INTECSEA
WorleyParsons Group

Pipeline Construction Equipment Design

Capability and Experience

Capability Overview

Since its inception in 1984, INTECSEA has been a leader in the design and operation assistance of offshore pipeline construction equipment. Whether working on conventional offshore pipeline construction projects or with innovative pipeline technology, INTECSEA's staff experience ranges from design of complete pipelay systems to design of specialized components, including stingers, pipe handling systems and subsea equipment for vertical jumper installations.

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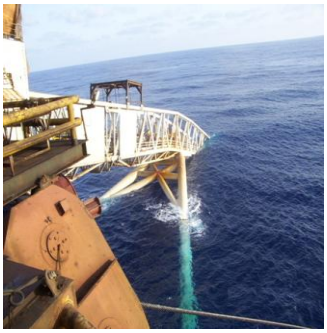
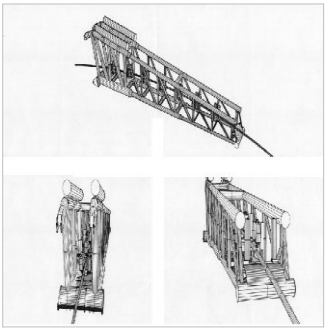
Engineering Services

Pipelay System



INTECSEA has the capability and experience to perform requirements verification to pipelay systems such as pipe characteristics, operating environment, limiting seastates, production rates, and applicable codes. Other verifications include: overbend configuration (roller and stinger settings review), pipe joining systems, pipe supply and transfer system, tensioning and Abandonment/Recovery (A/R) systems. Mooring system and anchor handling equipment is also part of the services related to pipelay systems.

Stinger Design



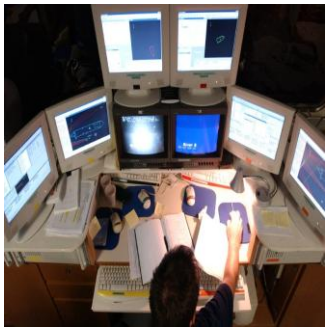
When designing the stinger, INTECSEA defines the operating limitations and design criteria for each specific project. The design also requires evaluating and selecting the stinger type and adjustment capability to be used for the pipelay. During the design process, many analyses such as load, stress, buoyancy, and free loading attitude analysis are done to ensure the integrity and operability of the stinger. Finally, INTECSEA prepares a review of the hitch and hinge detailed design, the as-built drawing review, and an operating manual review after its development.

Pipe Handling/Safety Systems

In order to ensure safety and proper handling of pipelines in during the process of depleting them, INTECSEA works to design and implement systems to ensure the highest HSE and operability standards. INTECSEA prepares a logic diagram and schematics and determines the measurement parameters. It makes sure to implement reliable system hardware and software to meet those objectives, as well as run several simulations for initiation, laying, and A/R stages.

Position Reference Systems

In the design of construction equipment, INTECSEA takes into consideration sophisticated position reference systems including logic diagrams, satellite positioning systems, anchor pattern display systems, barge position, and pipe Touch Down Point (TDP) tracking system, and as-built mapping systems.



Subsea Installation Equipment

INTECSEA has the experience and personnel capable of designing subsea equipment installation aids and managing their system delivery via procurement, package, FAT, and SIT management.

These services include a full complement of structural design, mechanical design, drafting, package/procurement management, FAT/SIT management, and preparation of operations manuals.

Project Execution

In addition to the above described design capabilities and experience, INTECSEA can assist during construction by providing inspection at manufacturing plants for pipelay equipment and during stinger fabrication, supervision of software and hardware development, technical assistance during fabrication, procurement, assembly, and project management.

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Project Experience

Project: **Bideford Dolphin Upgrade**
Client: **Harland & Wolff**
Phases: IDENTIFY EVALUATE DEFINE **EXECUTE** OPERATE

The North Sea

Assist Harland & Wolff with project management

The Bideford Dolphin semi-submersible drilling unit was built in the early 1970s and operated for a number of years in the North Sea. In 1996, Dolphin Drilling Company decided to convert/upgrade the Bideford Dolphin into a fifth generation drilling unit for worldwide service. The conversion included: increasing deckload capacity and stability by installation of additional buoyancy compartments, structural reinforcements and repairs and life extension of the basic hull and installed machinery. It also involved the procurement and installation of a ram type drilling system, reconditioned mud pump system, new diesel/AC generators and electrical system, new distributed control system (DCS), thrusters, mooring system, crane and accommodations for approximately 100 personnel.

Project: **Global Chickasaw Deepwater Stinger**
Client: **Global Pipelines Inc.**
Phases: IDENTIFY EVALUATE DEFINE **EXECUTE** OPERATE

Gulf of Mexico, USA

INTECSEA evaluated concepts for upgrading the pipelay systems, including modifications to the reel, pipe tensioning systems and a new stinger

The horizontal reel barge, Chickasaw, has an extensive history of installing up to 12-inch diameter pipelines in the Gulf of Mexico using the reel method. During 1994, water depth capabilities were upgraded with a new dynamic positioning system, increased pipelay tension, and a high departure angle stinger. The Chickasaw is now able to install small diameter pipelines in water depths to 6,000 ft.

Project: **Petrobras Laybarge Ramp Extension**
Client: **Petrobras**
Phases: IDENTIFY EVALUATE DEFINE **EXECUTE** OPERATE

Campos Basin, Brazil

INTECSEA services included detailed design and fabrication assistance of the ramp structural frame, adjustable rollers, ramp-to-barge connection hardware and auxiliary buoyancy tanks

INTECSEA was responsible for detailed design of a rigid ramp extension for the Petrobras Laybarge BGL-1 thereby making it suitable for pipelaying operations in water depths to 275 m in the Campos Basin, offshore Brazil.

About INTECSEA

(click here to learn more about INTECSEA)

For more than 25 years, INTECSEA has provided frontier technology leadership for the energy industry's most challenging offshore field development and pipeline projects.

INTECSEA was formed in 1984 and provides design for floating systems, risers, pipelines, and subsea engineering and construction management services within the global WorleyParsons Group. INTECSEA has established operating offices in Houston, Kuala Lumpur, Singapore, Delft, Rio de Janeiro, Jakarta, Angola, Cairo, St. John's, Perth, Melbourne, and London. (see all WorleyParsons' locations)

INTECSEA's major areas of expertise include deepwater subsea and floating production systems, marine pipeline and riser systems, Arctic pipelines, marine terminal systems, and Arctic structures. Additional areas of expertise include flow assurance and operability, marine surveys, marine operations, and offshore equipment design.

A History of Innovation and Benchmark Achievements…

SUBSEA

- Deepest Subsea Production
- Longest Oil Tieback
- Longest Gas Tieback
- First Subsea Allocation Flow Meters
- First 15,000 psi Subsea Trees
- First Electrically Heated Pipe-in-Pipe Flowlines
- Deepest Multiphase Subsea Pumps
- First Super Duplex Umbilical
- First Diaphragm Chemical Injection System

RISERS

- First Pipe-in-Pipe Steel Catenary Riser
- First Reeled Steel Catenary Riser
- The Deepest Steel Catenary Risers
- Most Shallow Catenary Riser
- Largest Diameter Flexible SCR Joint
- First SCRs on an FPSO
- Most Direct Vertical Access Risers
- First GOM Free-Standing Riser

FLOATING SYSTEMS

- Largest FPSO
- Deepest TLP at Time of Installation
- Deepest SPAR at Time of Installation
- Most Installed TLPs
- First Deepwater FPU Operated with a Drilling Tender
- Most Types of Floating Systems

MARINE PIPELINES

- Deepest S-lay Pipeline
- Deepest J-lay Pipeline
- Longest Offshore Pipeline
- First Offshore Arctic Pipeline
- First Arctic Pipeline Leak Detection System
- First Piggable Wyes
- First Arctic Pipeline Bundle

(for more capabilities information click here)

INTECSEA
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Global Reach,
Local Knowledge,
Global Solutions

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our global capability, email
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