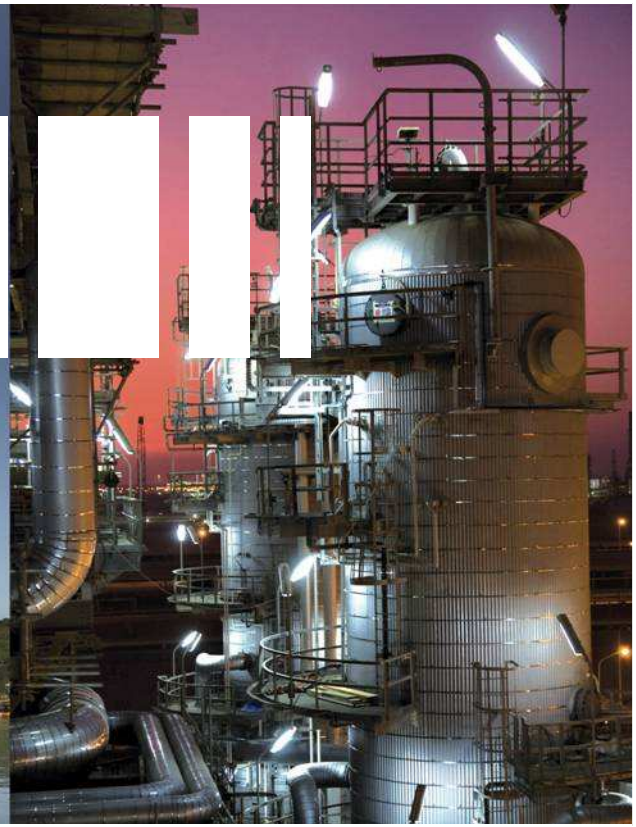
Tulevaisuuden osaamistarpeet offshore-teollisuudessa



Tapio TOLSA

Henkilöstö- ja viestintäjohtaja

Technip Offshore Finland Oy

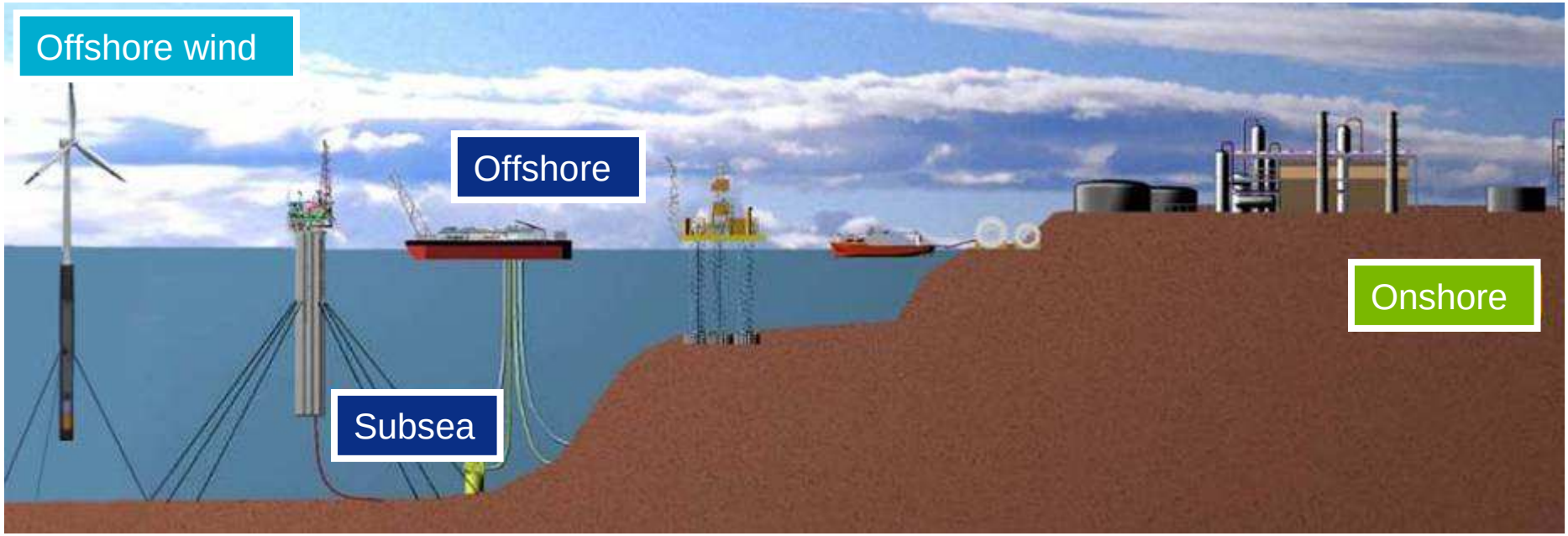
Technip

take it further®

Technip

Our business

- With engineering, technologies and project management, on land and at sea, we safely deliver the best solutions for our clients
- A regular workforce of 25,000 in 48 countries
- Industrial assets on all continents, a fleet of 17 operational vessels (3 others under construction)
- 2010 revenue: €6.1 billion
- backlog:€9.1 billion



Energy is at the core of Technip

Subsea:
Worldwide leading integrated player

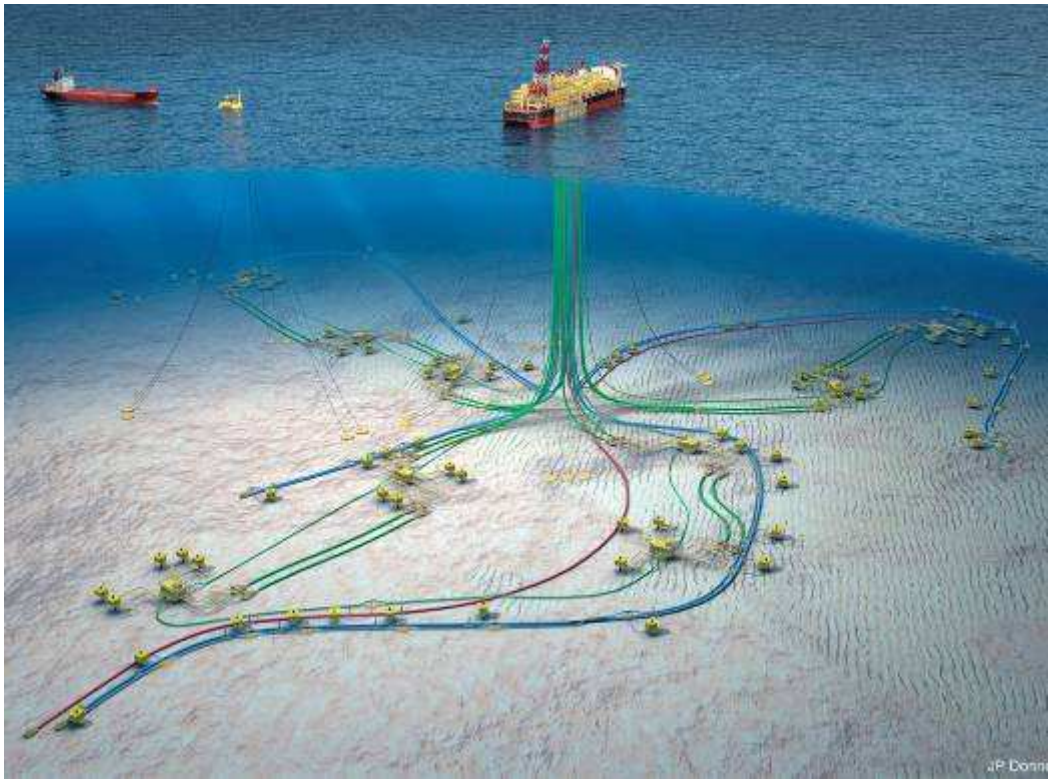
Services

Deep water installation
& construction

Flexible/rigid pipelaying

Inspection,
repair & maintenance

Architecture



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

Products

Flexible pipe
(in house manufacturing)

Rigid pipelines

Umbilicals
(in-house manufacturing)

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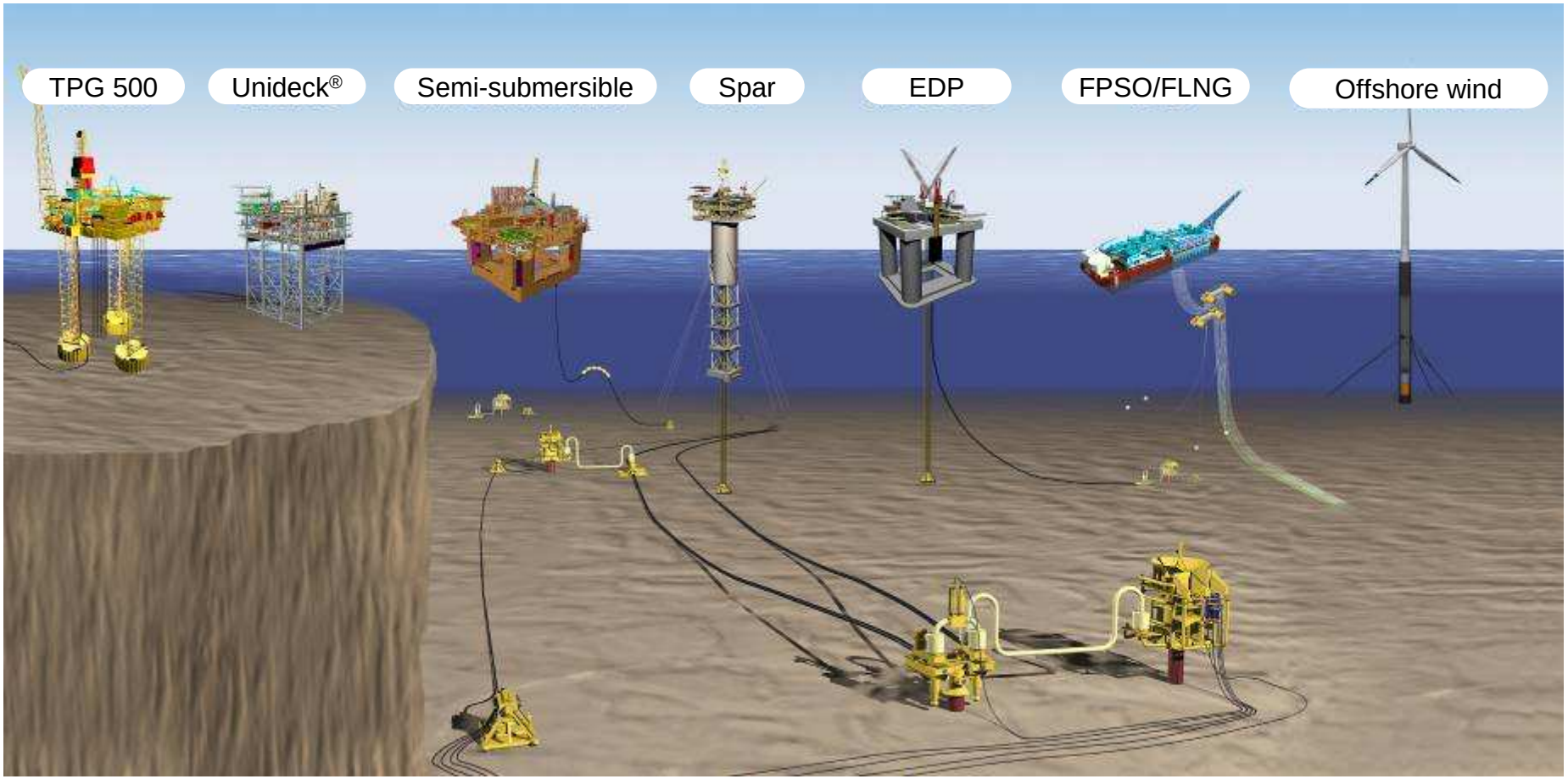
Offshore:
Expertise in high added-value technology



- Innovative capabilities
- Proprietary platform design
- Proven track record in engineering & construction

Onshore:
Project management capability and technological expertise

- **Refining & heavy oil**
  - Clean fuels
  - Grassroots
  - 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…)
- Solid reputation with NOCs & IOCs

North America - Key Clients and Projects

	Subsea	Offshore	Onshore	Recent Project Examples
ExxonMobil	√	√	√	Onshore environmental projects, Marine Well Containment Systems
Shell	√	√		Perdido, Princess
bp	√	√	√	Thunderhorse
Chevron	√	√	√	Tahiti
Petrobras	√	√	√	Cascade/Chinook
bhpbilliton	√	√		Shenzi
ATP Oil & Gas Corporation	√			Mirage
Mariner Energy	√			Bass Lite
Valero			√	St Charles, Port Arthur
Air Products			√	Baton Rouge, Garyville
Anadarko Petroleum Corporation	√	√		Jack St Malo, Lucius

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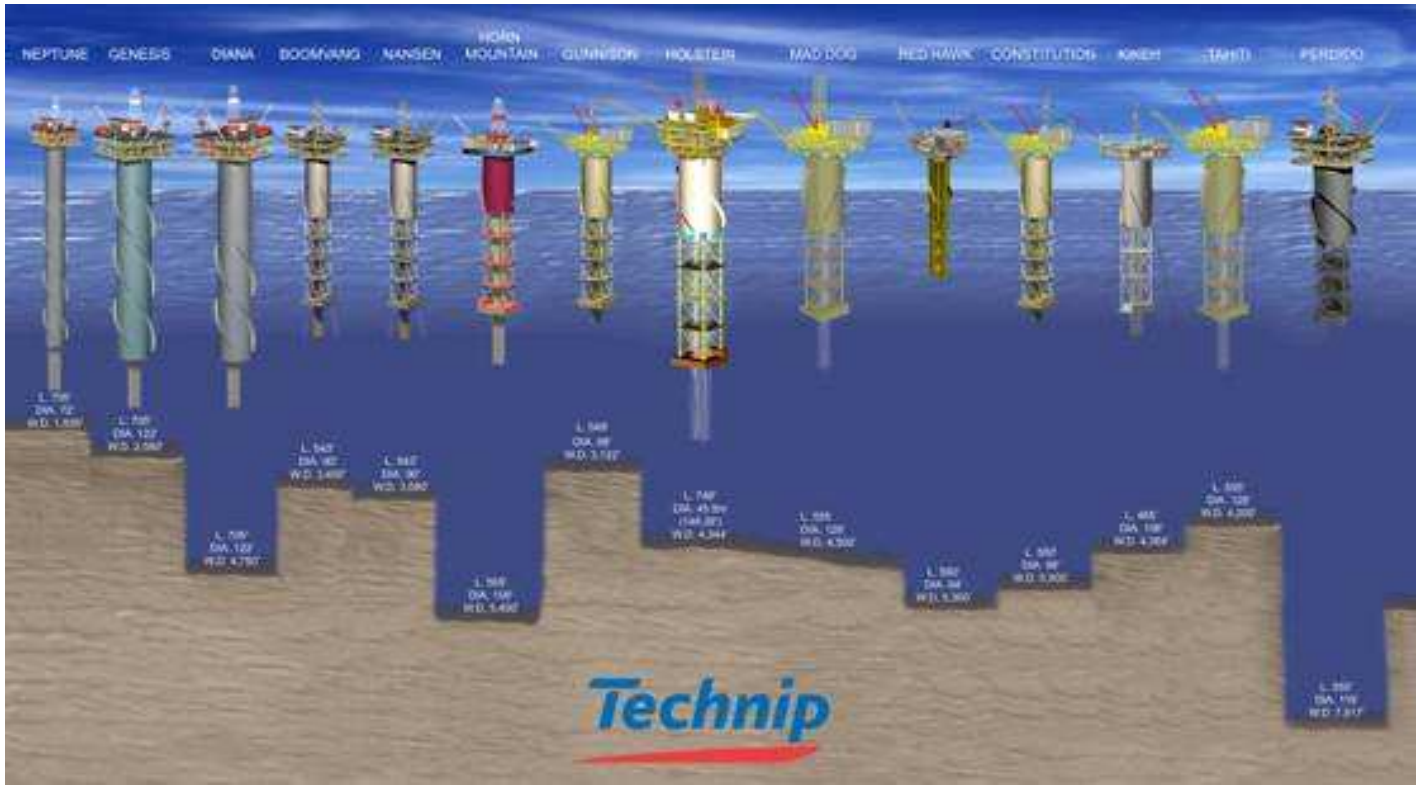
Spar: a Technip Leadership



- Deepwater floating platform for production and drilling with oil / condensate storage options
- Low motions even in harsh environments – support dry trees, steel catenary risers (SCRs) or flexible risers
- Unconditionally stable with simple ballast and marine systems

- 14 Technip Spars to-date – excellent delivery record
- Hull fabrication in Pori or locally with Pori supervision (eg. Kikeh in Malaysia)
- Topsides installation by heavy lift or by catamaran floatover (eg. Kikeh)
- Full drilling or with tender support

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EDP - Extendable Draft Platform

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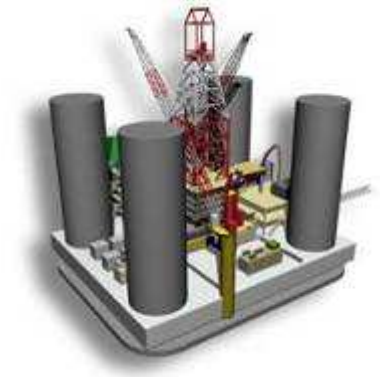
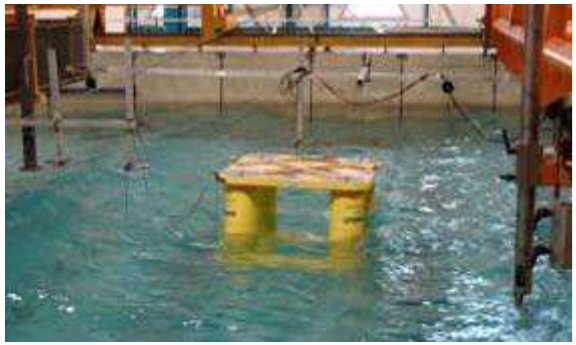
Construction and tow configuration



In-place configuration

5 extensive model testing campaigns



- **The EDP has:**
  - Superior motions to a conventional semi – improved drilling uptime
  - Equivalent motions to a Spar
  - Dry trees compatible behaviour
  - SCR compatible behaviour
  - Simple taut moorings
  - Wide payload range – from wellhead platform up to 50,000+ tonnes
  - Full drilling or tender assisted drilling (TAD) with surface BOP

- The EDP does not need a deep draft construction facility
- The EDP does not need an offshore mating or floatover operation
- The EDP is completed quayside
- The EDP enables worldwide fabrication and maximum local content
- 3rd party approval by DNV

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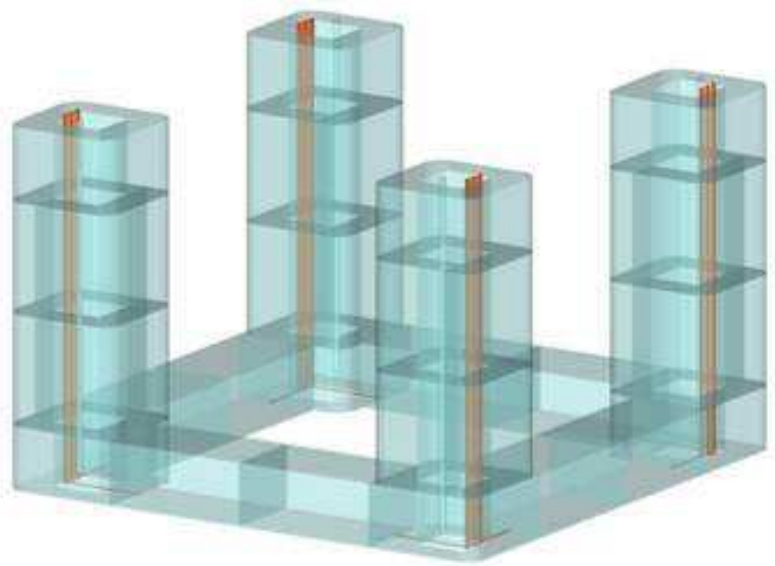
Tension Leg Platform (TLP)



- Deepwater floating platform for production and drilling
- Vertically moored with tendons – no heave motion – supports dry trees, top-tensioned risers and SCRs in deepwater
- Quayside integration of topsides
- Full drilling or with tender support

- We offer topside design services
- Technip is developing its own TLP hull design – to be available globally through IPAD (Integrated Platform for Analysis & Design) software module

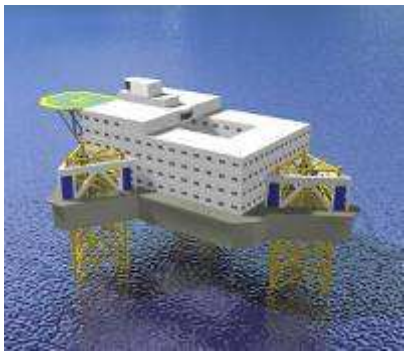
Technip Other Offshore Concepts

Elf Nkossa - Floating Production System (FPS) - oil & gas platform with LPG extraction - 30,000T topsides with concrete hull

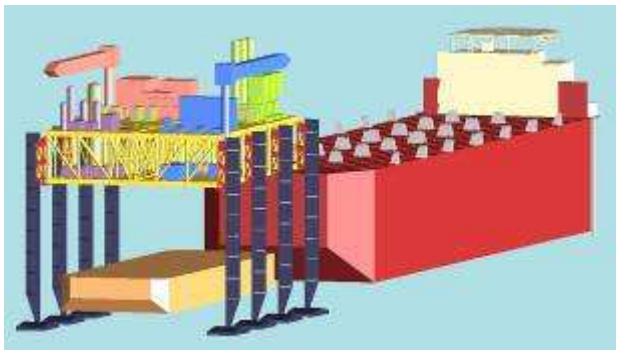
TPG 500 Monopod for marginal field developments

TPG 500 MFC Multi Field Concept with integrated oil storage

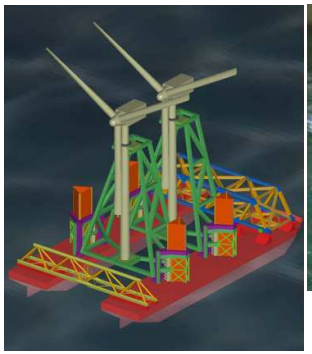
TPG 500 Trussdeck – Barge installed integrated deck with TPG 500 legs

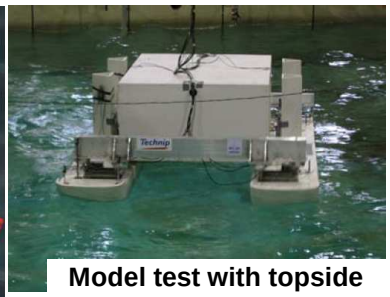


TPG 500 LQ for large integrated accommodation units



FPSO Jackdeck for installation of “mega” FPSO modules





Model test with topside

DSIV – Decommissioning Salvage & Installation Vessel

Pushing the Limits of Floatover

Exxon Mobil EA jacket – 18,000t

Petrobras P52 semi – 31,000t

Murphy Kikeh Spar – 4,000t

- Floatover installation of large topsides onto fixed or floating platforms
- Eliminates need for heavy lift crane
- Heavy topside installed as a single unit (beyond derrick barge capacities)
- Topside fully commissioned and tested onshore - minimum offshore HUC
- Installation in shallow water not accessible to heavy lift crane vessels

- Technip has installed by floatover:
  - 16 topsides onto fixed jackets in open seas
  - 3 topsides onto semis in sheltered seas
  - 1 topside onto a spar in open seas
- Technip performs all engineering associated with the floatover operation and supervises the marine operation
- Technip experience, which includes many world firsts, covers high airgap and long period swell conditions using Unideck™ jacks

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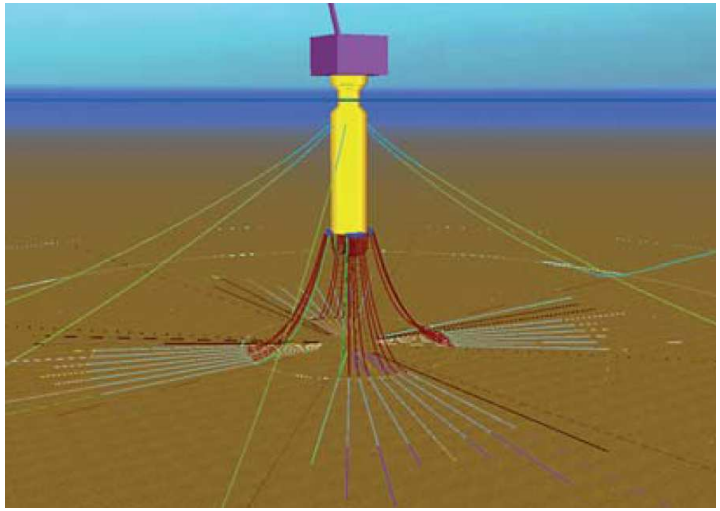
Arctic Experience

An Arctic Spar designed for operation in sheet ice conditions



- Technip has Spar designs specifically for Arctic and sub-Arctic locations, able to resist sheet ice flows or disconnect in the event of iceberg threats
- Technip has a state-of-the-art 3D continuum model that analyses ice behaviour around, and calculates loadings on, fixed & floating platforms and artificial islands

A Spar with disconnectable risers and moorings for iceberg conditions

- Technip is working on the topside design for the Shtokman project in the Barents Sea
- Technip has performed screening of field development options for Cairn Energy's Southern Greenland assets
- Technip draws on its extensive subsea experience of offshore construction operations in remote ice prone areas

Technip

Educational background

1. **Staff = 308 persons**
   - M.Sc. or higher 21%
   - B.Sc. 58%
   - Technicians 17%
   - Other 4%
2. **Labour = 518 persons**
   - Plate workers 29%
   - Welders 41%
   - Pipe fitters 4%
   - Painters 4%
   - Inspection workers 5%
   - Granage, transport 5%
   - Storemen 5%
   - Other 7%
   - Vocational training ~99%

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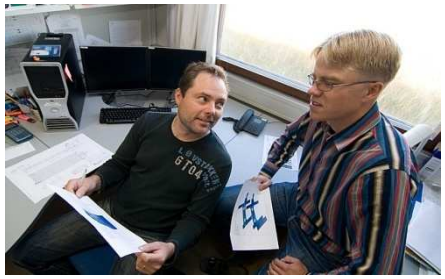
Engineering Discipline areas



Project managers	12	
Other project management	7	
Project administration	9	
Project estimation, Control and Planning	22	
Naval Architecture & Analysis	14	
Structural Detail Engineering	12	
Outfitting, Piping & HVAC	28	
Electrical, Instrumentation & Automation	4	
Mechanical & Mooring	4	
Marine Operations	11	
Construction Methods	11	
Structural Workshop Engineering	21	
Welding Technology	4	
TOTAL		154

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Engineering Competences

- Structural analyses
  - Hydrodynamic analysis of floating and gravity based structures
  - Structural analysis
  - Hydrostatic analysis
  - Weight estimates & control
  - High level documentation for classification approval
- Structural detailed design drawings
- Structural workshop drawings
- General arrangements and outfitting drawings
- Piping and fabrication drawings
- Electrical & instrumentation drawings
- Marine load out and transportation documentation
- Structures for arctic oil and gas operations
- Pressure vessels
- Gravity based and floating windmills

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- kommunikointi ja sosiaaliset valmiudet
  - kansainvälisyyden vaatimukset
- oppimiskyky ja kehittämismyönteisyys
  - moniosaaminen, joustavuus, jatkuva parantaminen
- projektien hallinta ja johtaminen
- erikoisosaaminen
  - hitsaustekniikat
  - hydrodynamiikka
  - Napa-osaaminen
  - jääosaaminen
  - öljy- ja kaasuosaaminen, uusiutuva energia
- turvallisuus – safety comes first!
- laatuosaaminen – dokumentointi
- IT-osaaminen
- esimiestaidot
- talousosaaminen
  - tuottavuusajattelu, hankintatoimi

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Offshore-teollisuudella valoisa tulevaisuus!

Thank you

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