



CELEBRATING
50
YEARS
1968-2018

Corporate Profile





***MODEC : A Leading Offshore Oil & Gas
Production Services Provider for over 50 Years***

MODEC has been providing competitive floating solutions for the offshore oil and gas industry and has been recognized as a leading specialist for floating oil and gas production systems, including FPSOs, FSOs, TLPs, and Production Semisubmersibles, for over 50 years.

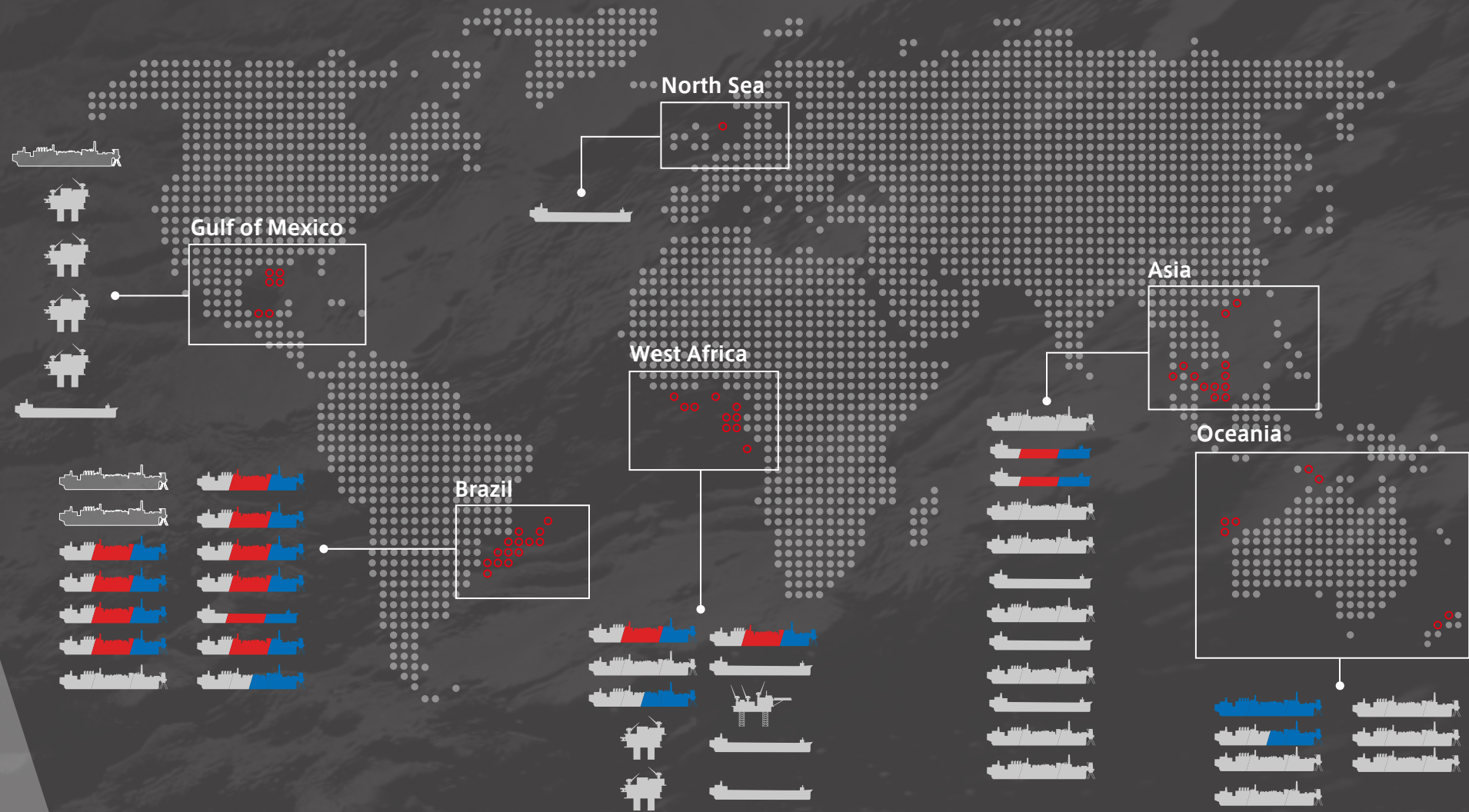


Our mission is “To produce oil and gas steadily and safely, 24 hours a day, 365 days a year, under harsh environmental offshore conditions that are subject to sudden and frequent changes.” To achieve this, we require an extremely high level of skill and expertise. In the offshore oil and gas industry, where successful track records are of utmost importance, we have been providing various technologies and solutions which are highly valued by oil companies around the world. In 2018, we marked the 50th anniversary of our founding. In the future MODEC will continue providing our clients with economical floating production solutions using the latest technologies as well as our experience gained over the last 50 years of designing and operating such systems. MODEC will continue to rise to the challenges of meeting the requirements of the offshore oil and gas industry.

The global energy demand will continue to grow, oil demand will increase steadily and the use of natural gas, a major clean energy source, will continue to gain strong momentum. We will optimize our business portfolio while pioneering new business areas, especially in offshore wind power utilization and seabed mineral resources harvesting, with the objective of contributing to the creation of a brighter future for our world.

President & Chief Executive Officer
Yuji Kozai

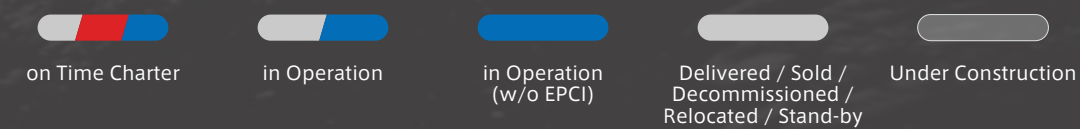
Project Locations



Unit Type

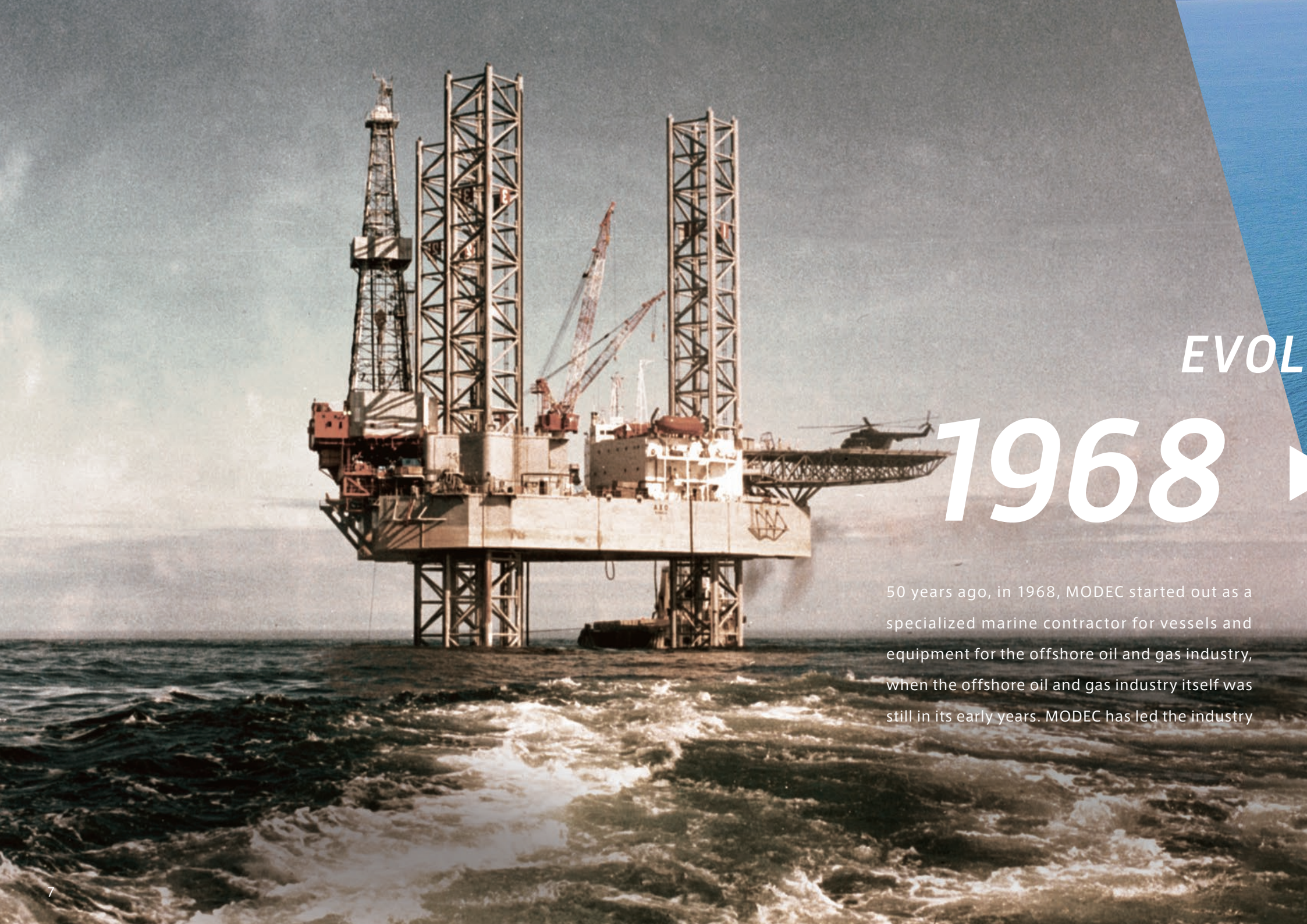


Status



MODEC performs EPCI activities for FPSOs and other floating oil and gas production facilities. Further, by owning and operating its own floating production facilities, MODEC provides oil companies around the world with comprehensive and competitive solutions for oil and gas production services.

On average, MODEC gains about 3 years of EPCI knowledge and more than 20 years of O&M and ownership experience for each facility which it owns and operates. The knowledge and data accumulated over these successful projects as well as the operating history provide valuable feedback for future EPCI projects, further advancing MODEC's engineering and project execution processes.



EVOLUTION

1968 ▶ 2018

50 years ago, in 1968, MODEC started out as a specialized marine contractor for vessels and equipment for the offshore oil and gas industry, when the offshore oil and gas industry itself was still in its early years. MODEC has led the industry



for half a century, and has evolved into a leading and dependable partner for oil companies for particularly challenging offshore oil and gas production projects such as for ultra-deep water and harsh environments.

Track Record

Track Record

Derrick Barges

Remotely Operated Vehicles

Single Point Mooring Systems with SOFEC

1986 FPSO Kakap Natuna



Field : Kakap KH, Indonesia
Water Depth : 88 m
Storage Capacity : 760,000 bbls
Oil Production : 25,000 bopd
Gas Production : 25 mmscf
Client : Marathon Petroleum Indonesia Ltd.
Contract : EPCI + Bare Boat Charter (Ownership was transferred to the client)
First Oil : April 1986
Current Status : Sold

The FPSO Kakap Natuna that achieved its first oil production in 1986, and is still in operation off the coast of Indonesia.

In its 50 year history, MODEC's first growth stage involved the design and construction of various vessels and equipment for the offshore oil and gas industry such as jack-up drilling rigs, semi-submersible drilling units, derrick lay barges and ocean going supply boats. Based on this early work, MODEC initially gained experience mostly in the exploration area of the business.

In 1985, MODEC successfully gained entry into the floating production area of the offshore oil and gas industry with its first FPSO for Marathon Oil in Indonesia. With this extensive and robust track record, MODEC offers full turnkey solutions for floating oil and gas production systems to clients round the world, either on a sale or lease basis.

1968 • • • • • 1978 • • • • •

1988 • • • • •

1990

FPSO Anoa Natuna



Field : Anoa field, Indonesia
Water Depth : 77 m
Storage Capacity : 550,000 bbls
Oil Production : 32,000 bopd
Gas Production : 5.4 mmscf
Client : Amoseas Indonesia Inc.
Contract : EPCI + Time Charter (Ownership was transferred to the client)
First Oil : April 1990
Current Status : Sold

1993

FSO Nanhai Sheng Kai



Field : Lufeng 13-1 field, China
Water Depth : 141 m
Storage Capacity : 880,000 bbls
Oil Handling : 25,000 bopd inlet
Client : JHN Oil Operating Company
Contract : EPCI
First Oil : October 1993
Current Status : Delivered

1996

FPSO Nanhai Sheng Li



Field : Liuhua 11-1 field, China
Water Depth : 305 m
Storage Capacity : 650,000 bbls
Oil Production : 65,000 bopd
Gas Production : 5 mmscf
Client : Amoco Orient Petroleum Company
Contract : EPC
First Oil : March 1996
Current Status : Delivered

1996

FPSO Whakaaropai



Field : Maui B field, New Zealand
Water Depth : 110 m
Storage Capacity : 750,000 bbls
Oil Production : 31,000 bopd
Gas Production : 27 mmscf
Client : Shell Todd Oil Services Ltd.
Contract : EPCI
First Oil : October 1996
Current Status : Decommissioned

1997

Escravos LPG FSO

Field : Escravos field, Nigeria
Water Depth : 42 m
Storage Capacity : 54,000 m³
Tanker Size : 37,100 dwt
 - 32°C Loading
 - 39°C Storage
Client : Chevron Nigeria Ltd.
Contract : EPCI
First Gas : July 1997
Current Status : Delivered

1998

FSO Madiela & Tchataba MOPU

Field : Tchataba Marine-1 field, Gabon
Water Depth : 55 m
Storage Capacity : 760,000 bbls
Oil Production : 24,000 bopd
Gas Production : 5 mmscfd
Client : Marathon Petroleum Gabon LDC
Contract : EPCI + Bare Boat Charter
 (Ownership was transferred to the client)
First Oil : January 1998
Current Status : FSO - Decommissioned
 MOPU - Sold

1999

FPSO Buffalo Venture

Field : Buffalo field, Australia
Water Depth : 255 m
Storage Capacity : 800,000 bbls
Oil Production : 40,000 bopd
Gas Production : 8 mmscfd
Client : Nexen Inc. (Transferred from BHP Petroleum Pty. Ltd.)
Contract : EPCI+Time Charter
First Oil : December 1999
Current Status : Decommissioned

2001

Prince TLP

Field : Prince field, USA - Gulf of Mexico
Water Depth : 454 m
Oil Production : 50,000 bopd
Gas Production : 80 mmscfd
Client : El Paso Energy Partners
Contract : EPCI
First Oil : September 2001
Current Status : Delivered

2002

FPSO Ruby Princess

Field : Ruby field, Vietnam
Water Depth : 50 m
Storage Capacity : 850,000 bbls
Oil Production : 30,000 bopd
Client : Petroleum Technical Services Company (PTSC)
Contract : O&M
O&M started : October 2002
Current Status : Decommissioned

2003

FPSO Fluminense

Field : Bijupir and Salema fields, Brazil
Water Depth : 740 m
Storage Capacity : 1,300,000 bbls
Oil Production : 81,000 bopd
Gas Production : 75 mmscfd
Client : Shell Brasil Petrleo Ltda.
Contract : EPCI+O&M
First Oil : August 2003
Current Status : In Operation (MODEC operates)

2003

FPSO Cuulong MV9

Field : Su Tu Den field, Vietnam
Water Depth : 48 m
Storage Capacity : 1,000,000 bbls
Oil Production : 65,000 bopd
Gas Production : 19.5 mmscfd
Client : Cuulong Joint Operating Company (CLJOC)
Contract : EPCI + Time Charter (Ownership was transferred to the client)
First Oil : October 2003
Current Status : Sold

2005

FPSO MODEC Venture 11

Field : Mutineer-Exeter field, Australia
Water Depth : 156 m
Storage Capacity : 930,000 bbls
Oil Production : 100,000 bopd
Gas Production : 2-3 mmscfd
Client : Santos Ltd.
Contract : EPCI+Time Charter
First Oil : March 2005
Current Status : Stand-by (MODEC owns)

2005

FPSO Baobab Ivoirien MV10

Field : Baobab field, Cte d'Ivoire
Water Depth : 970 m
Storage Capacity : 2,000,000 bbls
Oil Production : 70,000 bopd
Gas Production : 75 mmscfd
Client : CNR International S.A.R.L.
Contract : EPCI + Time Charter
First Oil : August 2005
Current Status : In Operation
 (MODEC owns and operates)

2006

Okume/Ebano TLP

Field : Okume/Ebano Fields, Equatorial Guinea
Water Depth : 500 m
Oil Production : 25,000 bopd
Gas Production : 30 mmscfd
Client : HESS Corporation
Contract : EPC
First Oil : December 2006
Current Status : Delivered

2007

FPSO Cidade do Rio de Janeiro MV14

Field : Espadarte Sul field, Brazil
Water Depth : 1,350 m
Storage Capacity : 1,600,000 bbls
Oil Production : 100,000 bopd
Gas Production : 87 mmscfd
Client : Petrleo Brasileiro S.A. (Petrobras)
Contract : EPCI+Time Charter
First Oil : January 2007
Current Status : In Operation
 (MODEC owns and operates)

2008

FSO Rang Dong MV17

Field : Rang Dong field, Vietnam
Water Depth : 60 m
Storage Capacity : 350,000 bbls
Oil Handling : 60,000 bopd inlet
Client : Japan Vietnam Petroleum Company Ltd. (JVPC)
Contract : EPCI+Time Charter
First Oil : November 2008
Current Status : In Operation
 (MODEC owns and operates)

1998

1998

FPSO MODEC Venture 1

Field : Elang / Kakatua / Kakatua North fields, JPDA
 (Joint Petroleum Development Area) - Australia/East Timor
Water Depth : 90 m
Storage Capacity : 750,000 bbls
Oil Production : 32,500 bopd
Gas Production : 6 mmscfd
Client : ConocoPhillips Petroleum [03-12] Pty. Ltd.
 (Transferred from BHP Petroleum Pty. Ltd.)
Contract : EPCI+Time Charter
First Oil : August 1998
Current Status : Decommissioned

1998

FSO Ta'Kuntah

Field : Cantarell field, Mexico - Gulf of Mexico
Water Depth : 75 m
Storage Capacity : 2,300,000 bbls
Oil Handling : 800,000 bopd inlet
Client : PEMEX Exploration y Produccin
Contract : EPCI+Time Charter
First Oil : August 1998
Current Status : Sold

2000

FSO Vietsovpetro 01

Field : White Tiger field, Vietnam
Water Depth : 47 m
Storage Capacity : 1,000,000 bbls
Oil Handling : 100,000 bopd inlet
Client : Petrovietnam Trading Company
Contract : EPC
First Oil : October 2000
Current Status : Delivered

2001

FPSO MV8 Langsa Venture

Field : Langsa field, Indonesia
Water Depth : 100 m
Storage Capacity : 270,000 bbls
Oil Production : 15,000 bopd
Client : Blue Sky Langsa Ltd. (Transferred from MEDCO MOECO Langsa Ltd.)
Contract : EPCI + Time Charter (Ownership was transferred to the client)
First Oil : November 2001
Current Status : Sold

2003

FSO Pathumabaha

Field : Bongkot field, Thailand
Water Depth : 78 m
Storage Capacity : 400,000 bbls
Oil Handling : 25,000 bopd inlet
Client : PTT Exploration and Production Public Company Ltd.
Contract : EPCI
First Oil : January 2003
Current Status : Delivered

2003

FSO Kome Kribi 1

Field : Bolobo/Miandoum/Kome fields, Cameroon
Water Depth : 34 m
Storage Capacity : 2,300,000 bbls
Oil Handling : 225,000 bopd inlet
Client : Cameroon Oil Transportation Company (COTCO)
Contract : EPCI
First Oil : September 2003
Current Status : Delivered

2004

Marco Polo TLP

Field : Marco Polo field, USA - Gulf of Mexico
Water Depth : 1,311 m
Oil Production : 120,000 bopd
Gas Production : 400 mmscfd
Client : Anadarko Petroleum Corp.
Contract : EPC
First Oil : July 2004
Current Status : Delivered

2005

FPSO Jasmine Venture MV7 (ex-FPSO Buffalo Venture)

Field : Jasmine field, Thailand
Water Depth : 60 m
Storage Capacity : 800,000 bbls
Oil Production : 20,000 bopd
Gas Production : 8 mmscfd
Client : PEARL Energy Pte Ltd.
Contract : Bare Boat Charter + O&M (Ownership was transferred to the client)
First Oil : June 2005
Current Status : Sold

2006

FSO Rong Doi MV12

Field : Rong Doi / Rong Doi Tay Fields, Vietnam
Water Depth : 85 m
Storage Capacity : 300,000 bbls
Oil Handling : 18,000 bopd inlet
Client : Korea National Oil Corporation (KNOC)
Contract : EPCI+Time Charter
First Oil : November 2006
Current Status : In Operation
 (MODEC owns and operates)

2006

Oveng TLP

Field : Oveng field, Equatorial Guinea
Water Depth : 280 m
Oil Production : 25,000 bopd
Gas Production : 30 mmscfd
Client : HESS Corporation
Contract : EPC
First Oil : December 2006
Current Status : Delivered

2007

FSO Cidade de Maca MV15

Field : Marlim Sul, Roncador and Marlim Leste fields, Brazil
Water Depth : 95 m
Storage Capacity : 2,150,000 bbls
Oil Handling : 818,000 bopd inlet
Client : Petrleo Brasileiro S.A. (Petrobras)
Contract : EPCI+Time Charter
First Oil : November 2007
Current Status : In Operation
 (MODEC owns and operates)

2007

FPSO Stybarrow Venture MV16

Field : Stybarrow field, Australia
Water Depth : 825 m
Storage Capacity : 900,000 bbls
Oil Production : 80,000 bopd
Gas Production : 45 mmscfd
Client : BHP Billiton Petroleum
Contract : EPC+Time Charter
First Oil : November 2007
Current Status : Stand-by (MODEC owns)

2008

FPSO Song Doc Pride MV19

Field : Song Doc field, Vietnam
Water Depth : 55 m
Storage Capacity : 360,000 bbls
Oil Production : 30,000 bopd
Client : Petrovietnam Exploration Production Corporation Ltd.(Transferred from Truong Son Joint Operating Company (TSJOC))
Contract : EPCI+Time Charter
First Oil : November 2008
Current Status : Sold

2009

Shenzi TLP

Field : Shenzi field, USA – Gulf of Mexico
Water Depth : 1,333 m
Oil Production : 100,000 bopd
Gas Production : 100 mmscfd
Client : BHP Billiton Petroleum
Contract : EPC
First Oil : March 2009
Current Status : Delivered

2010

FPSO Cidade de Santos MV20

Field : Urugua/Tambau fields, Brazil
Water Depth : 1,300 m
Storage Capacity : 700,000 bbls
Oil Production : 35,000 bopd
Gas Production : 350 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras)
Contract : EPCI+Time Charter
First Oil : July 2010
Current Status : In Operation (MODEC owns and operates)

2010

FPSO Kwame Nkrumah MV21

Field : Jubilee field, Ghana
Water Depth : 1,100 m
Storage Capacity : 1,600,000 bbls
Oil Production : 120,000 bopd
Gas Production : 160 mmscfd
Client : Tullow Ghana Ltd.
Contract : EPC + Time Charter(Ownership was transferred to the client)
First Oil : December 2010
Current Status : In Operation (MODEC operates)

2013

FPSO Cidade de São Paulo MV23

Field : Sapinhoá (formerly Guara) field, Brazil
Water Depth : 2,118 m
Storage Capacity : 1,600,000 bbls
Oil Production : 120,000 bopd
Gas Production : 180 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras) & its partners
Contract : EPC+Time Charter and
First Oil : January 2013
Current Status : In Operation (MODEC owns and operates)

2013

OSX-3 FPSO

Field : Waikiki, Pero and Inga fields, Brazil
Water Depth : 110 m
Storage Capacity : 1,300,000 bbls
Oil Production : 100,000 bopd
Client : OSX 3 Leasing B.V.
Contract : EPCI
First Oil : December 2013
Current Status : Delivered

2015

FPSO Cidade de Itaguaí MV26

Field : Iracema Norte (formerly Cernambi Norte) field, Brazil
Water Depth : 2,240 m
Storage Capacity : 1,600,000 bbls
Oil Production : 150,000 bopd
Gas Production : 280 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras) & its partners
Contract : EPCI+Time Charter
First Oil : July 2015
Current Status : In Operation (MODEC owns and operates)

2016

FPSO Cidade de Caraguatatuba MV27

Field : Lapa (formerly Carioca) field, Brazil
Water Depth : 2,126 m
Storage Capacity : 1,600,000 bbls
Oil Production : 100,000 bopd
Gas Production : 177 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras) & its partners
Contract : EPCI+Time Charter
First Oil : December 2016
Current Status : In Operation (MODEC owns and operates)

2018

FPSO Cidade de Campos dos Goytacazes MV29

Field : Tartaruga Verde and Tartaruga Mestiça fields, Brazil
Water Depth : 765 m
Storage Capacity : 1,600,000 bbls
Oil Production : 150,000 bopd
Gas Production : 176 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras)
Contract : EPCI+Time Charter
First Oil : June 2018
Current Status : In Operation (MODEC owns and operates)

2021

FPSO Carioca MV30

Field : Sépia field, Brazil
Water Depth : 2,200 m
Storage Capacity : 1,400,000 bbls
Oil Production : 180,000 bopd
Gas Production : 212 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras)
Contract : EPCI + Time Charter
First Oil : Planned for 2021
Current Status : Under Construction (MODEC will own and operate)

2021

Eni Mexico Area 1 FPSO

Field : Area 1, Mexico
Water Depth : 32 m
Storage Capacity : 900,000 bbls
Oil Production : 90,000 bopd
Gas Production : 75 mmscfd
Client : Eni Mexico S. de R.L. de C.V.
Contract : EPCI + Time Charter
First Oil : Planned for 2021
Current Status : Under Construction (MODEC will own and operate)

2008

2009

FPSO Cidade de Niterói MV18

Field : Marlim Leste field, Brazil
Water Depth : 1,400 m
Storage Capacity : 1,600,000 bbls
Oil Production : 100,000 bopd
Gas Production : 124 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras)
Contract : EPCI+Time Charter
First Oil : February 2009
Current Status : In Operation (MODEC owns and operates)

2010

FPSO Pyrenees Venture

Field : Pyrenees field, Australia
Water Depth : 200 m
Storage Capacity : 850,000 bbls
Oil Production : 96,000 bopd
Gas Production : 60 mmscfd
Client : BHP Billiton Petroleum
Contract : EPC+O&M
First Oil : February 2010
Current Status : In Operation (MODEC operates)

2010

FPSO Cidade de Angra dos Reis MV22

Field : Lula (formerly Tupi) field, Brazil
Water Depth : 2,149 m
Storage Capacity : 1,600,000 bbls
Oil Production : 100,000 bopd
Gas Production : 157,000 bopd
Client : Petróleo Brasileiro S.A. (Petrobras)
Contract : EPCI+Time Charter
First Oil : October 2010
Current Status : In Operation (MODEC owns and operates)

2012

FPSO PSVM

Field : Plutão, Saturno, Vênus and Marte (PSVM) fields, Angola
Water Depth : 1,800 – 2,000 m
Storage Capacity : 2,000,000 bbls
Oil Production : 45,000 bopd
Gas Production : 35 mmscfd
Client : OMV New Zealand Limited
Contract : O&M
O&M started : March 2013
Current Status : In Operation (MODEC operates)

2013

FPSO Raroa

Field : Maari field, New Zealand
Water Depth : 50 m
Storage Capacity : 600,000 bbls
Oil Production : 45,000 bopd
Gas Production : 35 mmscfd
Client : OMV New Zealand Limited
Contract : O&M
O&M started : March 2013
Current Status : In Operation (MODEC operates)

2014

FPSO Cidade de Mangaratiba MV24

Field : Iracema Sul (formerly Cernambi Sul) field, Brazil
Water Depth : 2,200 m
Storage Capacity : 1,600,000 bbls
Oil Production : 150,000 bopd
Gas Production : 280 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras) & its partners
Contract : EPC+Time Charter
First Oil : October 2014
Current Status : In Operation (MODEC owns and operates)

2016

FPSO Prof. John Evans Alfa Mills

Field : Tweneboa, Enyena and Ntomme (TEN) fields, Ghana
Water Depth : 1,500 m
Storage Capacity : 1,700,000 bbls
Oil Production : 80,000 bopd
Gas Production : 180 mmscfd
Client : Tullow Ghana Ltd.
Contract : EPCI + Time Charter
First Oil : August 2016
Current Status : In Operation (MODEC owns and operates)

2018

Stampede TLP

Field : Stampede field, USA – Gulf of Mexico
Water Depth : 1,067 m
Oil Production : 80,000 bopd
Client : Hess Corporation & its partners
Contract : EPCM + Commissioning
First Oil : January 2018
Current Status : Delivered

2019

FSO Ailsa

Field : Culzean field, UK – North Sea
Water Depth : 90 m
Storage Capacity : 430,000 bbls
Oil Handling : 25,000 bopd inlet
Client : Maersk Oil North Sea UK Limited
Contract : EPC
Delivery to Client : June 2018
First Oil : Planned for the 2nd quarter of 2019
Current Status : Delivered

2021

FPSO Guanabara MV31

Field : Mero (formerly Libra) field, Brazil
Water Depth : 2,100 m
Storage Capacity : 1,400,000 bbls
Oil Production : 180,000 bopd
Gas Production : 424 mmscfd
Client : Petróleo Brasileiro S.A. (Petrobras) & its partners
Contract : EPCI + Time Charter
First Oil : Planned for 2021
Current Status : Under Construction (MODEC will own and operate)

Extensive Experience



Robust EPCI Track Record

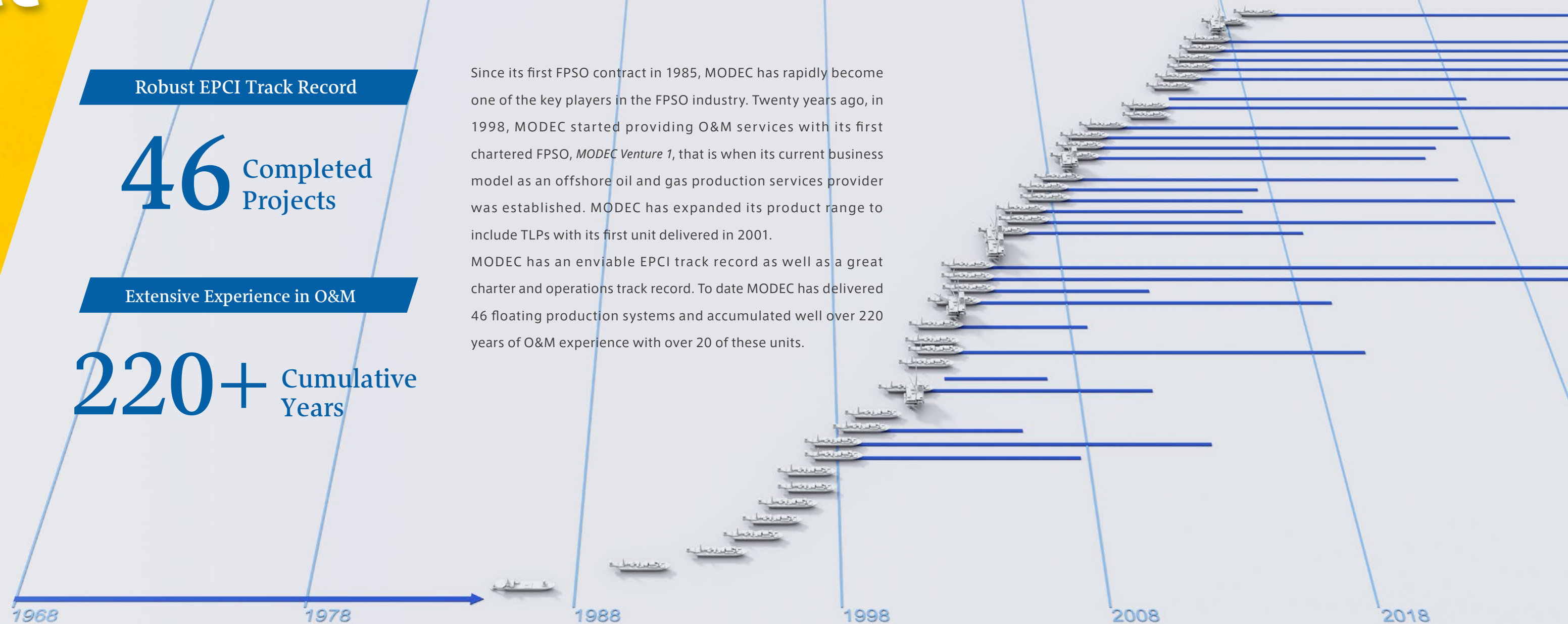
46 Completed Projects

Extensive Experience in O&M

220+ Cumulative Years

Since its first FPSO contract in 1985, MODEC has rapidly become one of the key players in the FPSO industry. Twenty years ago, in 1998, MODEC started providing O&M services with its first chartered FPSO, *MODEC Venture 1*, that is when its current business model as an offshore oil and gas production services provider was established. MODEC has expanded its product range to include TLPs with its first unit delivered in 2001.

MODEC has an enviable EPCI track record as well as a great charter and operations track record. To date MODEC has delivered 46 floating production systems and accumulated well over 220 years of O&M experience with over 20 of these units.



Extensive Experience

FPSO / FSO

Floating Production, Storage and Offloading vessel / Floating Storage and Offloading vessel

Ship shaped FPSO and FSO systems have become the primary production method for many offshore oil and gas producing regions around the world. Currently there are approximately 180 FPSOs and 100 FSOs in operation worldwide. MODEC delivered 28 of these FPSOs and 11 of the FSOs, and currently owns 13 FPSOs and 3 FSOs and operates 18 units.

An FPSO is a floating production system that receives fluids from a subsea reservoir through risers, which are then separated on the FPSO topside into crude oil, natural gas, water and impurities. Crude oil is stored in the storage tanks of the FPSO and then offloaded into shuttle tankers that take it to markets or for further refining onshore.

FPSOs and FSOs are moored to the seabed via a variety of mooring systems, the selection of which is determined by the prevailing environmental design conditions. They are suitable for a wide range of water depths, environmental conditions, and can be designed with the capability of staying on location for continuous operations for 20 years or longer. For hurricane, typhoon and cyclone prone areas disconnectable mooring systems can be provided.

Advantages of FPSOs / FSOs are

- Reduced upfront investment
- Retained value since they can be relocated to other fields
- Abandonment costs are much lower than for fixed platforms
- Accommodate up to 70 risers and umbilicals
- Equipped for water injection back into the reservoir for pressure maintenance
- Equipped for gas export, gas lift or gas reinjection into the reservoir

1986

Oil Production:
25,000 bopd
Water Depth:
88 m

1996

Oil Production:
31,000 bopd
Water Depth:
110 m

2005

Oil Production:
70,000 bopd
Water Depth:
970 m

2012

Oil Production:
150,000 bopd
Water Depth:
2,000 m

2020

Oil Production:
180,000 bopd
Water Depth:
2,200 m

As offshore oil and gas development projects increased in scale and move into deeper and deeper waters, FPSOs have also increased in size and complexity to meet these ever-changing needs. With accumulated knowledge from many different FPSO projects, MODEC has gained very valuable experience. In summary, MODEC has led the FPSO industry for several decades, and the evolution continues.

TLP

Tension Leg Platform

TLPs are compliant structures that are connected to the seabed with steel tendons which provide stability by the tension created by the buoyancy of the hull structure. TLPs are well-suited for oil and gas production, supporting dry trees and/or wet trees in deep-water under severe oceanic conditions because they restrict vertical motion which allows for the use of surface wellheads and/or Steel Catenary Risers (SCRs).

Other features of TLPs include:

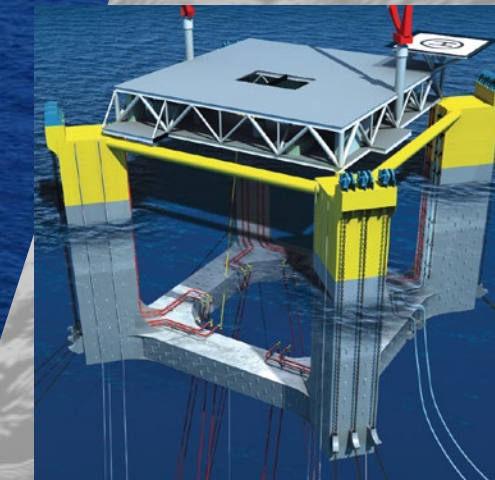
- Support full drilling rig with or without full process plant
- Support minimal drilling facilities with a Tender Assist Drilling (TAD) Vessel
- Support SCRs in shallow and deep water in severe environments
- Use as a wellhead system in conjunction with an FPSO for processing and storage
- Use as a drilling and production system and connected to an FSO for storage
- Cost effective solution for “small” to “intermediate” payloads and wellhead applications

Currently 28 TLPs are in operation worldwide of the world with MODEC having delivered more than 20% of the market share including:

- 2 Wellhead TLPs
- 2 Full process TLPs with drilling facilities
- 2 Wet tree TLPs



Production Semi-Submersible



Production Semi-submersibles are floating platforms for oil and gas production and are primarily suited for deep water developments with wet trees using Steel Catenary Risers (SCRs) under severe environmental conditions.

MODEC has developed a Semi-Submersible design named Central Pontoon Semi-submersible (CP Semi). The unique hull shape in combination with a deep draft, optimizes the stability of the platform and minimizes the vertical motion for favorable SCR performance, robustness and reliability.

MODEC has also developed a Dry Tree CP Semi (DTCP Semi) for deep and ultra-deep water depth applications. The resulting lateral offsets and vertical motions allow the use of proven and conventional riser tensioner technology to be deployed.

Other key features of the CP Semi include:

- Use of SCRs for oil and gas production in deep and ultra-deep water depths
- Efficient for supporting large topsides
- Efficient for supporting large number of risers
- Cost efficient solution for deep to ultra-deep field developments
- Proven performance thru extensive wave model test for wet and dry tree applications

Gas Solutions

MODEC considers Natural Gas a major clean energy source of the future and plans to participate in this market by providing in-house developed Gas FPSO, FLNG and FSRWP® solutions to its clients either on an EPCI or lease basis. These internally developed solutions make extensive use of MODEC's wide-ranging benchmarking data, knowledge and lessons learned over the last 35 years of designing, building and operating Floating Production Systems such as FPSOs, FSOs and TLPs.

FLNG

Floating LNG Production Systems

FLNGs are floating production facilities where natural gas from subsea reservoirs is converted into liquid hydrocarbons, i.e. Liquefied Natural Gas (LNG) by cooling it to minus 162° Celsius to form a more practical means for storage and transportation. MODEC has completed multiple FEED (Front End Engineering Design) studies for actual FLNG projects, and is ready to undertake such projects on an EPCI or lease basis. MODEC has multiple FLNG designs available to handle either dry or wet gas, and can provide extensive gas pretreatment facilities if so required. MODEC's FLNG solutions are based on both converted hulls or new built hulls. A site specific type of mooring system is selected depending on the prevailing environmental conditions and water depth.



FSRWP®

Floating Storage, Regasification, Water and Power

MODEC developed Floating Water and Power solutions to help its clients to provide their constituents with potable water and dependable electricity using clean natural gas as a fuel source either in the form of LNG or domestic natural gas. Typically, LNG storage and regasification, power generation and sea-water desalination are constructed and operated as separate projects. The FSRWP® uniquely combines these into one floating facility, thereby reducing construction time and cost, and achieving efficiencies through joint operation. The FSRWP® therefore produces power and water with a greater efficiency and at a cheaper cost than conventional onshore plants. Onboard the FSRWP®, electricity is generated by a Combined Cycle Gas Power Plant thereby achieving a very high thermal efficiency of approximately 50%. The turbine models and configurations are selected specifically to operate in a marine environment, thereby ensuring a reliable power supply for 30 years or more. Alongside the power generation, the sea-water desalination facilities can be installed on the same vessel. MODEC uses modular reverse osmosis (SWRO) technology, which treats sea-water to World Health Organization quality standards, ready for domestic or industrial use. Additionally, the FSRWP® can send regasified LNG to third party consumers onshore via a subsea gas pipeline.



FSR-Power® : 160 MW



FSR-Power® : 840 MW



FSR-Water® : 200,000 m³/day

* FSRWP, FSR-Power and FSR-Water are registered trademarks of MODEC, Inc.



Our lives ~ our oceans ~ our future

With 50-year experience extracting the ocean's enormous, yet hidden potentials, MODEC will continue moving the world forward, toward a future of bountiful energy.



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The information contained in this brochure is true and accurate at the time of publication; however, it may be subject to change without prior notice.

