As the oil and gas industry continues its recovery at a slow pace, MDL has been assisting new and existing customers in securing maximum returns from their projects and internal assets.

The recently expanded MDL Engineering department has been supporting client teams with efficient pre-project planning and operations management, on top of designing tailored equipment to customer specification, both for onshore and offshore applications (see p.2).

In the meantime, the Projects teams have been busy identifying and implementing cost efficiencies through MDL Marine Services, including: asset repair and maintenance, warm and cold-stacking, transpooling operations, dockside storage and asset disposal.

Pulling in all the MDL in-house capabilities: from specialist technicians, including software engineers, to seasoned offshore personnel, the services have been performed both at the company’s shore-base facility in Peterhead, as well as at clients’ locations, stretching from the Gulf of Mexico to South-east Asia.

Derek Smith, CEO of MDL, said: “As a back-beck rental company that grew from delivering marine equipment and services, MDL has always honed complete capabilities in-house to assist EPIC contractors and operators with their assets.

“Over recent years we have strengthened the front-end project and asset support by continuing internal investment, which also included reinforcing our Engineering department.

“This means we can offer a truly tailor-made package for the global operator of today, encompassing expert consultancy, market-leading equipment and trusted personnel.

“This combination ensures our clients can sleep peacefully at night in the knowledge their products are in safe hands.”
Simplifying the back deck

In 2018 the MDL Engineering team was strengthened by the addition of a senior structural engineer, a lead engineer and two draughtsmen.

The department manager Alic Wilson explains why this reinforcement means a deck-load of extra savings for pipelay projects.

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Article by:

ALIC WILSON
MDL Engineering Manager
With complete capabilities in-house: from manufacture to software development, and from project management to after-sale support, MDL has been advising clients not only on the best technology for their projects, but also the best application to yield the best possible returns.

The Engineering department plays a key role in this. The team, formed of design, structural, hydraulic, electrical, software and project engineers – all of whom developed their skills in the marine and offshore sectors – takes care of the complete pre-project planning, long before the equipment mobilisation.

It all actually starts with the company’s heritage of being an equipment designer and manufacturer, and therefore understanding the capabilities required for handling specific products in given sea-state conditions.

The manufacturing expertise also guarantees that industry-wide safety codes such as LOLER and PUWER are employed in all our operations. This allows our team to specify the correct equipment needed for the job, taking into account safe lifting and working loads; or, alternatively, understanding what ancillary systems are required to safely maximise the use of the client’s own equipment.

Next comes our decades-long collective experience of working on or with the back deck – and knowing all too well what doesn’t work and what to look out for.

This knowledge sets the basis for efficient deck planning. The identified equipment is located in the most optimum positions on deck to work with the vessel, and we can even reduce the equipment required by utilising existing on-board facilities. This can be presented as a storyboard to give a clear picture of how the deck will look and integrate.

As the equipment’s manufacturer, we are ideally placed to assist the customer with deck reaction load calculations and we understand whether deck stiffening is required, or if it can be eliminated.

Finally, there’s the engineering of sea-fastening, planning out safe wire runs, assessing crane lifting requirements and any other port services required for the mission.

After this point, there are other services MDL can provide in preparation for the project, such as welding and inspection services, as well as deck clean-up after demobilisation.

This complete project support is part of our consultancy service, available whether or not you choose to rent or buy equipment from us. It is also worth noting we are the only supplier of pipelay equipment on the rental market with all equipment design-verified by either DNV or Lloyd’s, giving you that extra peace of mind that your project solution is engineered to the highest quality.
MDL proves 150Te portability in Nigeria

MDL has proven the complete portability of its flex-lay equipment design with a successfully completed project in West Africa.
The newest and largest pipelay tensioner in the company’s rental fleet, the MDL TTS-4/375 Series Tensioner, rated for safe working load of 150-tonne line pull, was used for installation of oil offloading lines offshore Nigeria.

The system was mobilised from MDL Peterhead facility in 4 modules onto trucks for transport to port, where it was reassembled off critical path before being lifted onto a cargo vessel in a single lift.

Once at the project mobilisation port in Lagos, it was then lifted from the cargo vessel directly onto the project vessel and installed onto the client’s HLS ramp, also a bespoke manufacture by MDL Peterhead.

“We’re glad that we were able to launch our largest tensioner yet in a market that may pose some mobilisation challenges, where the ability to perform a vessel-to-vessel installation really comes into play,” said Greig May, MDL Rental Projects Manager.

The 150Te system joined the company’s unique 4-track tensioner range in 2018, shortly after the delivery of a 110Te unit.

Despite the increase in size and pulling capabilities, all tensioners retain 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 installation above 50Te line pull and 4.1m track contact length.

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 reduce operating personnel on board the installation.

All of MDL rental systems have been certified to a DNV-GL or Lloyds code.
Tailored back-deck packages

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

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

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
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

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
The addition of a new 4-track pipelay tensioner to the fleet, as well as setting up an equipment base in the Gulf of Mexico allowed more contractors globally to benefit from a tailored MDL back-deck package.

From market-leading equipment, to personnel support, to project planning and deck modelling – here are the highlights...
**INSTALLATION**

The largest member of the MDL tensioner fleet, the 150Te TTS-4/375 Series Tensioner, was used to install oil offloading lines offshore Nigeria, connecting an FPSO with an offshore buoy (p.4).

Following the installation, the unit was returned to MDL UK-operating base for scheduled maintenance in readiness for its next project.

In the North Sea it was a busy summer with TechnipFMC on four UK projects in close succession.

In total close to 40km of product was installed from 16 reels on board three different vessels. The MDL solution involved two MDL Reel Drive Systems (RDS) and a 4-track tensioner supported by MDL personnel.

On the ground, the MDL BD and projects teams provided planning support on sharing the equipment between the different vessels and missions for maximum efficiency without incurring additional cost.

Across the border, the MDL horizontal spread consisting of the TTS-4/140 Series Tensioner and Third-generation RDS returned to the Norwegian North Sea for the second consecutive year.

The challenge for the client project team was to increase the number of reels on-board from two (as per the 2017 scope) to four, without reducing the capability of the vessel. The MDL Engineering team worked closely with the client project team to prove the solution with models. The MDL RDS-350 with its narrow footprint proved ideal for the project.

The campaign was a continuation of a flowline replacement project, with MDL scheduled to return to the field for a similar scope in 2019.

**PERSONNEL SUPPORT**

With industry-leading talent, the MDL Offshore Service personnel are being drafted in to support clients with non-MDL assets operation and maintenance.

In 2018 this support included performing a function test and cold-stacking of a lay spread in the USA; operating a reel drive system to conduct an installation in the Gulf of Mexico; technical support on a 2-track tensioner in Cameroon; and repairs, modifications and training on a tensioner in Malaysia.

**DECOMMISSIONING**

Elsewhere in the basin, MDL Second-generation RDS assisted Rever Offshore in retrieval and replacement of a production riser in the Central North Sea.

A further project with Rever saw a similar MDL system used for the replacement of a 2km electrical umbilical in a gas field near the Shetland Islands.

**MIDSTREAM**

Marking its first US mid-stream project, the MDL TTS-2/140 Series Tensioner was deployed in California for a pipeline installation.

The 25Te unit was used to handle a small-diameter steel pipe, as part of a horizontal directional drilling (HDD) project to replace an 8-inch pipe.

The operation was carried out from an anchored barge, approximately 2km from shore and consisted of stacking 200ft-long steel pipes to form a single 1.2mile-long section.

Following the completion of the project, the tensioner moved into a temporary storage location in Houston, where it is accessible locally for clients to see the unit in person.
LiveWire breathes new life into crane wires

The wire rope revolution has begun – with the arrival of LiveWire.

The innovative system for efficient wire rope inspection and maintenance has begun its service to the Gulf of Mexico in Port Fourchon, Louisiana, following a complete function test performed by the MDL team that had brought it to life in Peterhead a month earlier.

Developed in a joint partnership between MDL and global mooring and subsea specialist Delmar Systems, LiveWire is designed to significantly cut costs associated with large wire rope maintenance and operations, particularly by minimising disruption to rig or vessel schedules.

The LiveWire spread, which includes a multi-reel handling system, back tension and inspection units and a compensator unit, has been commissioned and FATd (Factory Acceptance Tested) in MDL’s manufacturing and testing facility in Peterhead, Scotland, before being dismantled into modules and shipped across the Atlantic to Port Fourchon.

From there it is available for quayside inspection of crane wires on construction vessels, allowing the asset owners to schedule required maintenance at the most optimum time, outside their projects window.

Alternatively, the system can be easily mobilised on a vessel of opportunity and travel to an offshore rig to conduct the wire inspection off the rig’s critical path. The compact spread allows for a spare wire rope to be carried on-board the PSV to carry out a change-out during the same mobilisation, minimising the rig’s downtime and drastically cutting the length of the wire replacement process.
The system does not need to be located on-board the rig, eliminating any interface and preliminary engineering requirements.

The system is fully automated using remote controls developed in-house by MDL, and can be entirely powered by an independent generator, preventing the need for connection to any vessel or quayside services.

“Working alongside Delmar, we were able to re-define how clients approach crane wire maintenance and operations,” said Mark Williamson, MDL Head of Global BD.

“This out-of-the-box thinking is consistent with our client-focused approach to subsea services as a whole.

“The market has never before had a solution that meets the deliverables in an efficient manner, never mind one which can service both onshore and offshore applications.

“I expect LiveWire to have a significant impact on the crane wire inspection services – in the GoM, and globally.”
Engineered to PiP Perfection

MDL’s latest tailor-made delivery is a 150Te 2-track tensioner for Subsea 7 in Norway.

The unit was designed specifically for the contractor’s spoolbase facility in Vigra for pipe-in-pipe (PiP) operations by MDL Engineering department (p.2).

One of the key requirements of the system was the ability to move the bottom track to adjust the firing line for deployment and retrieval operations from or onto different vessels in Subsea 7’s fleet.

The tensioner will also be the master item in an upgraded production line facility for electrical heat-traced PiP. MDL was responsible for design, manufacture and testing of an integrated safety system for the tensioner and up to 4 external machines.

The already compact unit features a dedicated HPU integrated in its base frame for squeeze system and track adjustment; containment rollers for added support for the product; wireless control system with a Walk-About-Box (WAB) and remote access enabled for troubleshooting.

The tensioner was supplied with a dedicated EPU with control desk integrated into a partitioned 20ft container.

The system can also be broken down into modules for road transport, which facilitated a cost-effective transit to its new home in Norway.