MDL: Service made to measure

Maritime Developments has been assisting new clients and new markets worldwide with its tailored flex-lay packages.

The company has introduced a fresh alternative to cable installation in Mexico, where its portable spread was deployed for the country’s first flexible lay using modular equipment on board a vessel of opportunity (p.12).

MDL’s compact technology has also been helping bring new fields online offshore West Africa, including Nigeria, Ghana and Equatorial Guinea.

MDL expert team traveled between South America and South-East Asia to assist clients with asset maintenance and operation. The work scopes included completing a 5-year maintenance programme on a set of 11 assets in Brazil; annual maintenance and function testing of a system in Malaysia, and factory upgrades and spool base operations support in Norway, among others.

To further extend returns on clients’ past Capex investments, MDL Marine Services team has been consulting asset owners on how to efficiently extend the operational lives of their equipment and reduce storage costs.

Currently underway is a transpooling project, where MDL have relocated a riser from Denmark to the UK which MDL will transpool onto a new reel for long term storage in the UK. This solution offers cost effective storage, management/inspection and 24/7 access in the event that the riser is required.
So far in 2019, MDL has completed two distinct pipelay installations offshore West Africa, and its third SURF mission in the region is underway.

BD & Commercial Manager Dave Gardiner explores how MDL technology and in-house capabilities can help ramp up E&P activity in the basin, while keeping costs down.

As I’m writing this, the new MDL Horizontal Lay System (HLS) is on its first inter-continental journey down south, virtually straight off the back of its two maiden projects in the North Sea this summer.

It will be deployed alongside an MDL Reel Drive System, offshore Equatorial Guinea, where it will assist the client in adding new wells to an existing network of drill centres in the African basin.

What makes MDL particularly attractive to West Africa?

The technology is the first obvious answer, as the HLS or the MDL Third-generation RDS have shown.

The Third-gen RDS has this year returned to Africa after its debut in the region in 2016, to support Deep Ocean’s mission on the TEN development, offshore Ghana.

Similar to 2016, a driving factor for the RDS selection this time round was its narrow footprint and fully-integrated design, which made mobilisation/demobilisation of the system and reels much more efficient and safer for all parties involved.

Thanks to portable design, compact footprint and complete integration, the MDL rental fleet is ideal for short or tight pipelay projects.
A complete spread can be assembled on the quayside prior to vessel arrival, then lifted on board and fully sea-fastened quicker than any alternative equipment of similar size.

Automation of the systems and remote controls allow for more efficient mobilisation and operation, allowing the personnel to stand in the most optimum position on deck, while keeping them safe.

Naturally, building these systems, maintaining them after every job and performing regular software upgrades requires a dedicated time and resource commitment from MDL, for every piece of kit. This regular maintenance gives the client and operator assurance of no equipment-related downtime on the project.

MDL’s market-leading technology stemmed from our strong North Sea heritage. This challenging, ageing basin is a great test of character for operators and contractors looking to make a profit on their E&P in this part of the world – and even more so, for the supply chain who work hard to provide them with the best tools to do so.

These challenges can range from: limited access to specialist pipelay vessels, schedule clashes, weather challenges, and of course, tight budgets magnifying the negative effects of all of the above. That is why MDL focused its R&D on equipment that is easy to transport, efficient to mobilise, highly automated and safe to operate.

Next in MDL’s journey of development, we set our sights on the Americas and the Gulf of Mexico and other deepwater regions, where some of the above challenges were more pronounced, but the supply chain to address them was less developed.

MDL turned its focus to making deepwater operations more achievable with fewer assets – therefore, making them more economical. That is how our 85 to 150-tonne road-transportable pipelay tensioners came to life.

This unique fleet’s track record includes installation of umbilicals in over 1350m water depth – including offshore Nigeria - as well as performing beach pulls, all without the burden of a large installation vessel, due to the equipment’s significantly smaller footprint, offset with increased tensioner track lengths.

Today, MDL is bringing our collective knowledge and experience of addressing global pipelay challenges to West Africa, where we intend for it to stay.

**Beyond technology**

What truly brings MDL innovation to life – out of the workshops and on back decks – is the complete technical expertise we hone in-house. Before their first mission away, MDL offshore operators go through a training program like no other: they participate in the building, commissioning and any upgrades/modifications to equipment in our yards. This means they have an intimate knowledge of the equipment – making them the most experienced team in their space.

They are supported by the engineering department, who put new ideas on paper, and then figure out how to efficiently put the finished product on a vessel of opportunity. They know their ways around deck planning, sea-fastening and systems integration.

With all these assets at our fingertips, MDL can plan, procure and execute a complete pipelay work scope – allowing installation contractors to receive a range of services from a single source, simplifying contracting requirements and therefore helping to reduce the time and costs of bringing a well online.

With the support of our partners in the region – Bay Matrix Ltd – MDL is open to working with installation contractors and operators to identify what services and equipment would truly improve their operations – so that our investment in the region can benefit the local industry for years to come.
MDL’s 150Te pipelay tensioner is the biggest system in the company’s tensioner portfolio, and also the largest road-transportable system of its kind.

In late 2018 it was deployed offshore Nigeria for the installation of oil offloading lines. With the tensioner mounted on a bespoke ramp designed by MDL, the lines were installed in 1670m water depth.

The 150Te system joined the company’s unique 4-track tensioner range in 2018, shortly after the delivery of a 110Te unit – both units offer unrivaled portability and track length options.

Despite the increase in size and pulling capabilities, both systems retained the key features of the company’s patented MDL TTS-4 design, including Failsafe Grip System, self-centring alignment, Profinet architecture and road-transportability.

For the 110Te and 150Te units specifically, these systems can replace the need for a dual-tensioner solution to perform any installation above 50Te line pull and 4.1 m track contact length – even for products requiring low squeeze.

This is particularly relevant for delicate product handling or for deepwater operations, as demonstrated in recent offshore projects in Nigeria, the Mediterranean and the GOM.

Use of a single unit not only decreases the footprint of the equipment on board and the associated engineering costs, but also reduces the safety hazards associated with running two systems in tandem, and can offer a manpower reduction on board the installation.

**West Africa enablers**

Let’s take a closer look at the MDL systems that have assisted in bringing West Africa’s offshore fields closer to production.

**MDL TTS-4/375 Series Tensioner**

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**TTS-4/375 Series Tensioner**

**Operational mode:** 2 or 4 track mode

**Nominal pull force (idler end):** 150Te at 0.1 CoF, 125Te at 0.08 CoF, 100Te at 0.06 CoF (4 track mode) 75Te at 0.1 CoF, 62.5Te at 0.08 CoF, 50Te at 0.06 CoF (2 track mode)

**Product speed:** Installation 0 – 700m/hr (at 60Hz), Recovery 0 – 500m/hr (at 60Hz)

**Tension control:** 10 – 100%

**Product range:** 50 – 650mm OD

**Track contact length:** 5.5m

**Nominal squeeze:** 1500Te (4 x 375Te)

**Nominal squeeze/m:** 68.2Te/m

**Maximum track opening:** 1278mm
MDL Third-generation Reel Drive System

350Te Reel Drive System
(635Te dynamic working load)

- **Maximum reel weight:** 350Te (nominal as each tower can carry 210Te, overall max weight dependent on offset)
- **Maximum reel diameter:** 11.4m
- **Minimum reel diameter:** Unlimited (with packers below reel)
- **Maximum torque:** 75Te/m
- **Max hub rotation speed:** 1.0 rev/min at 37.5Te/m (high speed/low torque), 0.5 rev/min at 75Te/m (low speed/high torque)
- **Maximum line pull on 11.4m reel:** 13Te at outer flange

The MDL 350Te RDS is the most compact system of its kind, making it the ideal solution for vessels of opportunity where deck space is a constraint. The high demand for the system led to the delivery of a second unit, which joined the MDL fleet this summer.

Featuring a slim base design, the compact system takes up less space on deck than traditional equipment on the market: this is achieved thanks to the three-beam track system that acts as a grillage, and an integrated HPU within one of the towers.

Additionally, integrated skidding cylinders beneath, which do not protrude out with the towers’ footprint, offer shorter tracks requiring less deck space.

The tracks feature integrated reel cradles and lashing points, which saves port time sea-fastening reels, as only the RDS needs to be sea-fastened.

Safety is an ever-present element in MDL equipment, by eliminating manual handling and working at heights: all operations are performed from the deck and use a remote Walk About Box (WAB) with MDL software developed in-house.

Following its maiden West Africa project on the Agbami field with Marine Platforms (MPL) in 2016, the system returned to the basin this year for a campaign with DeepOcean, and remains in the region, in readiness for future projects.
Market-leading Equipment

Complete lay spreads
Portable vertical/horizontal lay systems
Tensioners
Reel drive systems
Winches, spoolers and level winders
Turntables
Radius controllers
Compensators
Overboarding chutes
Powerpacks, manifold systems and controls
Marine Services

Third-party equipment maintenance and repairs
System adaptation and upgrades, including software
Test-bed and FAT services
Re-certification
Product and equipment preservation
Dockside storage
Transpooling operations
Product and equipment disposal
Offshore equipment operation, technical support and training
24/7 onshore support

Engineering

Equipment and Operations Management
Offshore mobilisation and onsite engineering support
Package and project engineering for new-build equipment, upgrades and dry docking
Lift planning and method statements
Detailed procedures, O&M manuals, risk assessments and FMECA

Design draughting and visualisation
High-quality 3D visualisations and modelling, animations and storyboards
Detailed manufacturing drawings for machining, fabrication and assembly
General arrangement, set up, vessel layout and sea-fastening drawings
Class approval management and structural mobilisation support

Engineering and Design

Design and analysis works for bespoke offshore/marine equipment
Vessel permanent and temporary works design
Comprehensive vessel integration solutions

Vessel underdeck analysis and underdeck strengthening solutions
Concept development and FEED equipment design
Feasibility studies
Triple award adds HLS to MDL fleet

Maritime Developments has added a horizontal lay system (HLS) to its rental fleet following three project awards from two new clients.

The HLS is designed to work in conjunction with the complete range of MDL 2-track or 4-track tensioners for installation or retrieval of SURF products. The modular structure is road transportable, has been designed in accordance with DNV standards and is based on existing, proven components with a global track record.

The MDL HLS has already been proven on two gas flowline installation projects in the North Sea. For both work scopes the HLS was delivered with an MDL 50Te tensioner and a 400Te MDL Second-generation Reel Drive System.

Next, the MDL HLS spread is heading to West Africa, where it will support a new client’s programme to launch a number of new wells in an existing network of drill centres offshore Equatorial Guinea.

Following small upgrades ahead of its third project, the system now features a 4m entry chute, a 4.5m overboarding chute and can handle pipe diameters of up to 600mm.

Greig May, MDL Rentals Project Manager, said: “As awareness of MDL complete project capabilities keeps growing worldwide, it is essential for us to increase our fleet to meet existing and new clients’ expectations – the MDL HLS is a response to that demand.

“This system builds on our existing portfolio of back-deck spreads for all water depths and sea-state conditions. Used in conjunction with our tensioners, reel drive systems and ancillary equipment, and managed and operated by personnel praised for their professionalism, the MDL HLS is a time-saving enabler for delivering projects in any global basin.”
MDL Horizontal Lay System

Compatible with: MDL TTS-2 and TTS-4 Series Tensioners

Minimum pipe diameter: 50mm OD
Maximum pipe diameter: 600mm OD
Entry chute radius: 4m
Overboarding chute radius: 4.5m
The MDL Offshore Service has added a new Third-generation Reel Drive System to the fleet.

Doubling up on compact approach

The 350-tonne SWL system was delivered at the company’s yard facility in Peterhead, Scotland, this summer, and retains all the unique features of the third-generation design, including the HPU integrated into one of the towers.

The requirement for the second system was driven by two parallel pipelay projects with different clients requiring the compact RDS - in two remote basins.

In the North Sea, the original Third-generation RDS was required for a continuation of an ongoing tieback campaign, now in its third year running.

Here, the RDS is being used as part of a horizontal lay spread, alongside an MDL 4-track tensioner and deck deflectors.

Meanwhile, the second system was deployed in West Africa for the next phase of field development offshore Ghana.

“While the entire MDL Reel Drive System range is a few steps above the market average in terms of efficiency and safety of operations, the compact Third-generation system has proven a game-changer on several projects where deck space was a driver,” said Dave Gardiner, MDL BD & Commercial Manager.

“I am pleased that we have added another system to our fleet, to better cater for pipelay operations in different global basins simultaneously – allowing both our established and new clients to find better returns on their projects.”
Maritime Developments has completed a flexible installation project in the North Sea with i-Tech 7, Subsea 7’s Life of Field business unit – marking a return to the field two years after the original award.

The work scope – part of i-Tech 7’s inspection, repair and maintenance (IRM) campaign West of Shetland – consisted of a deployment of a jumper using an MDL horizontal spread. The 2-track pipelay tensioner, second-generation reel drive system, deck defectors and an over-boarding chute were mobilised on the same offshore supply vessel (OSV) as in 2017.

Greig May, MDL Rental Projects Manager, said: “This project is a great example of how a partnership approach between the different parties involved in a campaign can benefit the mission.

“Both i-Tech 7 and the end client were keen to replicate the MDL solution from two years prior, to reduce the costs associated with sea-fastening design, as the same vessel was being deployed on both projects.

“Prior experience and familiarity with the vessel, mobilisation port and project teams also facilitated efficient execution on MDL’s side, in terms of equipment and personnel scheduling, logistics and mobilisation.

“We hope to support i-Tech 7 on more projects in the future to further maximise the above benefits.”

MDL returns to North Sea with i-Tech 7
MDL concludes a project of firsts in Mexico

Maritime Developments has successfully concluded a maiden cable lay project offshore Mexico, marking a major milestone for the Mexican subsea market.

The company’s modular tensioning spread, featuring the MDL TTS-2/140 Series Tensioner, was used for the installation of a 25mm fibre optic cable on the Eni Amoca/Mitzón project.

The mission was completed in cooperation with MDL’s Mexico-based partner, Frontera Offshore. This project was the first for the country to use a portable flex-lay spread to install a shallow water cable.

Brad McNeill, CEO of Frontera Offshore said: “We are pleased that after promoting the flexible back-deck solutions in the Mexican market we have now completed our first installation project. We expect that this will be the first of many.

“Our view is that the market is seeking flexible and lower cost alternatives, and MDL equipment can be installed on any DP OSV and used to deploy or recover flexible products in shallow or deep water.”

Andrew Blaquiere, MDL VP Americas said: “Executing MDL’s first project in Mexico is a major milestone and solidifies our reputation as a market leader.

“With strategic placement of MDL equipment in the USA, we are giving our Mexican client base access to portable technology and equipment which eliminates the cost of bringing a specialized cable-lay vessel to the region.

“Working in partnership with Frontera Offshore, we look forward to delivering more projects and bringing more expertise to the offshore Mexico market.”