

Deeptec Brasil Introduction

Joint Venture & Alliance Capabilities



Joint Venture & Alliance Team

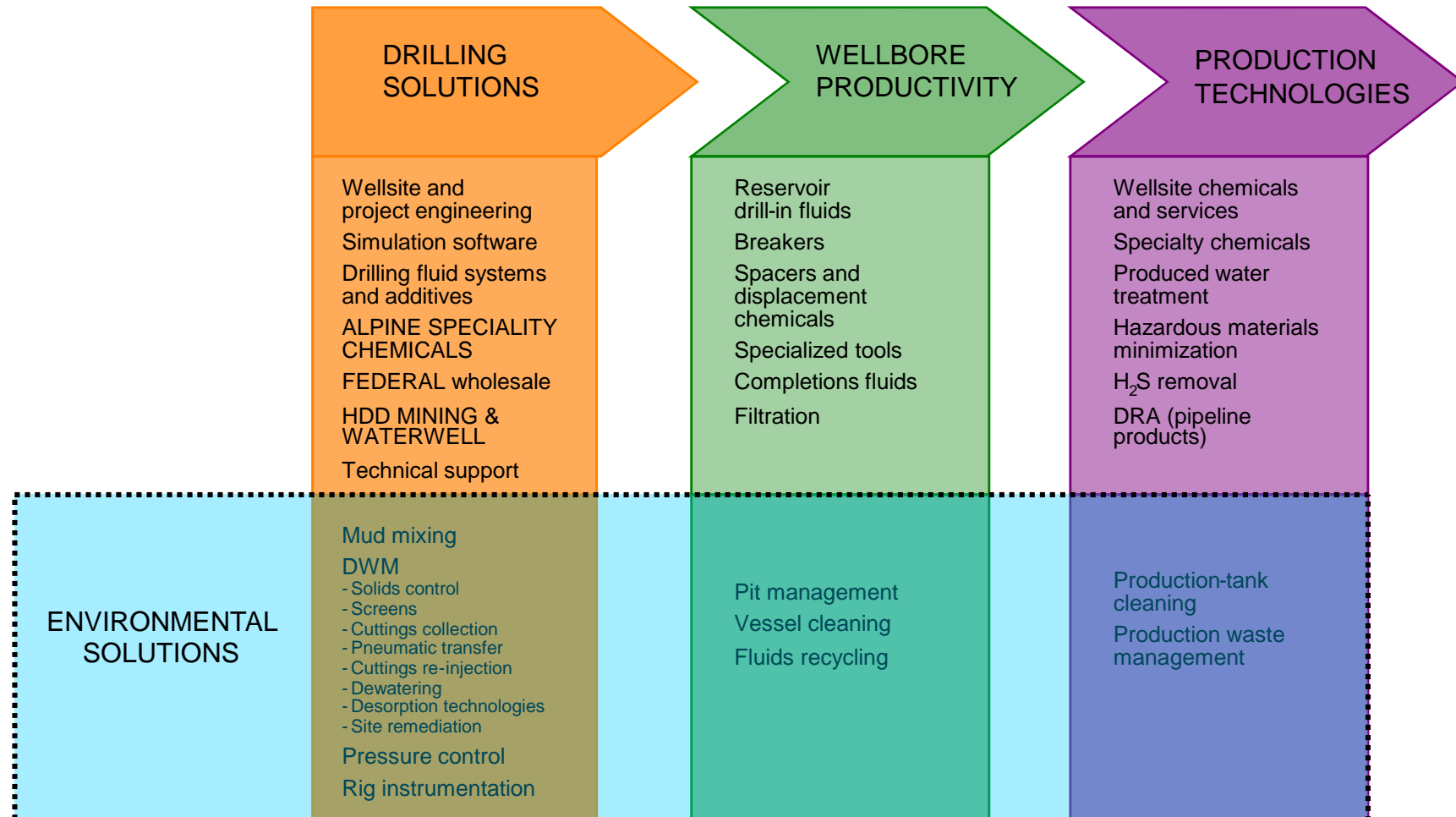


An Enertech & MI SWACO joint venture

Who we are – MI SWACO

- 320 locations across 74 countries world-wide and regarded as the leader in Deepwater drilling fluid technologies.
- 13,000 personnel delivering these solutions every day in the global E&P industry.
- A leading service company with unparalleled operational experience in Solids control equipment and Environmental Solutions
- Innovative equipment and solutions in rig modular component design, equipment integration, and automated process control.
- Well established Brazilian infrastructure for over 40 years
- Recognized deepwater services leader, operating on over 50% of the deepwater rigs offshore currently

The M-I SWACO Solutions Segments



Brasil > Deepwater_Design_Research

M-I SWACO has already done extensive research into the demands upon operations in Brasil Deepwater. From these efforts we have already designs several P&ID's specifically for use in the Brasil offshore market.

Are efforts to date are shown below:

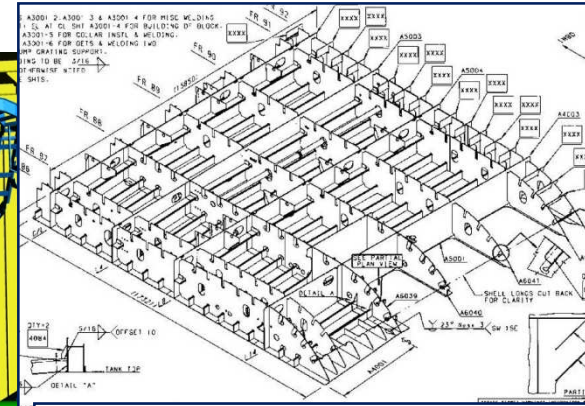
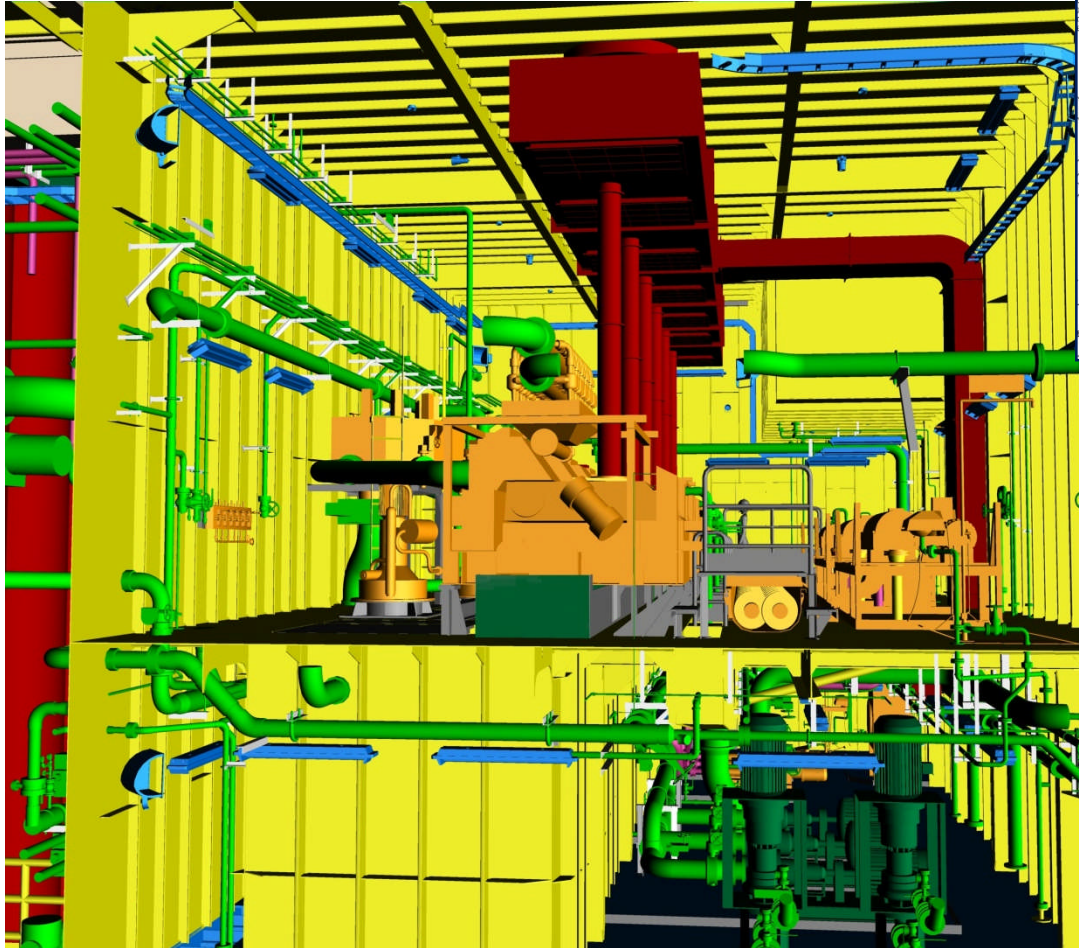
- Internal Global Deepwater Survey (Q1&Q209)
- Fluids Deepwater Workshop (Houston June 09)
- Input from Deepwater Fluids members globally (Q209)
- Input from our Brasil Ops (Q209)
- ES Deepwater Workshop (June 09)
- ES PFD review workshop (Aug 09)
- ES & Fluids P&ID review workshop (Oct 09)
- SWACO BLM Input (ongoing)
- Petrobras GTD (Current)

Who we are - ESI

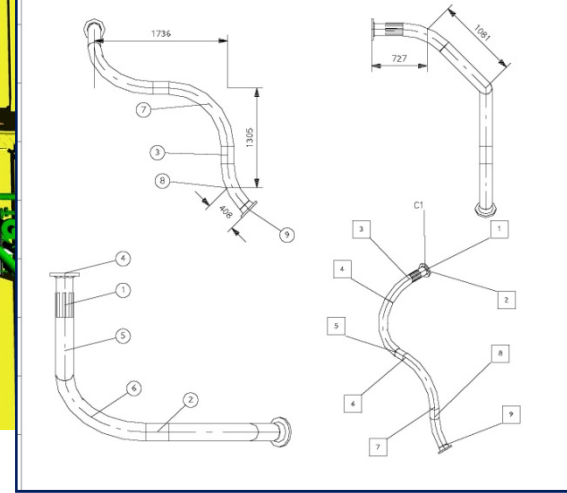
- Offshore Engineering and Design Specialists with office locations in Houston, Texas and China
- Have completed Detailed Design for several Deepwater Drilling Units
- Specialist in Deepwater Drilling Unit design and Drilling Package Integration
- Offer complete project services including Basic Design, Detailed Design, Shop Drawings, Site Team Support, Construction Management, and Procurement Support
- Detail design development utilizing latest 3D software customized for efficient processes



Deeptec 3D Design Capabilities



ITEM	QTY	UNITS	BORE	COMPONENT DESCRIPTION	MISC	BUILD	MAT NUMBER
1	398	mm	6in	ASTM A104 GR B STEEL SMLS PIPE BLACK	SC40	398	
2	212	mm	6in	ASTM A104 GR B STEEL SMLS PIPE BLACK	SC40	212	
3	227	mm	6in	ASTM A104 GR B STEEL SMLS PIPE BLACK	SC40	227	
4	1	Pieces	6in	FLANGE ASTM A105 FORGED STEEL SUPP/ON RF ANSI B14.5	CL 150	13	
5	1	Pieces	6in	SD 45 ELBO ASTM A104 GR. B	SC40	598	
6	1	Pieces	6in	SD 90 ELBO ASTM A104 GR. B	SC40	1197	
7	1	Pieces	6in	SD 45 ELBO ASTM A104 GR. B	SC40	1197	
8	1	Pieces	6in	SD 90 ELBO ASTM A104 GR. B	SC40	598	
9	1	Pieces	6in	FLANGE ASTM A105 SCH40 FORGED STEEL WN RF ANSI B14.5	CL 150	89	



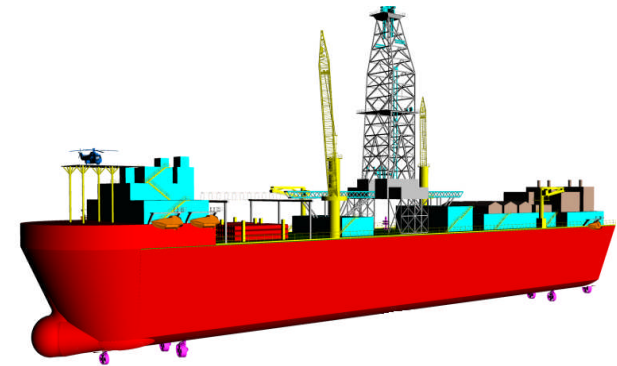
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ESI 6th-Gen DW Drilling Unit Design

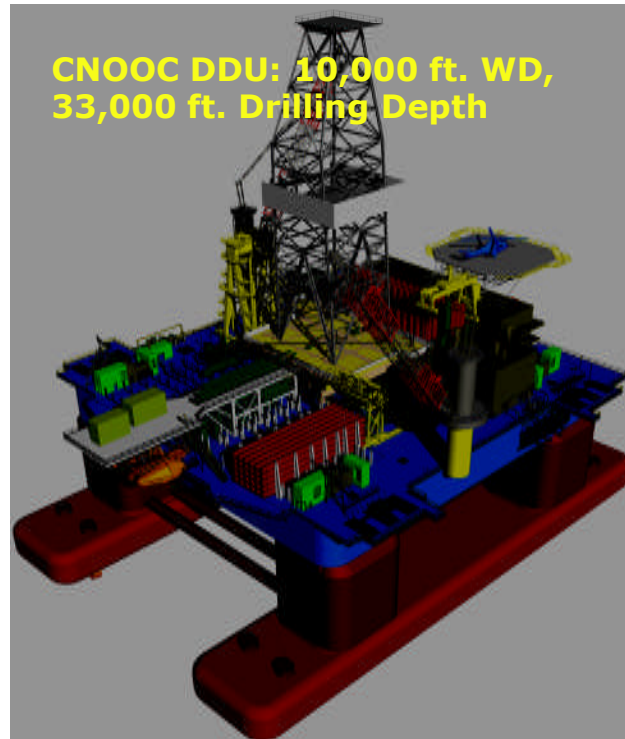
- Experience Unmatched

Deepwater Champion:
10,000 ft. WD + DPS-3
35,000 ft. Drilling Depth

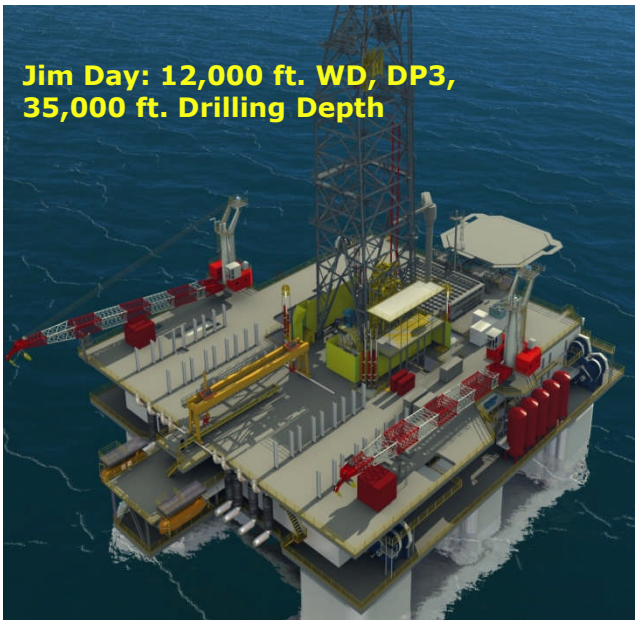
Danny Adkins: 12,000 ft. WD,
DP3, 35,000 ft. Drilling Depth



CNOOC DDU: 10,000 ft. WD,
33,000 ft. Drilling Depth



Jim Day: 12,000 ft. WD, DP3,
35,000 ft. Drilling Depth



Clyde Boudreaux: 10,000 ft.
WD, 30,000 ft. Drilling Depth



Deeptec Full Project Life Cycle (EPIC)

•ENGINEERING

- TENDER REVIEW & SUPPORT (TECHNICAL/COMMERCIAL)
- BASIC DESIGN & DRILLING PACKAGE INTEGRATION
- DETAILED DESIGN
- SHOP DRAWING

•PROCUREMENT

- MATERIAL ACQUISITION
- SUPPLY CHAIN MANAGEMENT
- EQUIPMENT SPECIFICATION/MATERIAL REQUISITION
- FACTORY ACCEPTANCE TEST

•INSTALLATION

- ENGINEERING SITE TEAM MANAGEMENT
- CONSTRUCTION MANAGEMENT
- COMMISSIONING SUPPORT
- SUPPORT EQUIPMENT INSTALLATION

•COMMISSIONING

- MECHANICAL COMPLETION
- CLIENT HANDOVER
- TRAINING
- REGULATORY INTERFACE



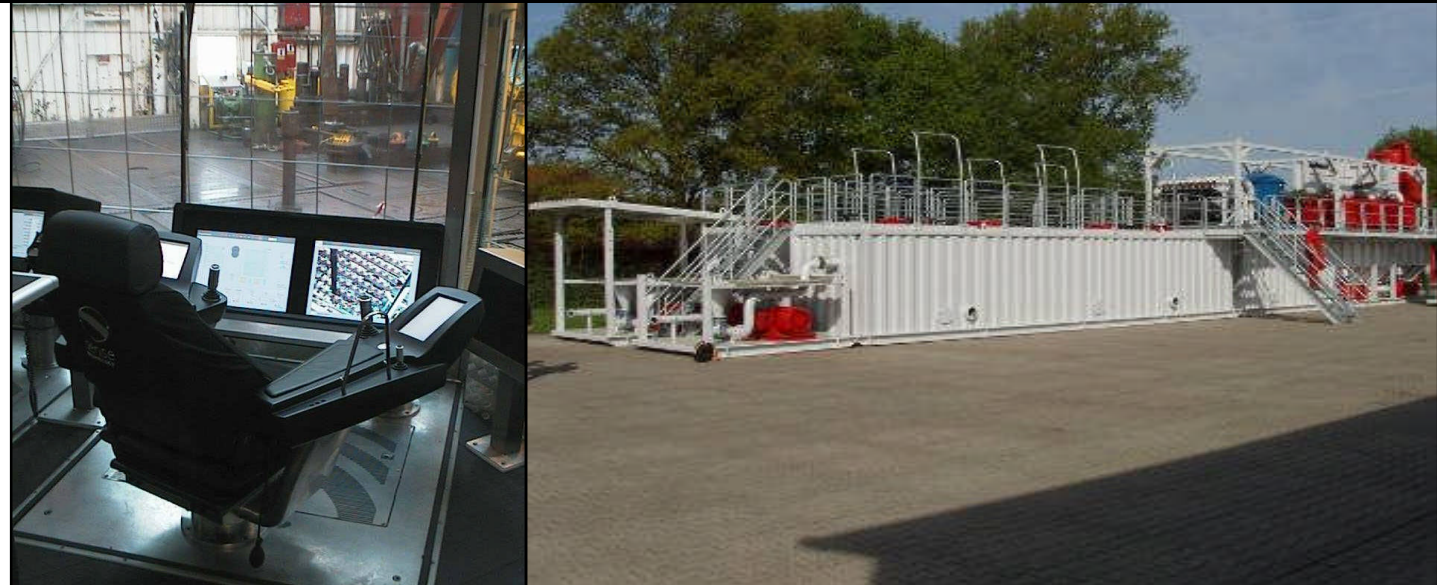
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Alliance Partner





TTS Sense is a supplier of complete offshore drilling equipment packages



**DEEPTEC
BRASIL**
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Derrick Structures

Various sizes (from 30x30 to any size) tailored to vessel requirements

Single or dual activity

Various heights (triple and quad arrangements)

Up to 1250T lifting capacity

For fixed or floating vessels

Bolted or welded

Corrosion resistant hot-dip galvanized structure / painting optional

3D design for optimal lay-out and clash prevention

Crown block and gin pole

Ladders and walkways

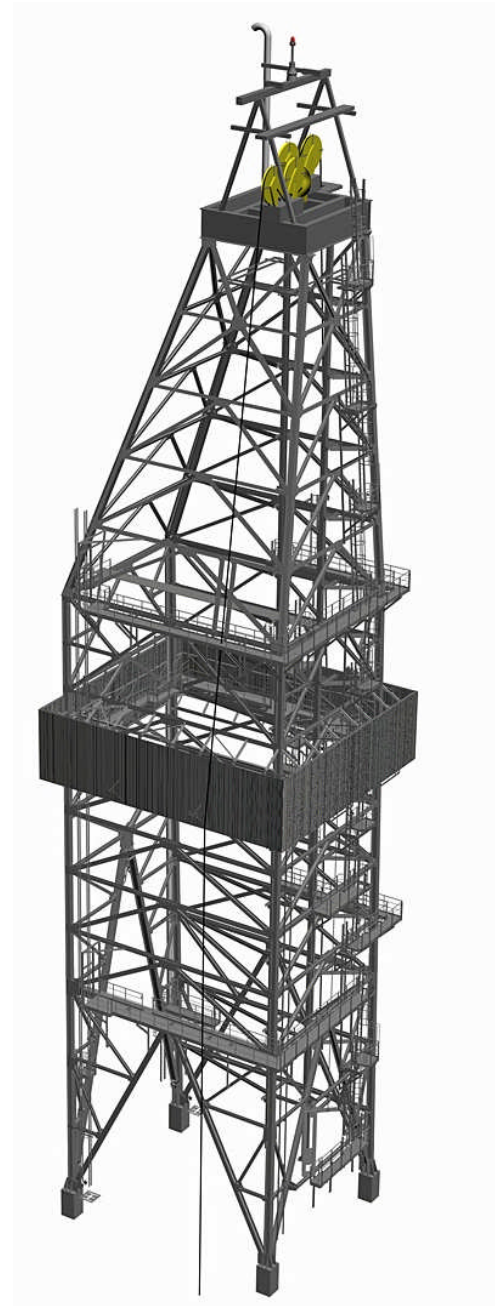
Finger boards support

Interface to derrick mounted drilling equipment

Electrical package

Piping package

Any regional certification requirement



UltraHoist® AHC Drawworks

Drawworks with built-in active heave compensation.

Gear driven (with 3 speed gearbox)

Dual disc brakes (2x100% capacity)

Large drum with lebus for 2" wire, designed for 1000 sh-ton hoisting arrangement.

4 GE motors provide 7300 hp hoisting and braking power.

Motors with redundant blowers (8).

Redundant lube oil and cooling systems.

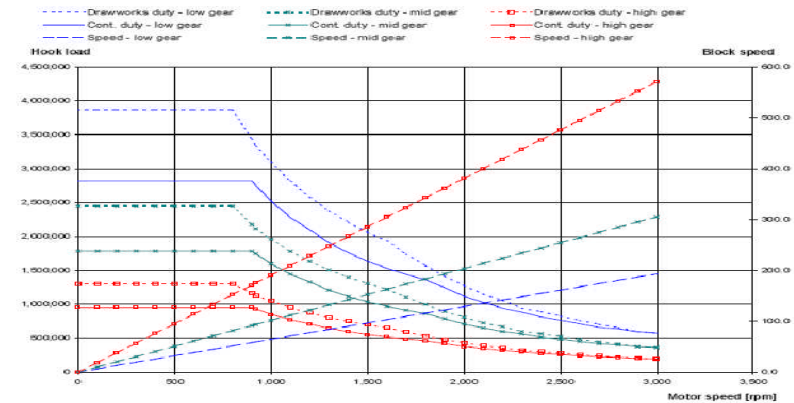
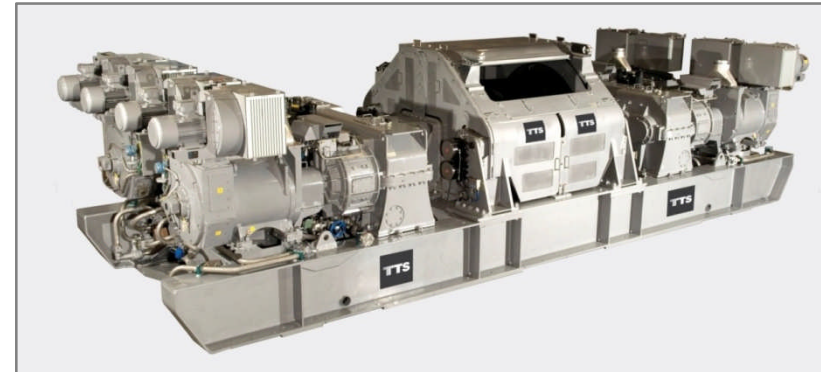
Redundant control system (hot standby).

Advanced algorithms for accurate and smooth heave compensation during all phases of the operation.

Triple heave reference units.

Complies with DnV OS-E101.

Approved by DnV for "locked to bottom" operations.

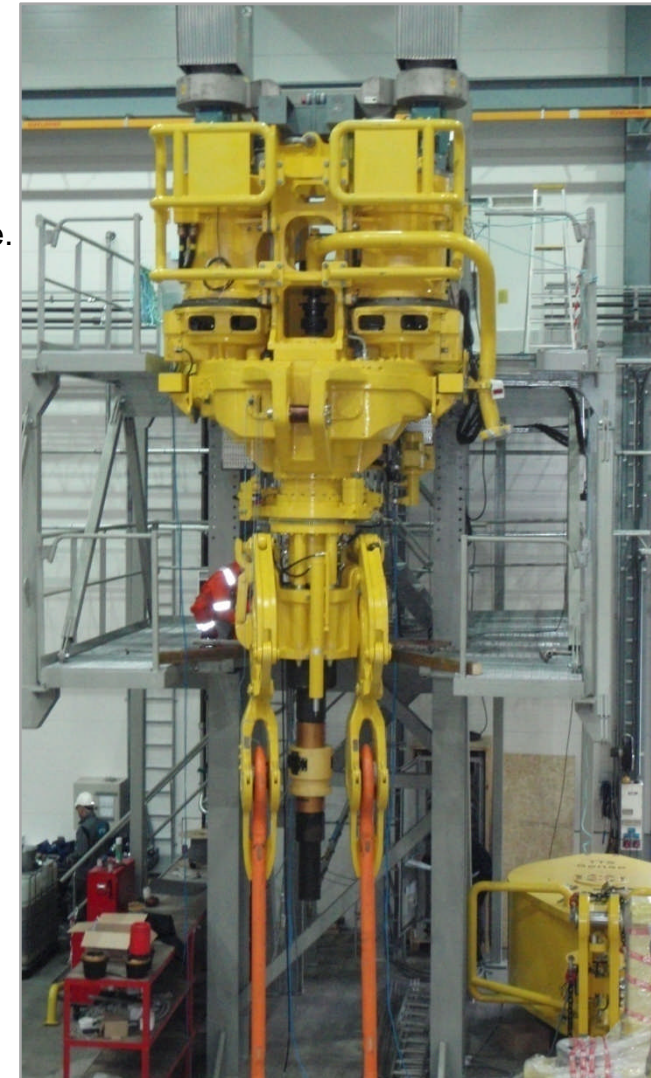


STD Top Drive Systems

Top Drive Systems for demanding drilling operations:

- Driven by AC motors with unique bell housing for perfect alignment.
- High capacity thrust bearings.
- Reliable gearbox design with helical cut gears for less noise and longer life.
- Self calibrating thread compensator system.
- High capacity knuckle link system (stiff links optional)
- Torque wrench 4 – 10” OD without jaw change
- Open design allows wash pipe to be changed in 5 minutes.
- Similar or better on all "standard" top drive features (compared with competitors).

Model	Load (sh-ton)	Torque (ft-lbs)	Max RPM	Power (hp)
STD 1250	1250	93,000	275	2300
STD 1000	1000	93,000	275	2300
STD 750	750	66,000	274	1150
STD 650	650	66,000	274	1150



SmartRacker®

Fully automated column type racker with unique features:

Main functions driven by AC technology (lift, turn, move).

Safety features (dual lifting wire / dual motors / dual brakes / emergency lowering / protected instrumentation).

Gripper head multirange 3-1/2" to 13-5/8" (handles DP, DC, CSG). Long life tungsten carbide dies.

Pick up elevator with fail safe pipe lock multirange 2-7/8" to 13-5/8".

Soft stabbing function.

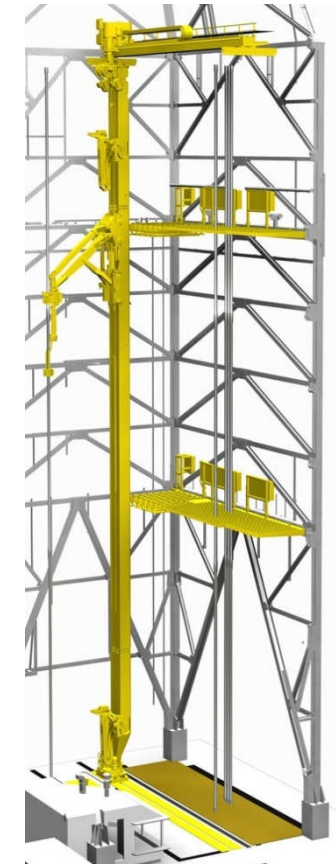
Arm reach 4.0 m / Rotation 359 degrees.

Guide arms vertical travel to improve racking.

Advanced features, yet very simple to use. Select function and row, control speed on joystick. Moves in accordance with geometric model.



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Model	Capacity	Stand	Racking	Arms
SmartRacker IV-P	13.5 mT	116-132 ft	Parallel	3
SmartRacker IV-XY	13.5 mT	116-132 ft	Parallel	3
SmartRacker III-P	10 mT	78-92 ft	X-Y	2
SmartRacker III-XY	10 mT	78-92 ft	X-Y	2

Deck Cranes

Deck Cranes for semis and drill ships. Combined general purpose lifting and tubular / riser handling.

Lifting by crane hook for general lifting applications.

Closer to the load – less swinging load.

Very accurate and easy to operate.

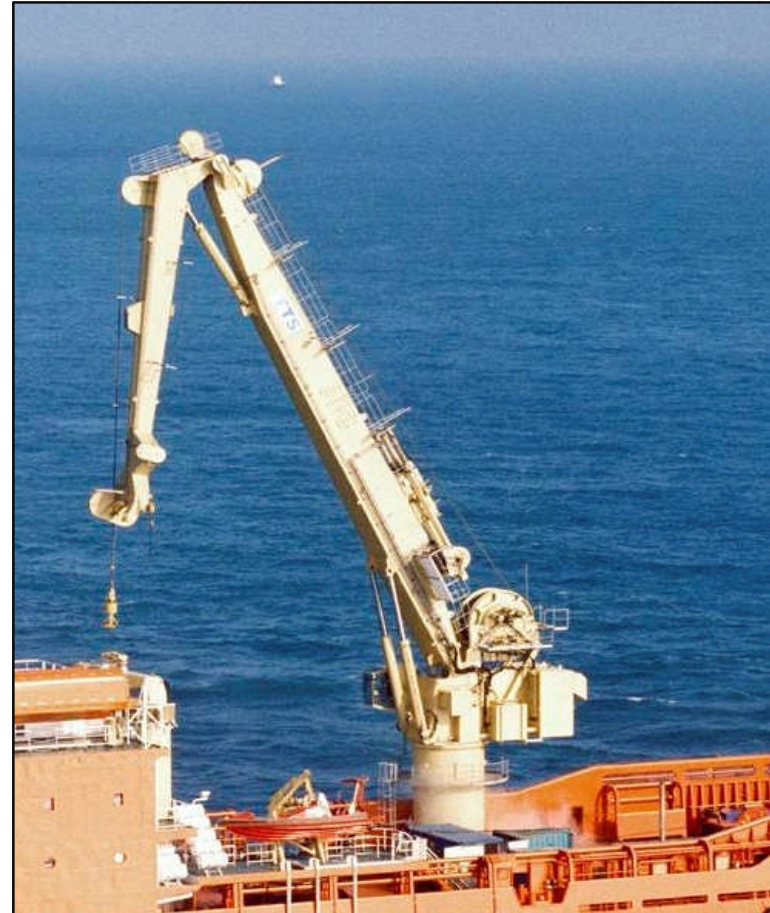
Optional whip winch.

Operator friendly cabin.

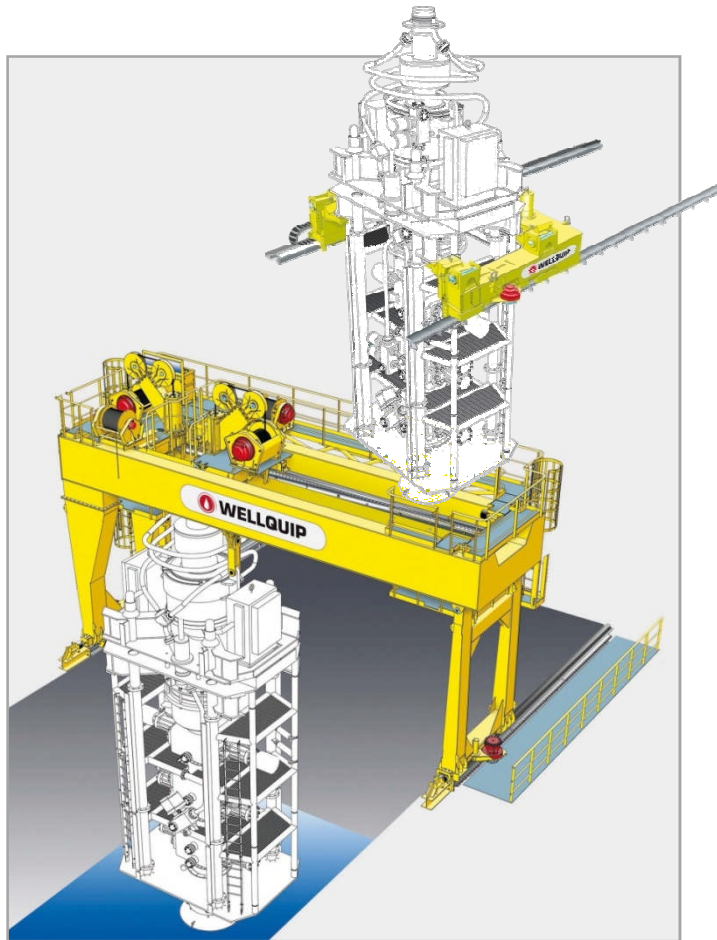
“On-board” HPU.

Range from 5T-22m to 85T-20m.

Tubular / riser handling with direct connection means NO swinging load



BOP Handling Equipment



BOP Carrier

Forklift type BOP Carriers up to any size and BOP load.

Overhead Service / BOP Crane

Overhead Cranes for handling BOP, stacking up X-MAS trees, lifting, guiding and securely lowering equipment on Cellar Deck.

X-MAS Tree / BOP Skids

Flat bed skids to carry load from 50 to 200 mT.

Trip Saver

Trip Saver trolley up to 750 mT load. Various arrangements and combinations available.

Under Hull Guiding

Securely guiding the BOP and X-MAS tree through the splash zone.



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All Sense BOP Handling Equipment is tailored to rig layout and client needs.

Drilling Control Rooms

TTS Sense delivers a broad range of Drilling Control Rooms.

Tailored to drill floor layout

Noise and vibration insulation

Floor tiles, recessed ceiling

Large windows, excellent views

Window / wiper system

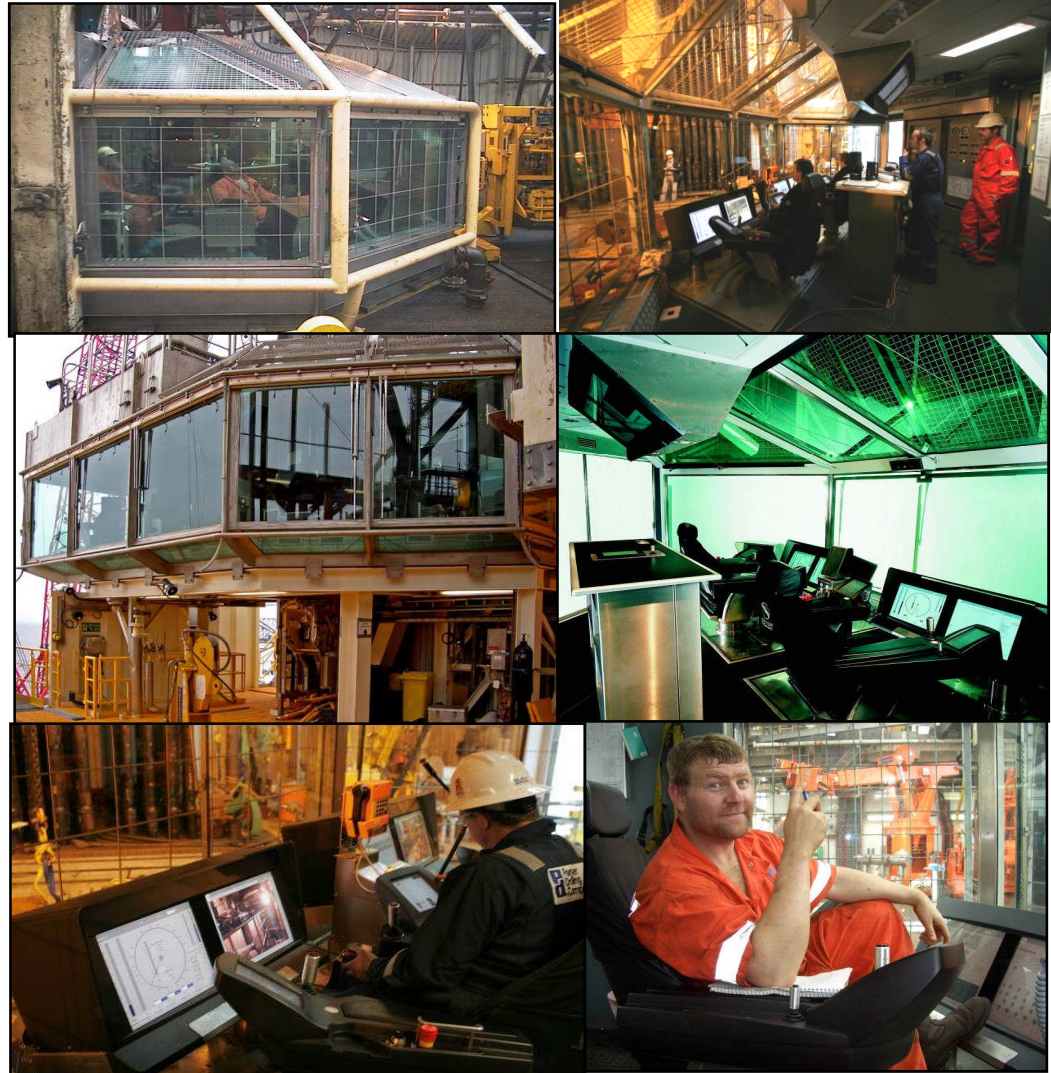
Zone lighting

Spaced for 1 to 5 X-COM chairs

Wall space for BOP / auxiliary panels

HVAC systems

Range of extras / options to meet any requirement



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Selected References



**JURONG SHIPYARD
PTE LTD**
A Subsidiary of SembCorp Marine Ltd



Skeie Drilling & Production



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Deeptec Presentation Summary

- 2 x companies (SWACO & Enertech) have formed a JV registered in Brasil set up **specifically for Brasillian Ops called, DEEPTEC**
 - Alliance with TTS Sense now in place
- The creation of Deeptec provides access to a manpower pool to draw from, in excess of 14,500 personnel from across our planet
- **Experience and knowledge transfer** of extensive Deepwater experience to Brasil, for Brasillians to absorb
- Spending thousands now in design will save millions later in corrections and/or NPT
- Deeptec can help from Tender review, through Commissioning and on into Operations
- Deeptec will provide all **Rig Package Integration**, all aspects
- Drlg fluid manipulation, pressure control, 3D detailed design, proprietary rig designs along with complete rig packages are **all now within Deeptec's realm of provisions**

Deeptec Local Infrastructure (existing)



Av. das Americas, 1650-BI.II - 303/310
Barra da Tijuca - Rio de Janeiro - RJ - Brasil,
CEP 22640-101

Benjamin Vallejo
bvallejo@deeptec.com.br
Gaston Diaz
gdiaz@deeptec.com.br



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