

Technip Offshore Activities in Africa

Africa Oil & Gaz Summit
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A. Maroini



Technip

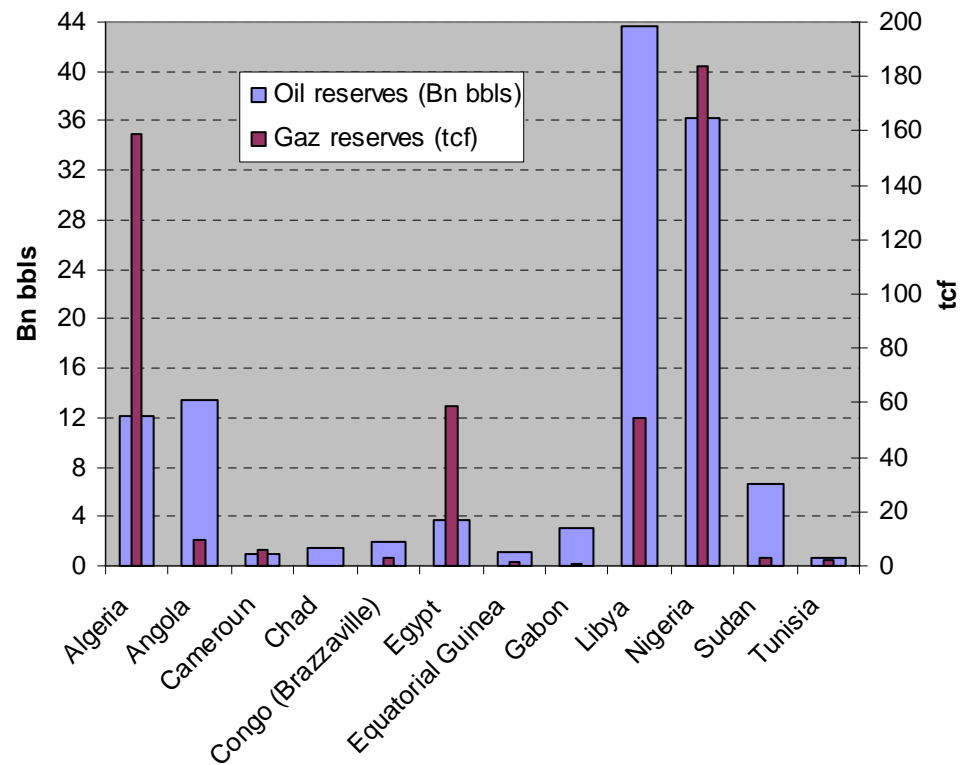


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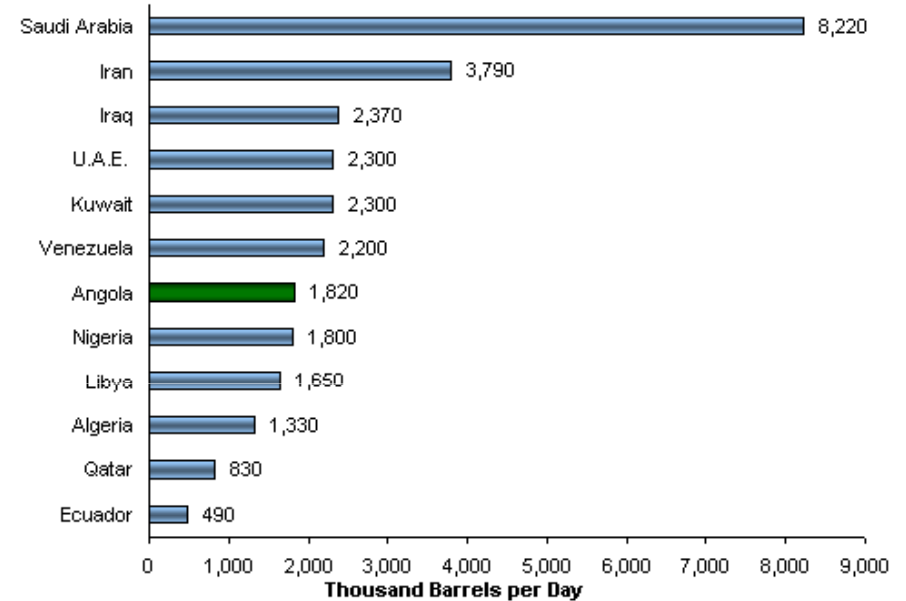
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Situation in Africa

Oil & Gaz Proved Reserves - Africa



OPEC Crude Oil Production by Country, 2009



Source: EIA Short Term Energy Outlook January 2010

Market Situation

► The “giants”

- **Nigeria**

- Was 1st African producer until 2008, but the instability in the Niger Delta has caused significant amounts of shut-in production
- As a result, 2009 monthly oil production dropped to 1.8 million bbl/d
- Still has large oil reserves (36 bn bbl) and giant gas reserves: ranking 7th worldwide
- New Petroleum Industry Bill in gestation

- **Angola,**

- Joined Opec in 2007, production in continuous growth. In 2009, Angola produced an average of 1.82 million bbl/d of crude oil making it the largest crude oil producer in Africa and placing it seventh among OPEC members according to US EIA
- Monthly oil production has now more than doubled compared to its level in 2000.
- Proven oil reserves of 13 bn barrels, with the majority of reserves located offshore

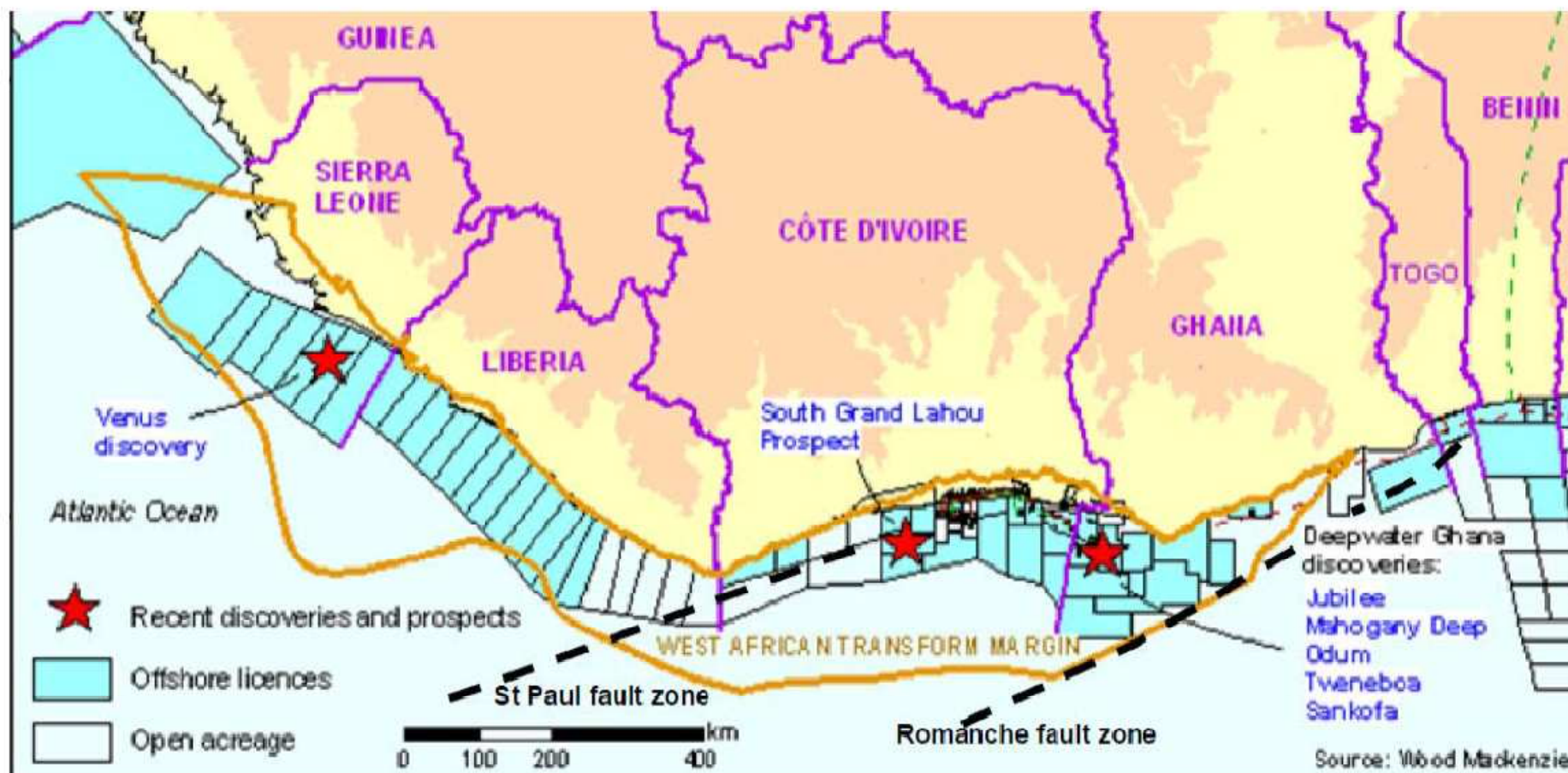
► The Declining

- Traditional mature oil producers : Gabon, Congo, Cameroun
- EG, Equatorial Guinea has become a significant oil exporter since the discovery and development of large offshore oil reserves in 1995. Oil production close to 365,000 bbl/d, but rates start to decline

► The Emerging

- East Africa : Uganda and, at less extent, Mozambique
- WA : Ghana, ...

WA « TRANSFORM MARGIN »



Anadarko, Kosmos, Tullow, Woodside, Repsol, Vitol, Lukoil, Vanco, CNR,
Afren, Heliconia Energy, Gasop, Hess, Oranto, Aker, ...

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Absence of the Majors

Technip Today

Worldwide leader in engineering, project management and technologies, serving the oil & gas industry for more than 50 years

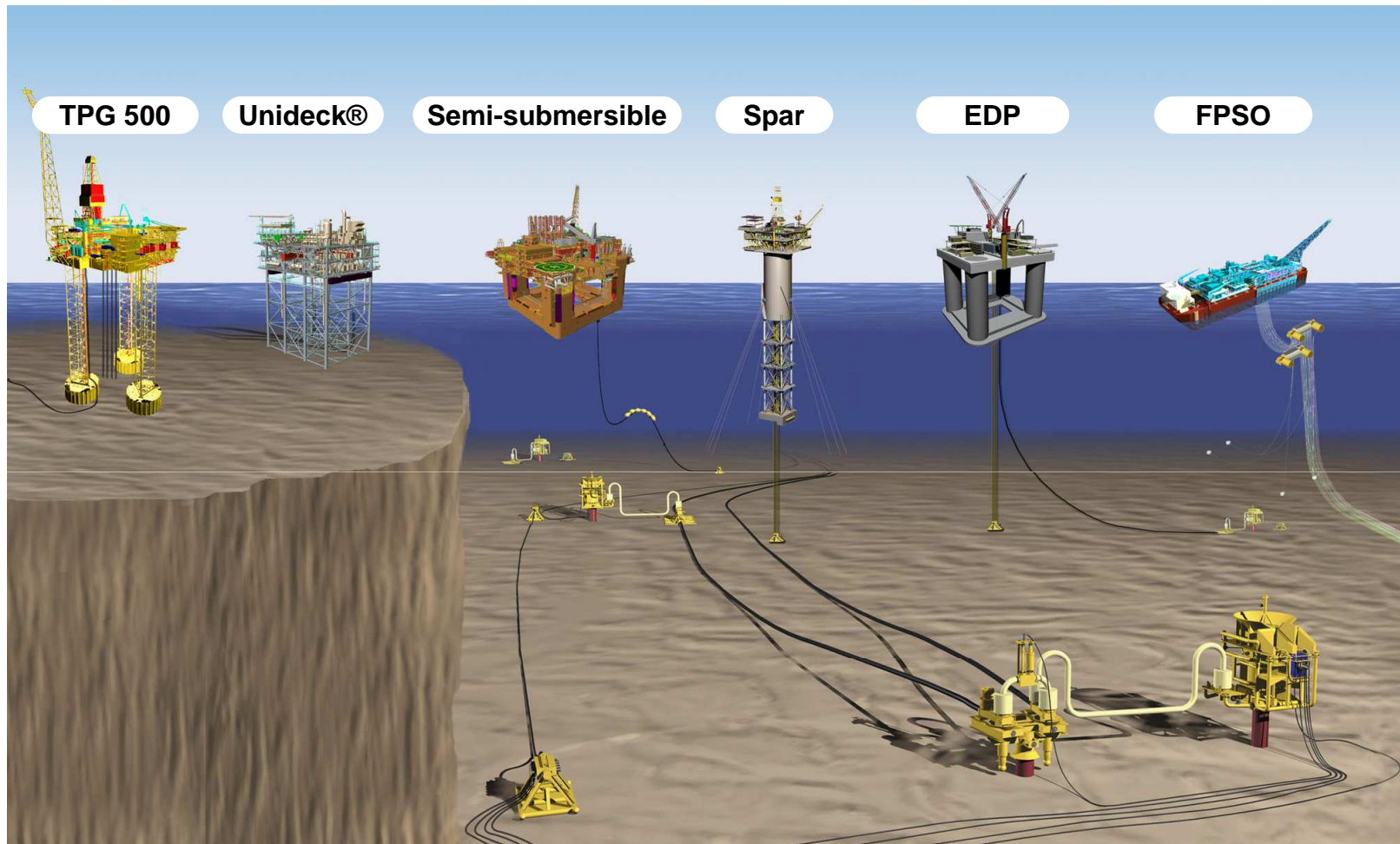
- ▶ **A regular workforce of 23,000 in 46 countries**
- ▶ **Industrial assets on 5 continents, a fleet of 16 vessels (19 vessel by 2011)**



A long term solid partner

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Offshore - a solution for every water depth



- ▶ Proprietary platform design
- ▶ Proven track record in engineering & construction

Subsea Activities

► Services



Deep Water Installation
& Construction

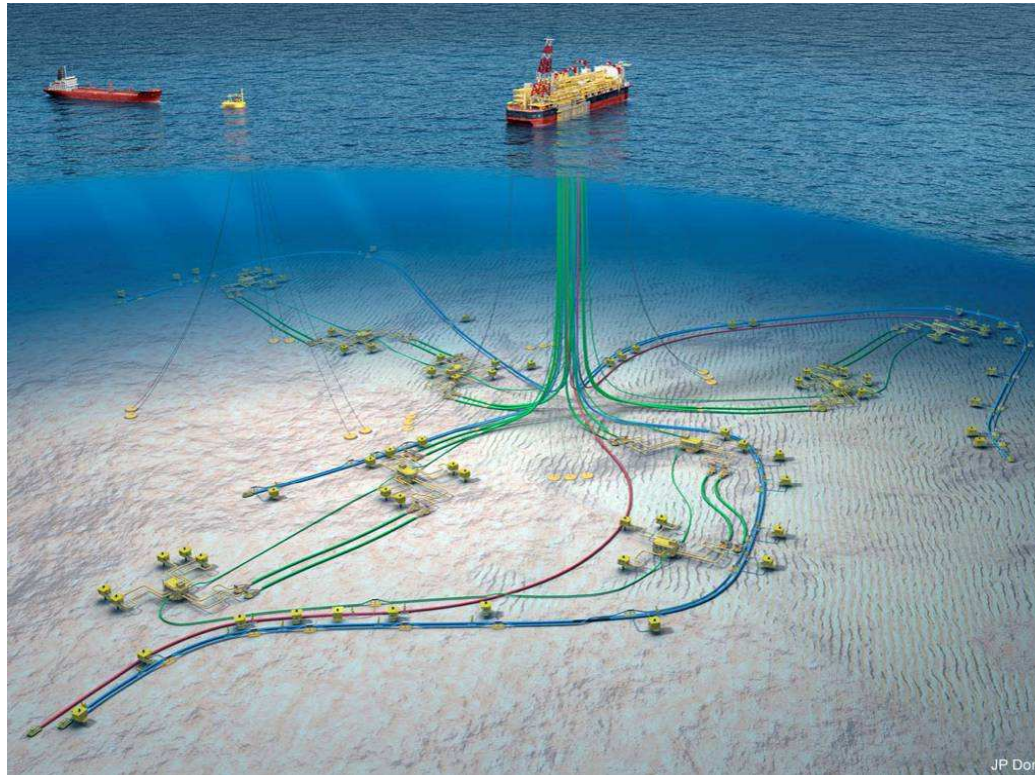


Flexible/rigid Pipelaying



Inspection,
Repair & Maintenance

► Architecture



- Vertical integration
- In-house technologies
- Worldwide leadership
- First class Assets

► Products



Flexible Pipes
(in house manufacturing)



Rigid Pipelines



Umbilicals
(in house manufacturing)

Onshore Activities

► Refining & heavy oil

- Clean Fuels
- Grass Roots
- Heavy Oil Upgraders
- Hydrogen



► Gas Processing

- Gas Treatment
- GTL
- LNG



► Petrochemicals

- Ethylene
- Polyolefins
- Aromatics
- Fertilizers



- Project management know-how
- Strong process engineering capabilities
- Proprietary technologies (Hydrogen, Ethylene...)

A Fleet of 19 Vessels by 2011

Current fleet: 16 vessels



Deep Blue



Deep Pioneer



Sunrise 2000



Venturer



Deep Constructor



Seamec Princess



Apache



Orelia



Wellservicer



Skandi Achiever



Normand Pioneer



Seamec 2



Seamec 3



Alliance



Seamec 1



Skandi Arctic

3 new vessels



Apache II
(rigid pipelay vessel,
delivery in 2010)



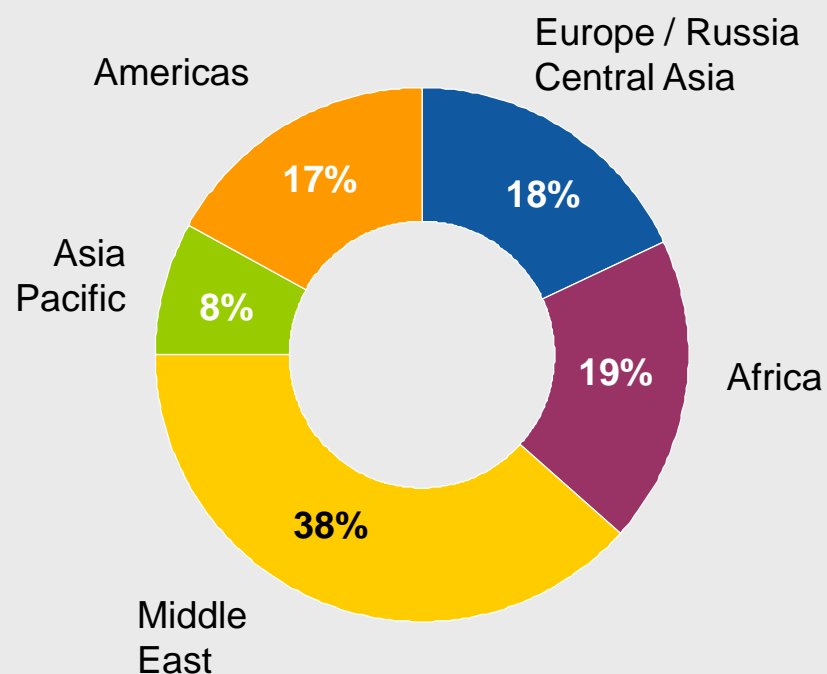
Skandi Vitoria
(new Brazilian deepwater
pipelay vessel, delivery in
2010)



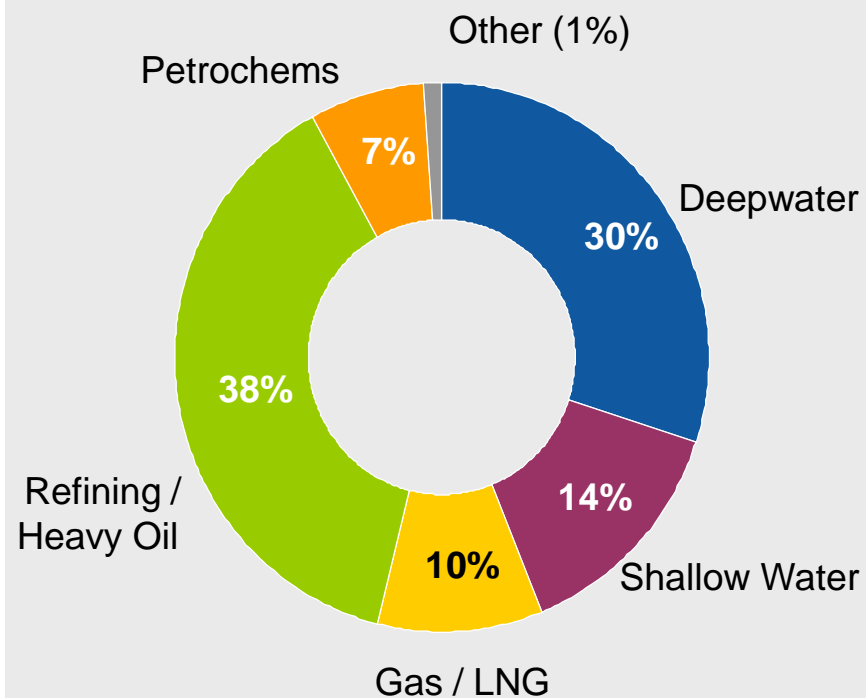
Deep Energy
(new deepwater
pipelay vessel,
delivery in H1 2011)

Backlog: €8,018 million (Dec. 31, 2009)

By region



By market





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Offshore Facilities & Technologies

FLOATERS

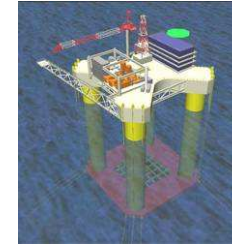
SPAR



FPSO



DEEP DRAFT SEMI-SUB



TOPSIDE FLOATOVER SOLUTION

FIXED PLATFORM



FLOATERS



FIXED FACILITIES

TPG 500



JACKET



TPG 500 DERIVATES



TPG500-MFC

Technological Achievements



► Nigeria, East Area 1A (ExxonMobil), 2005

- Heaviest deck installed by float-over : 18,000 tons
- Flare, wellhead platform jacket and bridges fabricated in Nigeria

► Malaysia, Kikeh (Murphy), 2006

- Local fabrication
- Deck installed by float-over
- First tender assisted drilling from a Spar

► Azerbaijan, Shah Deniz (BP), 2006

- Modularisation for transportation thru Volga –Don canal to Caspian Sea
- Local assembly

► Brazil, P-52 (Petrobras), 2007

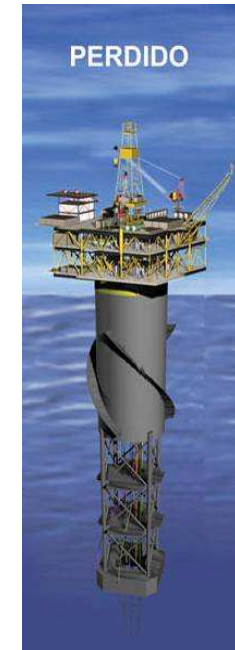
- Installation of a 22,000 mt deck by float-over
- Local fabrication

► US Gulf of Mexico, Perdido (Shell), 2009

- Deepest Drilling and Production Floater : 2,383 m
- (Neptune, first production spar – 1995 : 590 m)

► Nigeria, Akpo (Total), 2008

- Actual world largest FPSO (39,500 mt topsides dry weight)



UNIDECK - FLOATOVER

- ▶ Eliminates cost & schedule risk of HLV's
- ▶ Integrated deck: Onshore HUK & commissioning, thus reducing costs significantly
- ▶ Advantageous for remote locations
- ▶ 15 floatovers completed, 4 in West Africa + 1 in 2012



Hydraulics jack quickly lowers the deck

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Proprietary
Item

UNIDECK : AMENAM – AMP2 CONTRACT



AMENAM – AMP2 Gas Export Platform

Client :	TOTAL
Location :	Offshore Nigeria
Contract Award :	2003
Completion :	Oct. 2006
Gas Export :	370 mmscfd
Water depth :	41 m
Topside weight :	9,000 t

Scope of Work (EPC) :

- ▶ Basic Dossier
- ▶ Detailed Engineering
- ▶ Technical Services for Procurement and Offshore Installation
- ▶ Engineering and supply of proprietary item (jacking systems)

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P-52 semi-submersible platform, Brazil deepwater

- ▶ **Client: Petrobras**
- ▶ **Weight of the surface treatment units: 30,000 tons**
- ▶ **Semi-submersible platform**
- ▶ **Hull Dimensions:**
 - Length: 94 meters
 - Width: 85 meters
 - Height: 43 meters



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P-52 semi-submersible platform mating operation

- ▶ **Topsides installed on hull by mating operation**
- ▶ **Water depth: 1,800 meters**
- ▶ **Commissioning: 2007**

Deepwater Projects – FPSO, Subsea

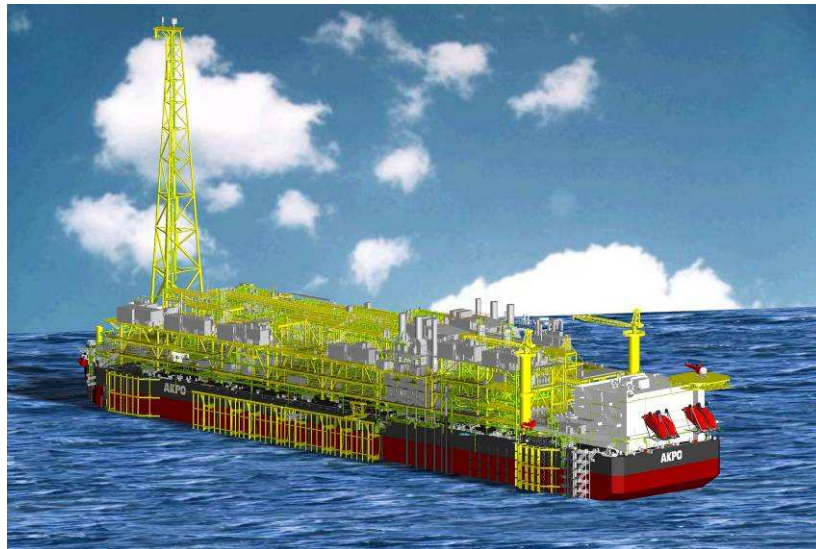
West Africa



Award / Completion	SCOPE of WORK	PROJECT	CLIENT	LOCATION	Main characteristics
2005 - 2009	EPCI	AKPO FPSO	TOTAL	Nigeria	WD = 1330 m, Oil prod.: 185.000 bopd, 37 000 t. T/S
2003 - 2006	EPCI	DALIA FPSO	TOTAL	Angola	Oil production: 240.000 bopd 24.000 t. topsides
2002	BE	ROSA-LIRIO CRAVO (GIRASSOL FPSO debottlenecking)	TOTAL	Angola	Oil production: + 70.000 bopd
2002	Concept + BE	AKPO FPSO Phase I	TOTAL	Nigeria	Oil production : 70 000 bopd 12 000 T topsides
1998 – 2001	FEED + E	GIRASSOL FPSO	MPG for ELF	Angola	Oil Production : 120.000 bopd 32 000 T topsides
1991 – 1996	FEED + EPC	NKOSSA FPS	ELF	Congo	Oil Production : 120.000 bopd 30 000 T topsides
2009	EPC	Moho Bilondo Flexible Riser Fab, Product supply	TOTAL	CONGO	WD = 605 m, combine production from Bilondo & Mobim
2008-2011	EPC	Pazflor SURF Project	TOTAL	ANGOLA	WD = 1200 m, Oil Production : 220 000 bbd
2008-2010	EPC	Jubilee Project Risers, Umbilicals & Flowlines	TULLOW	GHANA	Water Depth 900-1700m, Oil - 120 kbpd → 135 kbpd

AKPO – a Mega FPSO project

- ▶ Water depth: 1,325 m
- ▶ Prod. capacity: 185,000 bpd
- ▶ Gas production: 530 mmscfd
- ▶ Water injection: 420,000 bpd
- ▶ Storage capacity: 2 mmbbl
- ▶ Dimensions: 321x61x31m



Topsides dry wt 37,000 tonnes

Technip



Hull dry wt 80,000 tonnes

Contract details:

- ▶ Client: TOTAL
- ▶ Location: Nigeria
- ▶ Contractor: Technip (consortium leader) & HHI
- ▶ Contract Value: about 1500 MUS\$
- ▶ Schedule: 46 months



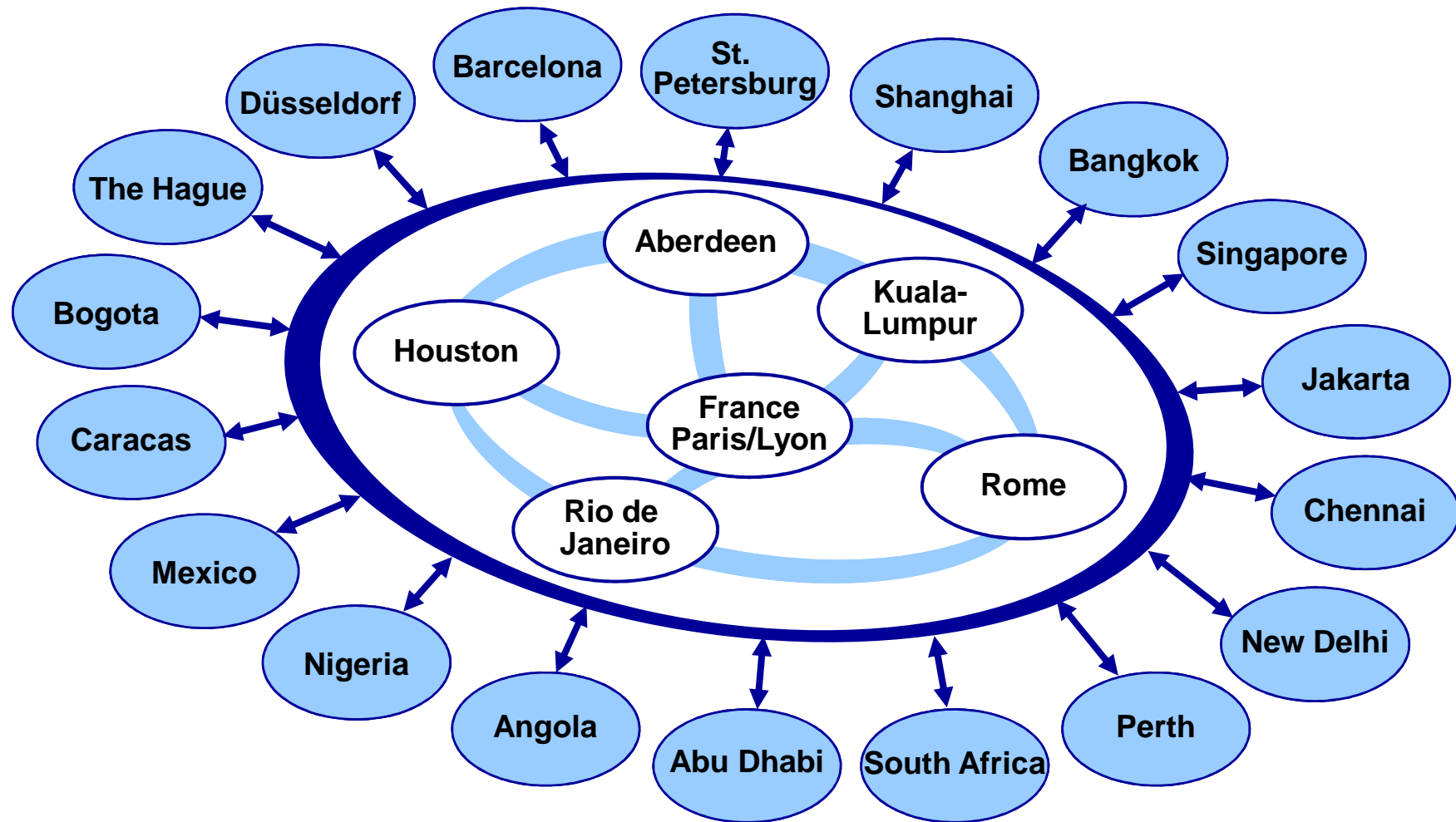
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Deepwater Projects Challenges

- ▶ **FPSO are offshore mega-projects**
 - Large teams to be managed & Complex project management
 - Construction requires world-class yards
 - Engineering needs to fit with efficient construction (constructability)
- ▶ **Operator may create numerous interfaces between hull, risers and topsides**
 - Different contractual relationships
- ▶ **Mega FPSO projects require a tight execution schedule**
 - Strict fabrication sequences for Hull:
 - Topsides installation and onshore hook-up
 - Tow to site
 - Offshore final hook-up & commissioning
- ▶ **Weight control is always critical**
 - Module weight not to exceed lifting capacity
 - Weight increases and COG elevation can affect FPSO stability
- ▶ **Long Lead Items equipment**
 - Fast track schedule for major equipment
 - Early start of LLI requires an early mobilisation of the contractor
- ▶ **Safety and environment design constraints to be right the first time**
- ▶ **Local Content becoming an important issue**

Managing Complexity: A global network of engineering centres



*Network organization provides flexibility and productivity:
Global Strategy to manage Complexity*

FLNG : a unique combination of technologies and know-how

