



ISO 9001:2008
Certified

ISO/TS 29001:2007
Compliant

Topsides Design Kit When Experience Matters!



Alliance Engineering's

FPSO PROJECTS

Keys to Success

Alliance Engineering's successful FPSO formula



ISO 9001:2008

Certified

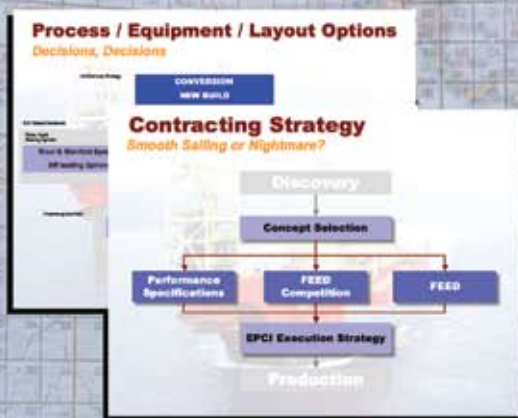
Provision of Project Management, Engineering and Procurement Support Services to the Oil and Gas Industry

ISO/TS 29001:2007 Compliant

Petroleum, Petrochemical and Natural Gas Industries

Experience

- 15+ World-Class Projects with Operators & FPSO Contractors
- HSE & Risk Management
- Project Management / Owner's Engineer / Detailed Design
- Execution Plans



Contracting Strategy

- From Concept Selection through FEED & EPCI Execution
- Lease / Own
- Conversion / New Build

Process / Equipment / Layout Options

- Fit for Purpose - Gas, Heavy Oil to Light Condensate Design
- Functional Specifications
- Existing PDMS Models and Layouts
- Databases



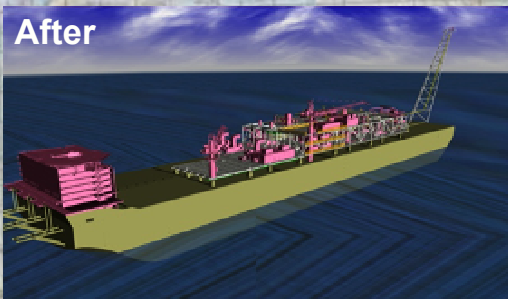
Cost & Schedule Database

- Schedule
- Equipment Costs
- Weights
- Material Costs
- Fabrication Costs

Success Stories



Topsides Weight 20400 MT



Topsides Weight 13326 MT

Nsiko FPSO Development Project

**Chevron
Offshore Nigeria**



- Cost Reduction Study, Pre-FEED, Sourcing Study, 3rd Export Compress Train
- Conversion Tanker
- Design Rates:
 - 250 MMscfd
 - 100,000 BOPD
 - 100,000 BWPD
 - 275,000 BPD Water Flood
- Topsides Weight Reduction from 20,400 MT to 13,326 MT = Savings to Chevron of \$300 Million
- 1.6 Million BBL Storage
- Spread Moored
- 5,000' Water Depth
- Completion Date: 2007



Bijupira and Salema Development

**MODEC
Enterprise / Shell
Offshore Brazil**



- Conceptual, Detailed Engineering, Procurement, and Construction Support
- Conversion Tanker (Singapore)
- Design Rates:
 - 75 MMscfd
 - 70,000 BOPD
 - 50,000 BWPD
 - 92,000 BPD Water Flood
- 1.3 Million BBL Storage
- Turret Moored
- ABS Classed
- ECP Contractor - MODEC
- 2,200' Water Depth
- Completion Date: 2002



Su Tu Den Field Development

MODEC
Conoco Vietnam
Offshore Vietnam

ConocoPhillips

- Conceptual, Detailed Engineering and Design, Procurement Assistance, Fabrication, and Commissioning Support
- New Build Tanker (Korea)
- Design Rates:
 - 35 MMscfd
 - 65,000 BOPD
 - 65,000 BWPD
 - 90,000 BPD Water Flood
- 1 Million BBL Storage
- Turret Moored
- ABS Classed
- EPC Contractor - MODEC
- 150' Water Depth
- Completion Date: 2003



TUI FPSO Field Development

Prosafe
Offshore New Zealand



Prosafe

- FEED Verification, Detailed Engineering and Design, Procurement Assistance
- Conversion Tanker (Singapore)
- Design Rates:
 - 20 MMscfd
 - 50,000 BOPD
 - 118,000 BWPD
 - 120,000 BFPD
- 1 Million BBL Storage
- Turret Moored
- ABS Classed
- 5,000' Water Depth
- Completion Date: 2006

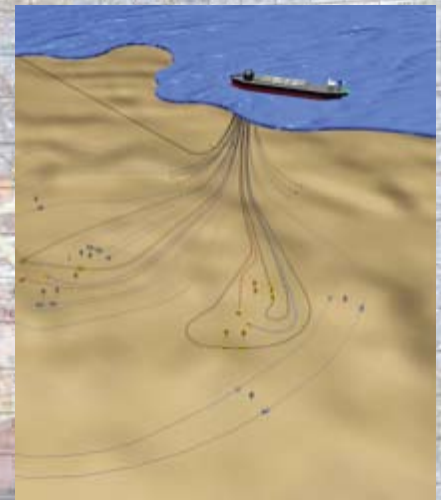


Jubilee FPSO Development

MODEC
Offshore Ghana



- Detailed Design of Topsides
- Conversion Tanker
- Design Rates:
 - 160 MMscfd
 - 120,000 BOPD
 - 84,000 BWPD
 - 232,000 BPD Water Flood
- 1.6 Million BBLs Storage
- Spread Moored
- 5,000' Water Depth
- Completion Date: 2009



Tantawan Field Development

SBM
Pogo Producing (now Chevron)
Offshore Thailand

- Conceptual and Detailed Engineering and Design
- Conversion Tanker
- Design Rates:
 - 200 MMscfd
 - 50,000 BOPD
 - 25,000 BWPD
- 8% CO₂ (Corrosion Control)
- 5 Wellhead Platforms
- Liquid Slug Design
- Sales Gas Compression to 1,700 psig
- 1.2 Million BBLs Storage
- Turret Moored
- ABS Classed
- EPC Contractor - SBM
- 200' Water Depth
- Completion Date: 1998

Frade FPSO Development

Chevron
Offshore Brazil

- FEED, Project Controls, Estimating, and Development Scheduling
- Conversion Tanker
- Design Rates:
 - 35 MMscfd
 - 100,000 BOPD
 - 130,000 BWPD
 - 150,000 BFPD
 - 150,000 BPD Water Flood
 - Injection 90 MMscfd Gas Compression and Treatment
- 1.5 Million BBLs Storage
- Turret Moored
- ABC Classed
- EPC Contract Strategy
- 3,600' Water Depth
- Completion Date: 2005



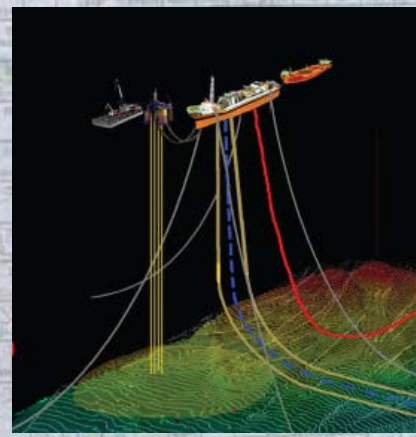


Alvheim FPSO Project

**Dragados
Marathon
Offshore Norway**



- Topsides FEED Verification, EPC Bid, Engineering and Design, Procurement Assistance, and Bid Support
- Conversion Tanker
- Design Rates:
 - 100 MMscfd
 - 80,000 BOPD
 - 130,000 BWPD
 - 140,000 BFPD
 - Gas Export - 60 MMscfd
- 540,000 BBLs Storage
- Turret Moored
- 400' Water Depth
- Completion Date: 2006



Gehem-Ranggas Project

**Unocal
Offshore Indonesia**



- FEED Definition - 5 Months Duration
- Conversion Tanker
- 100,000+ HP of Compression and Generation
- Design Rates:
 - 700 MMscfd
 - 50,000 BOPD with 8 RVP
 - 7,000 BWPD
 - 57,000 BFPD
- 1.2 Million BBLs Storage
- FPSO plus 1 - 2 Dry Tree TLP's
- Tender Assist Drilling
- Spread Moored
- ABS Classed
- 5,000' Water Depth
- Completion Date: 2006

Agbami FPSO Project

**HHI
Chevron
Offshore Nigeria**



- World's Largest FPSO
- EPC FEED Verification - 5 Months Duration
- New Build Tanker
- 200,000+ HP of Compression and Generation
- Design Rates:
 - 450 MMscfd
 - 250,000 BOPD with 8 RVP
 - 250,000 BWPD
 - 450,000 BFPD
 - 415 MMscfd Injected Gas to 7,000 psig
 - 50 MMscfd Gas Lift
 - 450,000 BPD Water Flood
- Power Generation - 70 MW
- 2.3 Million BBLs Storage
- Spread Moored
- ABS Classed
- EPC Contractor - HHI
- 5,000' Water Depth
- Completion Date: 2004





Sanha LPG Fractionation FPSO Project

JGC
Chevron
Offshore Angola



- World's First LPG FPSO
- Structural Support Module Design
- New Build Tanker
- Process 37,000 BBLs of LPG per day into Propane and Butane Products
- Double-hulled to Store 135,000 Cubic Meters of Propane and Butane
- Side-by-side and Tandem Offloading
- Turret Moored
- EPC Contractor - JGC
- 200' Water Depth
- Completion Date: 2003

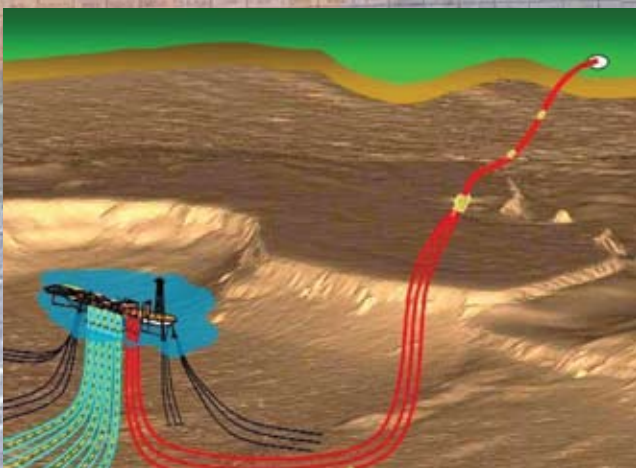


Cascade / Chinook FPSO Project

Petrobras America, Inc.
Walker Ridge, Gulf of Mexico



- U.S. Gulf of Mexico's First FPSO
- World's Deepest FPSO (at time of installation)
- Verification Engineering
- Conversion Tanker
- Design Rates:
 - 16 MMscfd
 - 80,000 BOPD
 - 16,000 BWPD
- 600,000 BBLs Storage
- Power Generation - 36MW
- Turret Moored
- 8,500' Water Depth
- Completion Date: 2007



Gendalo FPSO Project

Unocal
Offshore Indonesia



- FEED Definition - 5 Months Duration
- Conversion Tanker
- 100,000+ HP of Compression
- Design Rates:
 - 650 MMscfd
 - 33,000 BOPD
 - 3,000 BWPD
 - 33,000 BFPD
- Power Generation - 40 MW
- 1 Million BBLs Storage
- Spread Moored
- ABS Classed
- 5,000' Water Depth
- Completion Date: 2006

KEEPING SCORE

Completion Date	Project Name / Scope	Location	Hull Type	Mooring	Storage Capacity BBLs	Oil BOPD	Water BWPD	Gas MMscfd	Water Depth ft.
2009	Jubilee MODEC Detailed Design	Ghana	Conversion	Spread	1.6 Million	120,000	84,000	160	5,000
2006	Tui Prosafe Concept through Detail	New Zealand	Conversion	Turret	1 Million	50,000	118,000	20	5,000
2003	Su Tu Den MODEC Concept through Detail	Vietnam	New Build	Turret	1 Million	65,000	65,000	35	150
2002	Bijupira & Salema MODEC Concept through Detail	Brazil	Conversion	Turret	1.3 Million	70,000	50,000	75	2,200
1998	Tantawan SBM Concept through Detail	Thailand	Conversion	Turret	1.2 Million	50,000	25,000	200	200
2008	SSP OPE Conceptual	West Africa	New Build	Spread	1 Million	80,000	155,000	70	4,000 - 10,000
2008	Negage CABCOG Pre-FEED	Angola	Conversion	Turret	1.4 Million	100,000	90,000	60	4,300
2007	Petrobras Tambua Urugua Teekay Topside Dev./ Bid Support	Brazil	Conversion	Turret	1 Million	47,723	42,610	353	5,000
2007	Cascade / Chinook Petrobras America, Inc. Verification Engineering	GOM	Conversion	Turret	600,000	80,000	16,000	16	8,500
2007	Nsiko Chevron Pre-FEED	Nigeria	Conversion	Spread	1.6 Million	100,000	100,000	250	5,000
2006	Alvheim Dragados EPC Bid Support	Norway	Conversion	Turret	540,000	80,000	130,000	100	400
2006	Gehem-Ranggas Unocal FEED Definition	Indonesia	Conversion	Spread	1.2 Million	50,000	7,000	700	5,000
2006	Gendalo Unocal FEED Definition	Indonesia	Conversion	Spread	1 Million	33,000	3,000	650	5,000
2005	Frade Chevron FEED	Brazil	Conversion	Turret	1.5 Million	100,000	130,000	35	3,600
2004	Agbami HHI EPC FEED Verification	Nigeria	New Build	Spread	2.3 Million	250,000	250,000	450	5,000
2003	Sanha (LPG) JGC Structural Detail	Angola	New Build	Turret	N/A	N/A	N/A	N/A	200

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