



# Comprehensive Experience Overview

## Floating Production, Storage & Offloading (FPSO) systems

YEAR OF INST.	FIELD OPERATOR	LOCATION/ FIELD Type of Mooring	WATER DEPTH (M)	TANKER NAME/ SIZE (DWT)	PRODUCTION FACILITIES (bopd + MMscfd)
2018	HURRICANE ENERGY	LANCASTER FIELD	150	AOKA MIZU	
2013	ENQUEST BRITAIN Ltd.	UKCS/ALMA/GALIA FIELD Internal Turret	76	UISGE GORM 95,263	57,000 bopd
2011	ENI KITAN FIELD DEVELOPMENT	TIMOR LESTE	325	GLAS DOWR 89,562	40,000 bopd + 22 MMscfd (gaslift).
2010	CACT	HUIZHOU FIELD Dynamic Positioned	90	MUNIN	60,000 bopd
2009	NEXEN	NORTH SEA U.K., ETTRICK FIELD, UK Disconnectable Turret	115	AOKA MIZU 105,000	30,000 bopd 20 MMscfd
2005	EXXON MOBIL	CENTRAL NORTH SEA, NORWEGIAN SECTOR	126	JOTUN 92,000	70,000 bopd 68 MMscfd
2004	SHELL UK LTD	NORTH SEA U.K. ,PIERCE FIELD, UK Disconnectable Turret	85	HÆWENE BRIM 103,000	70,000 bopd 110 MMscfd
2004	CONOCOPHILLIPS	XIJIANG FIELD, CHINA Dynamic Positioned	100	MUNIN 103,000	60,000 bopd
2004	STATOIL/CNOOC	LUFENG Internal Turret (APL)	300	MUNIN 103,000	60,000 bopd
2003	PETRO SA	SOUTH AFRICA/ SABLE FIELD Internal Turret	102	GLAS DOWR 105,000	90,000 bopd 80 MMscfd
1999	TALISMAN	NORTH SEA U.K. / ROSS Internal Turret	100	BLEO HOLM 100,000	100,000 bopd 58 MMscfd

YEAR OF INST.	FIELD OPERATOR	LOCATION/ FIELD Type of Mooring	WATER DEPTH (M)	TANKER NAME/ SIZE (DWT)	PRODUCTION FACILITIES (bopd + MMscfd)
1997	AMERADA HESS	NORTH SEA U.K. / DURWARD & DAUNTLESS Internal Turret	90	GLAS DOWR 105,000	60,000 bopd 85 MMscfd
1995	AMERADA HESS	NORTH SEA U.K. / FIFE Internal Turret	70	UISGE GORM 100,000	57,000 bopd 20 MMscfd
1990	OCCIDENTAL	CHINA / LUFENG CALM with Mooring Hawser	330	AYER BIRU 45,000	30,000 bopd
1989	MAXUS ENERGY	INDONESIA / INTAN Spread Mooring	42	LAN SHUI 70,000	60,000 bopd
1989	MARATHON PETROLEUM	AUSTRALIA / TALISMAN CALM with Mooring Hawser	80	ACQUA BLU 70,000	40,000 bopd
1988	AGIP	ANGOLA / SAFUEIRO Spread Mooring	40	ACQUA BLU 70,000	40,000 bopd
1987	AMOCO	CHINA / LIUHUA CALM with Mooring Hawser	± 300	LAN SHUI 70,000	60,000 bopd
1987	AMOCO	GABON / GOMBE MARIN Spread Mooring	20	ACQUA BLU 70,000	40,000 bopd
1985	MONTEDISON	ITALY / MILA CALM with Wishbone Yoke	50	ACQUA BLU 70,000	40,000 bopd

## Floating Storage & Offloading (FSO) systems

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD Type of Mooring	WATER DEPTH (M)	TANKER NAME / SIZE (DWT)
1993	TOTAL EXPLORATION & PRODUCTION	THAILAND / BONGKOT Internal Turret	80	LAN SHUI 26,000
1989	SOVEREIGN OIL & GAS PLC	UNITED KINGDOM / EMERALD Tripod Wishbone	150	AILSA CRAIG 200,000
1986	OCCIDENTAL / ECOPETROL	COLOMBIA / COVENAS CALM Wishbone	35	FSO COVENAS 390,000
1982	PHILLIPS PETROLEUM	IVORY COAST / ESPOIR CALRAM	87	TT PHILLIPS 230,000

## Internal Turrets

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2017	TOTAL	KAOMBO (BLOCK 32), ANGOLA	1700	VLCC
2017	TOTAL	KAOMBO (BLOCK 32), ANGOLA	1700	VLCC
2006/2007	BP NORGE	SKARV (FEED CONTRACT)	370	200,000
2003	PETROSA	SABLE FIELD, SOUTH AFRICA	100	(GLAS DOWR) 105,000
1999	PETROBRAS	BRAZIL / MARLIM (FSO P38)	1,020	270,000
1999	AMERADA HESS / SHELL	UNITED KINGDOM / TRITON	92	105,000

<b>1999</b>	PETROBRAS	BRAZIL / RONCADOR (FSO P47)	815	280,000
<b>1999</b>	ESSO	CENTRAL NORTH SEA, NORWEGIAN SECTOR / JOTUN	126	92,000
<b>1998</b>	TALISMAN	NORTH SEA U.K. / ROSS	100	(BLEO HOLM) 100,000
<b>1998</b>	PETROBRAS	BRAZIL / MARLIM (FPSO P37)	900	269,000
<b>1998</b>	PETROBRAS	BRAZIL / MARLIM	163	282,750
<b>1997</b>	AMERADA HESS	NORTH SEA U.K. / DURWARD & DAUNTLESS	90	(GLAS DOWR) 105,000
<b>1996</b>	CONOCO	NORTH SEA U.K. / MCCULLOCH	150	100,000
<b>1995</b>	AMERADA HESS	NORTH SEA U.K. / FIFE	70	(UISGE GORM) 100,000
<b>1993</b>	TOTAL EXPLORATION & PRODUCTION	THAILAND / BONGKOT	80	LAN SHUI 26,000

## Disconnectable Turrets

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2018	HURRICANE ENERGY	LANCASTER FIELD, UKCS WEST OF SHETLANDS	150	AOKA MIZU
2009	NEXEN	NORTH SEA U.K., ETRICK FIELD, UKCS	115	(AOKA MIZU) 105,000

## External Turret Mooring systems

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2013/2014	EXXONMOBIL (MWCS Company)	GULF OF MEXICO	150-1500	AFRAMAX
2011	STX Heavy Industries Co. Ltd	Korea	45	FSU 341,000
2009	TALISMAN / MISC	BUNGA ORKID FIELD	55	"MT FSO ORKID" 100,047
2006	PETRONAS / MISC	ABU CLUSTER FIELD	61	"MT ARMATA" AFRAMAX 89,920

## Calm Buoy systems (Turret Buoys)

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2018	PERTAMINA	JAKARTA	18	10,000 – 50,000
2018	PERTAMINA	SEMARANG	18	10,000 – 50,000
2018	PERTAMINA	BELAWAN	18	10,000 – 50,000

<b>2015</b>	ADMA – OPCO	SATAZ AL-RAZBOOT (SARB), ZIRKU ISLAND	28	320,000
<b>2014</b>	PETROBRAS	TEFRAN	25	80,000-120,000
<b>2014</b>	PETROBRAS	TEFRAN	25	80,000-120,000
<b>2014</b>	PETROBRAS	TEFRAN	25	80,000-120,000
<b>2013</b>	PDVSA	TAECJAA Terminal, Venezuela	25	300,000
<b>2013</b>	PDVSA	TAECJAA Terminal, Venezuela	28	300,000
<b>2013</b>	PETROBRAS	Brazil, Campos Basin	70	350,000
<b>2013</b>	PETROBRAS	Brazil, Campos Basin	70	350,000
<b>2012</b>	FAPCO	Fujairah, UAE	40	50,000 – 150,000
<b>2012</b>	PDVSA	VENEZUELA	16	80,000
<b>2012</b>	CPC	Russia, Novorossiysk	58	15,000 - 300,000
<b>2011</b>	CAIRN ENERGY	INDIA	28	120,000
<b>2010</b>	ECOPETROL	COLUMBIA	25	350,000
<b>2010</b>	ECOPETROL	COLUMBIA	35	350,000
<b>2010</b>	HPCL-INDIA	VISAKHAPATNAM-INDIA	35	320,000
<b>2010</b>	ADCOP - ABU DHABI, UAE	FUJAIRAH, UAE	35	320,000
<b>2010</b>	ADCOP - ABU DHABI, UAE	FUJAIRAH, UAE	52	320,000
<b>2010</b>	ADCOP - ABU DHABI, UAE	FUJAIRAH, UAE	54	320,000

<b>2009</b>	PETRONAS CARIGALI (TURKMENISTAN) SDN	KIYANLI (KASPIAN SEA, TURKMENISTAN)	17	12,000
<b>2009</b>	BRUNEI ECONOMIC DEVELOPMENT BOARD (BEDB)	MUKIM LIANG, BRUNEI	25	46,000
<b>2009</b>	ROMPETROL	BLACK SEA	25	165,000
<b>2009</b>	ENI	BLACKTIP, AUSTRALIA	27	350,000
<b>2009</b>	MAERSK OIL QATAR	BLOCK 5, QATAR	60-63	500,000
<b>2009</b>	MAERSK OIL QATAR	BLOCK 5, QATAR	60-63	500,000
<b>2009</b>	MAERSK OIL QATAR	BLOCK 5, QATAR	60-63	500,000
<b>2008</b>	BP TRINIDAD AND TOBAGO	GALEOTA TERMINAL, TRINIDAD	29	150,000
<b>2008</b>	AL-KHAFJI JOINT OPERATIONS (KJO)	AL-KHAFJI Terminal, Saudi Arabia	23	300,000
<b>2007</b>	QATAR GAS	RAS LAFFAN TERMINAL	37	320,000
<b>2007</b>	QATAR GAS	RAS LAFFAN TERMINAL	37	320,000
<b>2007</b>	THAI OIL, THAILAND	SRI-RACHA TERMINAL	30	220,000
<b>2007</b>	KOCHI REFINERIES LIMITED	OFFSHORE COCHIN	30	300,000
<b>2006</b>	ABU DHABI OIL CO. LTD, JAPAN (ADOC)	MUBARRAZ OIL FIELD	19	330,000
<b>2005</b>	TPPI INDONESIA	TUBAN AROMATIC PLANT, INDONESIA	50	185,000



<b>2005</b>	PEREMBA CONSTRUCTION	MELUT BASIN OIL DEVELOPMENT PROJECT, SUDAN	55	300,000
<b>2005</b>	ADMA-OPCO	DAS ISLAND, UAE	26	360,000
<b>2004</b>	OXXO SA	LA LIBERTAD REFINERY, EQUADOR	15	45,000
<b>2004</b>	SADRA GROUP	ASSALUYEH, IRAN	45	250,000
<b>2004</b>	BHP BILLION	ANGOSTURA, TRINIDAD	25	150,000
<b>2004</b>	AGIP GAS B.V.	WEST LIBYA/WAFA	26	30,000 - 80,000
<b>2002</b>	AMERADA HESS	EQUATORIAL GUINEA / CEIBA	67	350,000
<b>2002</b>	VOPAK ENOC FUJAIRAH LTD.	UNITED ARAB EMIRATES / FUJAIRAH	25	175,000
<b>2001</b>	UNOCAL	THAILAND / BIG OIL FIELD	74	120,000
<b>2000</b>	WOODSIDE ENERGY LTD.	AUSTRALIA / LEGENDRE	49	90,000 - 120,000
<b>1999</b>	GREATER NILE PETROLEUM OPERATING COMPANY	SUDAN / MUGLAD BASIN DEVELOPMENT	54	40,000 – 300,000
<b>1998</b>	GEORGIAN PIPELINE COMPANY	GEORGIA / CHIRAK	50	60,000 – 150,000
<b>1998</b>	ENRON	INDIA / DABHOL POWER PLANT	19	60,000
<b>1997</b>	APACHE ENERGY	AUSTRALIA / STAG	46	150,000
<b>1997</b>	VOLTA RIVER AUTHORITY	GHANA / TAKORADI	30	40,000
<b>1996</b>	FRED. OLSEN / SOEKOR	SOUTH AFRICA / SOEKOR E-BT	118	128,000

1996	OLEODUCTO / CENTRAL S.A.	COLOMBIA / COVENAS	28.8	50,000 – 160,000
1995	UNOCAL	THAILAND / ERAWAN	67	150,000
1993	TEXACO	ANGOLA / BLOCK 2	35	175,000
1993	CORPOVEN (PDVSA)	VENEZUELA / JOSE ORIMULSION	28	45,000 – 250,000
1992	CHEVRON NIUGINI	PAPUA NEW GUINEA / KUTUBU	27	300,000
1989	MARATHON PETROLEUM	AUSTRALIA / TALISMAN	80	70,000
1986	OCCIDENTAL COLOMBIA	COLOMBIA / COVENAS	25	60,000 - 120,000
1985	KODECO / PERTAMINA	INDONESIA / MADURA	28	120,000
1984	MOBIL	INDONESIA / ARUN	59	40,000 - 280,000
1983	ELF GABON	GABON / MAYUMBA	30	30,000 - 100,000
1980	ELF SEREPCA / SHELL OIL	CAMEROON / KOLE – RIO DE REY	30	250,000
1980	ELF GABON / GULF OIL	GABON / MAYUMBA	30	70,000

## Calm Buoy systems (Deepwater)

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2014	TOTAL E&P ANGOLA	CRAVO, LIRIO, ORQUIDEA and VIOLETA (CLOV) oil fields located offshore in Angola (Block 17)	1260	140,000 - 350,000

## Calm Buoy systems (Turntable Buoys)

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2019	KUWAIT OIL COMPANY (KOC)	KUWAIT OIL COMPANY (KOC) TERMINAL	25-30	300,000
2008	KUWAIT OIL COMPANY (KOC)	KUWAIT OIL COMPANY (KOC) TERMINAL	25-30	300,000
2008	KUWAIT OIL COMPANY (KOC)	KUWAIT OIL COMPANY (KOC) TERMINAL	25-30	300,000
2005	SHELL NIGERIA	BONNY TERMINAL, NIGERIA	36	350,000
2003	ZUEITINA OIL COMPANY	LIBYA/MARSA AL BREGA	32	275,000
2002	TOTAL FINA ELF E&P CONGO	CONGO / DJENO	35	340,000
1996	BRUNEI SHELL PETROLEUM	BRUNEI	25	20,000 - 350,000
1995	SHELL SARAWAK BERHAD	MALAYSIA / MLNG-2 PLANT	20	100,000 - 350,000
1993	ONGC	INDIA / NEELAM	57	147,000
1991	SHELL EASTERN PETROLEUM	SINGAPORE / PULAU BUKOM	35	150,000 - 350,000
1988	SHELL	GABON / GAMBA	23	50,000 - 150,000
1986	SHELL	NIGERIA / BONNY	28	35,000 - 350,000

## CALM Buoy Wishbone systems for Permanent Mooring

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
1986	OCCIDENTAL / ECOPETROL	COLOMBIA / COVENAS	35	390,000
1985	MONTEDISON	ITALY / MILA	50	70,000
1983	AMOCO	GABON / INGUSSI	30	230,000
1982	PHILIPPINES CITIES SERVICE	PHILIPPINES / NIDO	73	55,000

## CALRAM Buoy systems for Permanent Mooring

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
1995	HAMILTON OIL	LIVERPOOL BAY / DOUGLAS	30	116,500
1982	PHILLIPS PETROLEUM	IVORY COAST / ESPOIR	87	240,000
1981	UNION OIL OF THAILAND	SOUTH CHINA SEA / ERAWAN	68	85,000

## Conventional Buoy Mooring (CBM) systems

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2012	ONGC	Mumbai High	75	2,500
2004	CPTP, S.A.	CANICAL LPG TERMINAL, MADEIRA	20	30,000
2002	SHUWEIHAT POWER COMPANY	SHUWEIHAT/JEBEL DHANA, UAE	10	5,000
1999	SHELL TERMINAL LANKA	SRI LANKA / COLOMBO	15	20,000
1994	ONGC	INDIA / BOMBAY HIGH	74	2,500
1989	ONGC	INDIA / BOMBAY HIGH	68	2,500
1987/1988	ONGC	INDIA / BOMBAY HIGH SOUTH	60	2,500

## Tower Mooring systems

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2015	GAZPROM NEFT	OB-TAZ river mouth, NOVIY PORT, RUSSIA	10,4	55,000
2008	LUKOIL	RUSSIA, CASPIAN SEA YURI KORCHAGIN FIELD	22	30,000
2009	CONOCOPHILLIPS	PENGLAI FIELD, BOHAI BAY, CHINA	27	300,000
2005	EXXON NEFTEGAS LIMITED	SAKHALIN ISLAND	45	110,000

1996	TEXACO / ANGOLA	LOMBO FIELD, OFFSHORE ANGOLA	37,5	270,000
YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
1985	SOVEREIGN OIL & GAS, DAVY OFFSHORE / NORTH SEA	EMERALD FIELD, NORTHERN NORTH SEA	150	200,000
1982	HUBBAY OIL / MALACCA STRAIT, MALAYSIA	SUMATRA, INDONESIA	23	140,000

## Swivel Stacks

YEAR OF INST.	FIELD OPERATOR	LOCATION / FIELD	WATER DEPTH (M)	TANKER RANGE (DWT)
2010	EMAS OFFSHORE CONSTRUCTION AND PRODUCTION PTE LTD (EOCP)	BLOCK 12W IN VIETNAM	95.6	185,000
2010	SAIPEM S.P.A.	AQUILA FIELD	815	112,000
2010	SAIPEM S.P.A.	LIVORNO FIELD	112	80,000