 84,200	FEED, EPC in JV with Technip, Snamprogetti, JGC	2, 6, 8
NIGERIA LNG (PLUS) Two-Train Expansion	Bonny Island, Nigeria	8.0	1 x 84,200	FEED, EPC in JV with Technip, Snamprogetti, JGC	2, 5, 6
NIGERIA LNG (NLNGSix) One-Train Expansion	Bonny Island, Nigeria	4.0	–	FEED, EPC in JV with Technip, Snamprogetti, JGC	2, 5, 6
NIGERIA LNG (SevenPLUS) Two-Train Expansion	Bonny Island, Nigeria	17.0	–	FEED in JV with Technip, Snamprogetti, JGC	
OK LNG Two-Train Grassroots	Olokola, Nigeria	11.0	2 x 165,000	FEED in JV with JGC	2, 5, 6
OMAN LNG Two-Train Grassroots	Al Ghalilah, Oman	6.6	2 x 134,000	FEED in JV with JGC	2, 6
PERU LNG One-Train Grassroots	Pampa Melchorita, Peru	4.3	2 x 130,000	FEED	2, 5, 6
PT. BADAQ H One-Train Expansion	Bontang, Indonesia	2.95	1 x 127,200	FEED, EPC in JV with IKPT and PTGC	2
QATARGAS LNG Two-Train Grassroots	Ras Laffan, Qatar	4.5	3 x 85,000	FEED in JV with JGC	2, 6

KBR Liquefaction Complexes (1976-Present) Cont'd.

Client, Project	Location	LNG Production Capacity (MPTA)	LNG Storage Capacity (MPTA)	KBR Scope of Work	Notes
QATARGAS LNG Three-Train Debottleneck	Ras Laffan, Qatar	9.7	4 x 85,000	FEED	2, 6
RAS LAFFAN LNG Two-Train Grassroots	Ras Laffan, Qatar	5.0	2 x 140,000	EPC in JV with JGC	2, 6
SEGAS LNG One-Train Grassroots	Damietta Port, Egypt	5.0	2 x 150,000	FEED, EPC in JV with JGC, Tecnicas Reunidas SA	2, 5, 6
SONATRACH GL 2.Z Six-Train Grassroots	Arzew, Algeria	9.6	3 x 100,000	FEED, EPC for grassroots and later for capacity increase	1, 2
SONATRACH GL1.K Three Trains	Skikda, Algeria	3.5	3 x 56,000	EPC Completion & Renovation	4
SONATRACH NEW TRAIN One Train Grassroots	Skikda, Algeria	4.5	1 x 150,000	FEED, EPC	2, 5, 6
TANGGUH LNG Two-Train Grassroots	West Papua, Indonesia	7.6	2 x 132,000	FEED, EPC Early Works Program in JV with JGC	2, 5, 6
WOODSIDE NW SHELF Two-Train Grassroots	Karratha, Australia	4.2	–	FEED in JV with JGC, Kaiser	2
WOODSIDE NW SHELF Two-Train Grassroots	Karratha, Australia	4.3	4 x 65,000	FEED, EPC in JV with JGC, Kaiser	2, 5, 6
WOODSIDE NW SHELF One-Train Expansion	Karratha, Australia	2.2	–	EPC in JV with JGC, Kaiser	2, 5, 6
WOODSIDE NW SHELF One-Train Expansion	Karratha, Australia	4.2	–	FEED, EPC in JV with JGC, Hatch-Kaiser, Clough	2, 5, 6
WOODSIDE NW SHELF One-Train Expansion	Karratha, Australia	4.2	–	FEED in JV with JGC, Hatch-Kaiser, Clough	2, 5, 6
YEMEN LNG Two-Train Grassroots	Balhaf, Yemen	6.7	2 x 140,000	FEED, EPC in JV with JGC, Technip	2, 6

- NOTES
1. Grassroots capacity was originally 8.4 MTPA and later renovated to increase capacity to 9.6 MTPA
 2. Propane pre-cooled mixed-refrigerant process
 3. Dual mixed-refrigerant process
 4. Single mixed-refrigerant process
 5. Air cooled plant
 6. Gas turbine compressor drivers
 7. Hybrid Air cooling/Seawater cooling
 8. Closed loop, fresh water, with cooling towers

Gas-to-Liquids (GTL)

Gas to liquids (GTL) is a rapidly emerging technology that converts natural gas into premium liquid hydrocarbons. KBR brings to this market our differentiated, global capabilities to complete extremely large, complex, technically challenging projects on schedule under the most rigorous conditions. We have established ourselves in the GTL market and are involved in both of the GTL projects in development globally. GTL facilities are now in progress or being considered in gas-rich countries such as Algeria, Australia, Colombia, Nigeria, Qatar and Russia.

High crude oil prices in recent years and technological advances in processing have made GTL an attractive option for monetizing stranded gas. Trillions of cubic feet of stranded natural gas are located in remote areas across the globe, and we have the expertise in building complex plants in remote locations.

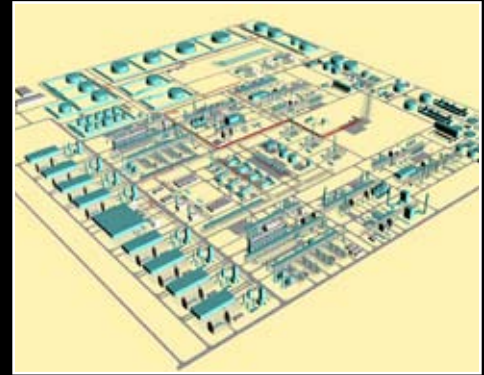
GTL can be used directly as diesel fuel or blended with lower quality fuel to bring it into compliance with environmental and performance specifications.

Gas Processing

We offer sixty years of unrivaled gas processing expertise and have been instrumental in building hundreds of gas treatment and recovery units, ranging from small units to some of the world's largest facilities. We pioneered the use of gas treatment technology in enhanced oil recovery and can provide the best solutions for our client's process needs.

Gas Monetization Studies

We have executed many gas monetization studies to assist our clients in evaluating appropriate options for utilization of offshore and onshore gas during the early field development phase. We are in a unique position to execute these studies as a result of our wide experience with gas monetization projects.



Following on the heels of the successful completion of the basis of design/basic design package and subsequent front-end engineering design (FEED) provided by the KBR/JGC joint venture, the award of the Pearl project execution cements KBR's leadership status in the GTL industry.



Building upon our history of successful project execution in Nigeria, KBR along with our JV partners, JGC Corporation and Snamprogetti, are providing engineering, procurement and construction for the Chevron Nigeria Limited/Nigeria National Petroleum Corporation Escravos GTL facility in Escravos, Nigeria.



KBR and JGC provided conceptual engineering, FEED and EPC services for the In Salah Gas Field Development.

KBR Receiving Terminals

Client	Location	Import Capacity (MTPA)	Storage Capacity (m3)	Scope
Port Arthur LNG	Sabine Pass, TX, USA	11.5	3 x 160,000	FEED
Cameron LNG (Expansion)	Hackberry, LA, USA	8.6	3 x 160,000	FEED
Rabaska LNG	Quebec, Canada	3.6	2 x 160,000	FEED
Taranto LNG	Taranto, Italy	6	2 x 150,000	FEED
Zaul LNG	Trieste, Italy	6	2 x 150,000	FEED
Domineon (Expansion)	Cove Point, MD, USA	13.5	2 x 160,000	FEED
Vista del Sol LNG	Ingleside, TX, USA	7.5	3 x 155,000	FEED
Golden Pass LNG	Sabine Pass, TX, USA	7.5	3 x 155,000	FEED
Bear Head LNG	Port Hawkesbury, Canada	7.5	2 x 180,000	FEED
P.T. PLN	Cilegan, Indonesia	3	2 x 120,000	FEED
Sound Energy Solutions (Mitsubishi)	Port of Long Beach, California	5.2	2 x 160,000	FEED
Brindisi LNG	Brindisi, Italy	6	2 x 160,000	FEED
South Hook LNG	Milford Haven, United Kingdom	7.5	3 x 155,000	FEED
Marathon	Baja California, Mexico	5.6	2 x 150,000	FEED
DEPA (Expansion)	Revithoussa, Greece	4.7	2 x 65,000	FEED
Guangdong LNG	Chentoujiao, China	3	2 x 160,000	FEED
BBG (Expansion)	Bilbao, Spain	5.5	-	FEED
Terminal LNG S.A.	Police, Poland	3.9	1 x 160,000	FEED
Lattice (Conversion of Peakshaver)	Isle of Grain, United Kingdom	1.5	Used Existing Tanks	FEED
Gopalpar LNG	Orissa, India	6	2 x 160,000	FEED
Union Fenosa LNG	Valencia, Spain	5.1	3 x 150,000	FEED/Site Selection
Phillips	Rosario, Mexico	5.0	2 x 132,000	FEED
Shell	Altamira, Mexico	5.0	3 x 150,000	FEED
Enagás	El Ferrol, Spain	2.74	2 x 105,000	FEED
ENEL	Montalto di Castro, Italy	6.45	4 x 76,500	FEED
Repsol-Enagás (2nd Expansion)	Cartagena, Spain	2.48	1 x 72,000	FEED/Advisory Services
Petronet	Kochi, India	2.6	2 x 110,000	FEED
DEPA	Revithoussa, Greece	1.97	2 x 65,000	FEED/Advisory Services
Repsol-Enagás (2nd Expansion)	Huelva, Spain	3.1	1 x 150,000	FEED
Repsol-Enagás (1st Expansion)	Cartagena, Spain	2.48	1 x 105,000	FEED/Advisory Services
Repsol-Enagás (Expansion)	Barcelona, Spain	8.47	2 x 150,000	FEED
Bahia de Bizkaia (BBG)	Bilbao, Spain	3.6	2 x 150,000	FEED
POSCO	Kwangyang, S. Korea	1.5	2 x 100,000	FEED/Advisory Services
KOGAS (Pilot Plant)	Inchon, S. Korea		2 x 1,000	FEED/Training
Enro	Dabhol, India	5.0	2 x 160,000	FEED
KOGAS	Tongyeong, S. Korea	6	3 x 140,000	FEED
KOGAS (Phase 2)	Inchon, S. Korea	10.0	7 x 100,000 2 x 140,000 + 6 Inground	FEED/Advisory Services
KOGAS	Inchon, S. Korea	3.0	3 x 100,000	FEED/Advisory Services
BOTAS	Marmara Ereğlisi, Turkey	3.03	3 x 85,000	FEED
Enagás (Expansion)	Huelva, Spain	3.1	1 x 100,000	FEED/Advisory Services
Chinese Petroleum Corp.	Yung-An, Taiwan	1.5	3 x 100,000	FEED/E/S/CO
Enagás	Cartagena, Spain	0.32	1 x 55,000	FEED/Advisory Services
Enagás	Huelva, Spain	0.83	1 x 60,000	FEED/Advisory Services
Distrigaz, S.A.	Zeebrugge, Belgium	6.42	3 x 87,000	FEED/EPC/Advisory
KOGAS	Pyeong Taek, S. Korea	3.5	4 x 100,000	Technical Consultancy
Trunkline LNG Co.	Lake Charles, LA, USA	5.68	3 x 95,400	FEED/EPC
Domineon	Cove Point, MD, USA	8.07	4 x 60,000	FEED/EPC/Advisory

LEGEND

FEED – Front End Engineering Design
E – Engineering

P – Procurement
C – Construction

S – Start-up
CO – Commissioning

Transforming Resources into Value

KBR's global engineering, construction and services expertise enables us to execute projects and provide cost-effective solutions for our customers anywhere in the world. Our energy and chemicals capabilities include onshore and offshore oil and gas production facilities, gas monetization facilities, refineries, petrochemical plants and synthesis gas technology. As energy demand continues to rise, KBR is working to meet tomorrow's demands today by providing value to our customers through the right people, technologies and processes.



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