DLT Engineering

Technology for Modular Construction

Bridges

Buildings

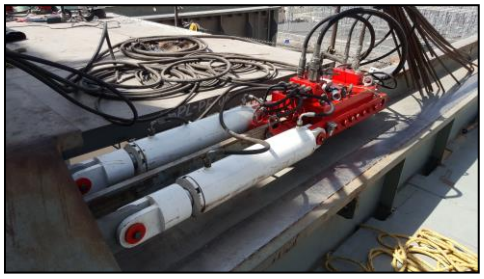
Erection Gantries

Power & Industrial

Offshore

Tower Systems

Jacking Systems



Skidding Systems

Specialist Equipment

(Click on any underlined image above to be redirected to the relevant section of this document)

DLT Engineering

Technology for Modular Construction

Introduction

Welcome to DLT Engineering

DLT Engineering was founded in 2000 but can trace its links to historical companies formed in the 19th century. As such, the Company has a long and distinguished history in the construction of landmark structures around the world, particularly iconic bridge works and building structures.

Today, we develop, manufacture and operate the specialist technology needed for the modular construction of bridges, buildings, dams, refineries, power stations, offshore structures and manufacturing plants. We also offer construction engineering and site services to help our clients get the best value from our engineering expertise and the equipment we supply.

Our role on most projects is to develop solutions to construction problems, fully engineer these solutions and then to work with our customers to carry out the operations on site. We are happy to offer any combination of construction engineering, including temporary works design, equipment supply/rental and site support services to suit the needs of each project.

Please see pages 6 to 30 of this brochure for brief details of some of the many projects that we have been involved with. Further details are also available on our website: www.dlteng.com

Company Management Systems

All our projects are carried out in accordance with our company management systems for quality, environmental and occupational health and safety which are accredited by LRQA to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 standards. These management systems have been developed and written in-house by our own staff to ensure total relevance to our business and the quality of services and products that we supply to our clients.

Products

Our product range includes bridge construction equipment, offshore construction equipment, jacking tower systems, strand jacks, hydraulic gantries, skidding systems and synchronised jacking and weighing systems.

We specialise in hydraulic powered equipment and integrated systems. Our standard products are designed in-house, generally to the requirements of the relevant European standards. However, bespoke items, including bespoke versions of our standard products, can be developed and designed to suit the needs of projects and customers' specific requirements.

Our full range of products include the following:

Bridge Deck Erection Gantries

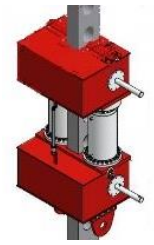
Straddle Carriers

Self-Propelled Transporters

Jacking Tower Systems

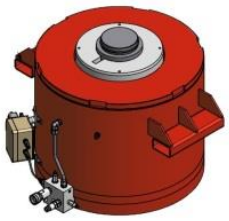
Strand Jack Systems

Skidding Systems

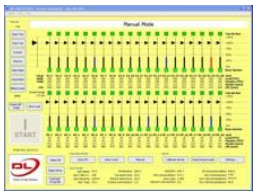


Pinned Climbing Jacks

Chain Jacks

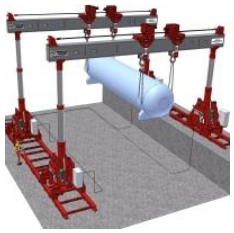


Synchronous Jacking & Weighing Systems

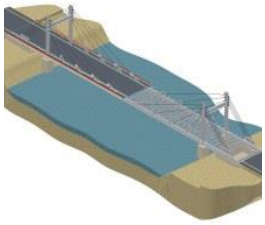


Heavy Lift & Skid Control Systems

Hydraulic Power Units

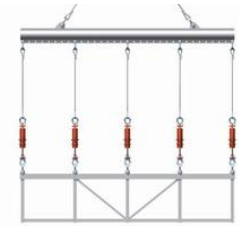


Hydraulic Gantries



Modular Bridges

Hydraulic & Electric Winches



Hydraulic Sling Length Adjustment Systems

Viscous Dampers / Lock-Up Devices

For further information and details, click on any of the images above to be redirected to the relevant section of our website (www.dlteng.com).

We maintain a small stock of strand jacks and hydraulic power units for rental or quick delivery. This enables us to respond rapidly where there is a need, to suit customers' requirements.

Construction Engineering Services

We offer a range of construction engineering consultancy services for the design and construction of many types of structure, including bridges, buildings, heavy process plants, petrochemical vessels and offshore structures. We have particular expertise in the erection of long span suspension and cable-stayed bridges, and in the engineering of specialist modular construction involving heavy lifting, lowering and horizontal skidding operations.

Our engineers draw on first-hand experience of site operations to provide practical schemes supported by clear and concise documentation. We can develop schemes from initial concept through to detailed design including stage by stage analysis of the permanent works if required.

Our services include the engineering and design needed for the following:

- Heavy lifting operations
- Skidding operations
- Mechanised temporary works
- Bridge deck erection gantries
- Bridge deck launching and sliding
- Power station heavy plant installation
- Erection of large roof structures
- Long span bridge erection engineering, including cable-stayed and suspension bridges
- Modular steel bridges

We also offer 3rd party independent checking services for construction methods and temporary works designs for projects on a global basis. For example, in the UK we have experience in third party checking of temporary works for Network Rail, National Highways (previously the Highways Agency and later Highways England), main designers and main contractors. Examples include the peer review and third party check of the erection scheme for Chiswick Park footbridge and the third party check of temporary works for Google HQ (KGX1) in London.

Site Support Services

Site Support for our equipment is provided by our Site Technicians, who have many years of experience in carrying out heavy lifting and moving operations. They are usually seconded into a client's team to assist with the first few operations until the client's own staff are confident to safely operate the equipment themselves. As part of this service, we provide a formal training and certification programme to approve client's staff as competent to operate and maintain the equipment. Our Site Technicians often become a valued member of the site team and are then requested to return to assist with future operations.

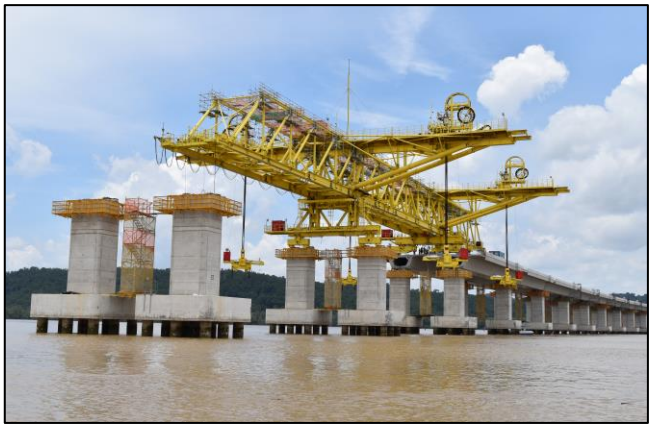
Our Site Technicians are also available to carry out periodic inspection, maintenance and load testing of the equipment with manufacturer’s certification provided for the work carried out.

Reference Projects – Bridges

Suspension Bridges

Cable-stayed Bridges

Full Span Erection Gantries

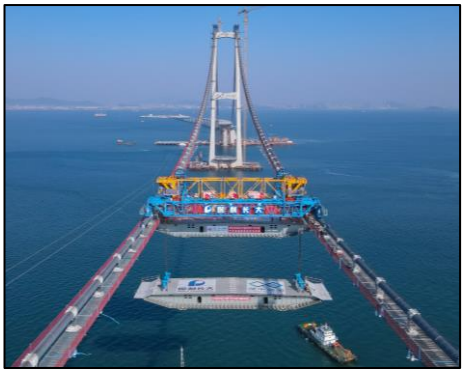


Bridge Launching & Sliding

Other Bridges

(Click on the images above to be redirected to the relevant section of this document)

Reference Projects – Suspension Bridges

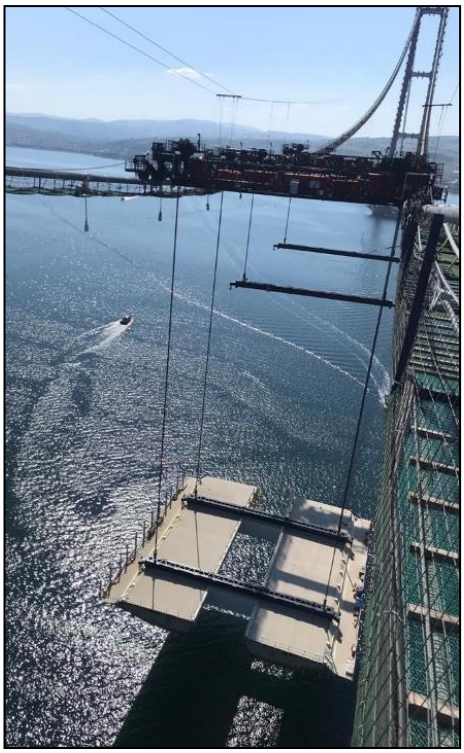


Retrofitted Erection Gantries – Shenzhong Link Suspension Bridge, China

The Lingdingyang Bridge is a suspension bridge with a main span of 1666m and two side spans of 500m. It is part of the Shenzhen-Zhongshan Link ("Shenzhong Link"), located in the Chinese province of Guangdong, in the Pearl River Delta downstream of Guangzhou city.

DLT were sub-contractors to Guangdong Provincial Changda Highway Engineering Co for the retrofit design of the deck lifting gantries used in the Humen II Suspension Bridge project. A total of 2 No. retrofitted gantries were used for deck erection: one on the west side span and one on the western half of the main span.

The retrofit required the development of an innovative solution using ramps to roll over cable bands with horizontal bolts.



Deck Erection – Çanakkale 1915 Bridge, Turkey

The Çanakkale 1915 Bridge is a suspension bridge constructed in the Çanakkale province in north-western Turkey. With a main span of 2,023m, the bridge surpassed the Akashi Kaikyō Bridge in Japan by 32m to become the longest suspension bridge in the world when it was completed in 2022. The bridge is an integral part of infrastructure connecting the continents of Europe and Asia.

DLT Engineering were responsible for the design, supply and site supervision of 8 No. 450-tonne capacity deck lifting gantries, including self-erect and self-dismantling systems. The versatility of the lifting gantries was considered advantageous for their operation over the sea, particularly their ability to operate in tandem (for a total 900-tonne capacity) and be self-erected onto the main cables, eliminating the need to procure a large floating crane. More than 3km of deck were erected in two months during the summer of 2021. Double tandem lifts near the towers were carried out in December 2021 to erect the final deck segments, weighing over 1200 tonnes each.

DLT won the award in the Product Innovation of the Year category at the British Construction Industry Awards in 2022 for these gantries.

Cable Construction – Çanakkale 1915 Bridge, Turkey

In addition to supplying the deck lifting gantries for the Çanakkale 1915 Bridge, DLT Engineering provided main cable construction equipment consisting of multiple high capacity winches, rope unreelers, rope turn sheaves, PPWS guide rollers, hauling rope guide rollers and the computer control system, together with site supervision and maintenance for all these systems.

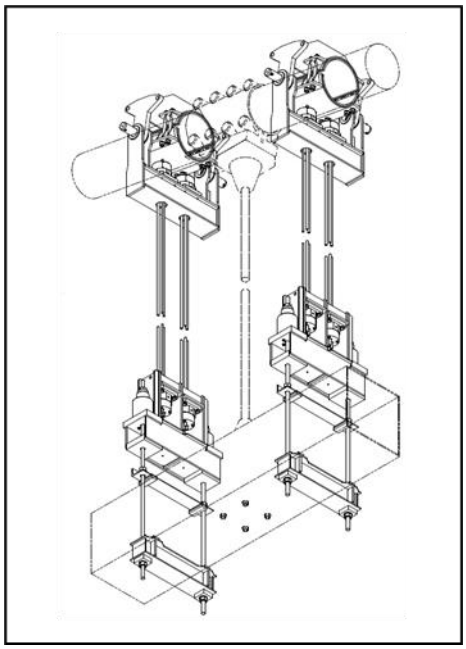
DLT also designed and supplied 8 No. cable compaction machines and 8 No. main cable wire wrapping machines to assist in the construction of the main cables.

Deck Erection Gantries – Humen II Suspension Bridge, China

The Humen II Suspension Bridge in China is an asymmetrical suspension bridge with a main span of 1,688m and a suspended side span of 658m. The reinforced concrete towers are 257m tall and the main cable spacing is 42.1m. The deck is an aerofoil shaped orthotropic steel box 49.7m wide and 4m deep.

DLT were responsible for the concept, detailed design and equipment supply for three 500-tonne SWL deck erection gantries and also one saddle erection gantry which was used for the installation of main cable saddles at the top of both towers and the splay pillars.

The deck erection gantries were successfully overload tested to 125% of safe working load and function tested off site on a specially designed test frame. The 175 deck segments were lifted into position in just 10 weeks. The gantries were easy to operate, each completing a 70m lifting cycle in 4 hours and relocation in 30min, the latter thanks to an innovative movement system specifically developed for this gantry.



Temporary Hanger System – Tamar Suspension Bridge, UK

The Tamar Bridge is a suspension bridge that connects the counties of Devon and Cornwall over the River Tamar in southwest England.

Maintenance works were needed to the cable bands and hangers that support the deck from the main suspension cables. DLT developed and supplied a temporary hanger system that was used to relieve the load from each permanent hanger and to support the bridge deck whilst the maintenance works were carried out.

DLT also provided certified training in the use of the system to the Client's team so that they could safely install and operate the equipment themselves.

Xihoumen Suspension Bridge, China

The Xihoumen suspension bridge crosses the Xihoumen straight between the islands of Jintang and Cezi. It forms one part of a chain of bridges that link Zhoushan island to Ningbo, on the Chinese mainland to the south of Shanghai. It has a main span of 1650m and was the second longest suspension bridge in the world when completed in 2009.

DLT were the designers and suppliers of the deck erection gantries, which were originally used on the Runyang Bridge and were modified for this project which had a different main cable spacing and diameter. 119 steel deck segments were erected with these gantries. Maximum lift weight was 370 tonnes. DLT also provided site supervision for the operation and maintenance of the gantries.

‘Walking’ Deck Erection Gantries – Runyang Bridge, China

DLT were responsible for the design, supply and commissioning of four 370-tonne capacity deck erection gantries for this 1,490m main span suspension bridge. These gantries ‘walk’ the main cables and work in pairs to erect steel deck units weighing up to 470 tonnes each. The gantries can be self-erected onto the main cables and are easily adapted for future projects with different cable centres and diameters.

Alfred Zampa Mem. (Carquinez) Suspension Bridge, USA

DLT were responsible for all aspects of construction engineering for the bridge deck, main cables and hangers for this 728m-span suspension bridge. DLT also undertook the sub-contract to erect the twenty-four 700-tonne steel deck units. Using our strand jacks, the deck units could be jacked into position directly from the ships that had carried them from their manufacturer in Japan. The bridge was constructed in the Carquinez Straits, an active shipping lane under U.S. Coast Guard jurisdiction, at a site that was subject to strong currents, winds and dense fog.

Jiangyin Suspension Bridge, China

Our engineers were responsible for the detailed erection engineering, heavy lifting equipment supply, and site supervision for deck erection on this 1,385m main span suspension bridge. The Jiangyin Bridge went on to win the Eugene C. Figg Medal for Signature Bridges at the International Bridge Conference Awards in 2002 as an “outstanding achievement in bridge engineering that, through vision and innovation, provides an icon to the community for which it was designed.

Tuti Suspension Bridge, Sudan

DLT were responsible for the permanent-works design and erection engineering for this landmark structure in the centre of Khartoum. The bridge has a main span of 210m and had been designed for construction by local labour. The Tuti Bridge was one of the first suspension bridges to be constructed in both Sudan and wider Africa. The bridge provided ease of access to the island of Tuti, which had previously only been accessible by ferry.

Tsing Ma Suspension Bridge, Hong Kong

Our engineers were responsible for detailed erection engineering, heavy lifting equipment supply and site supervision for deck erection on this 1,377m main span suspension bridge. When completed in 1997, the Tsing Ma Bridge was the second longest suspension bridge in the world and is still the longest that can accommodate both rail and road traffic. In the case of a severe typhoon, the two road lanes and two railway lines enclosed on the lower deck can still be used to transfer passengers to and from the airport.

Reference Projects – Cable-Stayed Bridges

Deck Erection Gantries – Queensferry Crossing, Scotland

DLT were appointed by the main contractor, Forth Crossing Bridge Constructors, as construction engineers for the design of the deck erection gantries for the cable-stayed spans and for the design of the deck support falsework at piers S1 and S2.

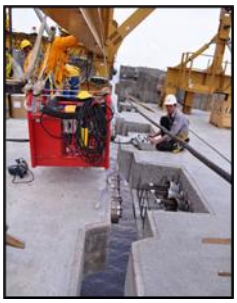
DLT provided the detailed design for the six deck erection gantries, used to erect a total of 109 steel/concrete deck sections, weighing up to 729 tonnes each.

The unusual aspect was the need for the gantries to fit between the 2 planes of stay cables that are only 4m apart in the central section of the bridge, which led to a very slender structure that needed sophisticated control systems to limit eccentric loading from the lifting strand jacks and retractable feet to allow it to advance between lifting positions.

When opened in 2017, Queensferry Crossing was the world's longest triple-tower cable-stayed bridge.

Deck Erection Gantries – Rio Negro Cable-Stayed Bridge, Brazil

The Ponte Rio Negro is a 3,595m long bridge, linking Manaus with Iranduba over the River Negro in Brazil. DLT were awarded the contract to design, supply and operate two 320-tonne capacity deck erection gantries to lift and position the 52 precast concrete deck sections of the cable-stayed spans. Each gantry used two DL-S185 strand jacks for lifting the deck sections, and other hydraulic rams to adjust the plan position and slope for accurate alignment with the previous section.



Shanghai Yangtze Cable-Stayed Bridge, China

The Shanghai Yangtze cable-stayed bridge carries both road and rail traffic and has a main span of 730 m that crosses the navigational channel along the link between Shanghai and Chongming Island.

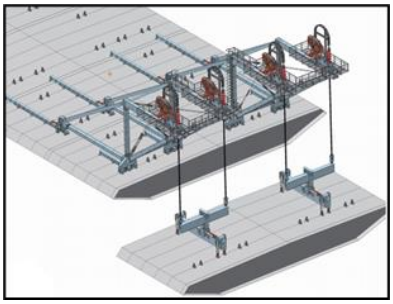
DLT were awarded the sub-contract by Second Navigational Engineering Bureau to provide site supervision during erection of bridge deck units. Modified DLT deck erection gantries from the Sutong Bridge project were used to erect the 46 No. steel orthotropic deck segments, each weighing up to 387 tonnes, from Jan to June 2008

Deck Erection Gantries – Sutong Cable-Stayed Bridge, China

With a main span of 1,088m, the Sutong cable-stayed bridge was the longest span cable-stayed bridge in the world between the years 2008-2012 and won the 2010 Outstanding Civil Engineering Achievement award from the American Society of Civil Engineers. DLT were sub-contractors to 2nd Navigation Engineering Bureau for the design and supply of eight deck erection gantries that were used to erect the eighty-four steel orthotropic deck segments, each weighing up to 450 tonnes.

Deck Erection Gantries – E-Dong Yangtze Cable-Stayed Bridge, China

The E-Dong Yangtze Cable-Stayed Bridge is located in Huanggang City, Hubei Province, China, and crosses the Changjiang (Yangtze) River. It has a main span of 926m and side spans of 275m, making it one of the longest cable-stayed bridges in the world. DLT were awarded the sub-contract by Second Highway Engineering Bureau to design a pair of 280-tonne capacity deck erection gantries to erect steel orthotropic deck segments, weighing up to 369 tonnes each on one half of the main span.



Second Orinoco River Crossing (Orinoquia Bridge), Venezuela

At over 3km long and with two cable-stayed spans of 310m, this project provided many engineering challenges. The steel box girder deck for the 60m approach spans was launched in pre-assembled units of up to 2,413 tonnes. The steel box girder deck of the two cable-stayed main spans was erected by balanced cantilever in 250-tonne segments. DLT were responsible for the supply and operation of the strand jack systems for launching the approach spans and for lifting and skidding the main span deck units.

Reference Projects – Full Span Erection Gantries

Launching Gantry – Temburong Bridge, Brunei

DLT were responsible for designing and supplying a bespoke launching gantry that was used for the simultaneous erection of two 870-tonne, 50m long box girder precast concrete bridge deck beams. It was used to erect all bridge deck beams (four per span) along the 13.35km marine viaduct, crossing Brunei Bay and connecting Mengkubau & Sungai Besar to Labu Estate. This bridge is the first road bridge in the country to link the mainland of Brunei to the Temburong enclave, bypassing the Malaysian district of Limbang and its associated border controls.

Erection Gantry – Sheikh Jaber Al Ahmed Al Sabah Causeway Project, Doha Link, Kuwait

DLT were responsible for the detailed design of a bridge-deck erection gantry for the Sheikh Jaber Al-Ahmed Al-Sabah Causeway Project (Doha Link) in Kuwait. The Doha Link is a 12.43km sea crossing with twin parallel decks and is constructed from precast concrete deck beams supported on cast in-situ piers. The gantry was designed to handle precast concrete bridge deck beams weighing up to 1,700 tonnes, with a span range of 30m to 60m.

Erection Gantries & Sideways Skidding System – Riyadh Metro Project, Saudi Arabia

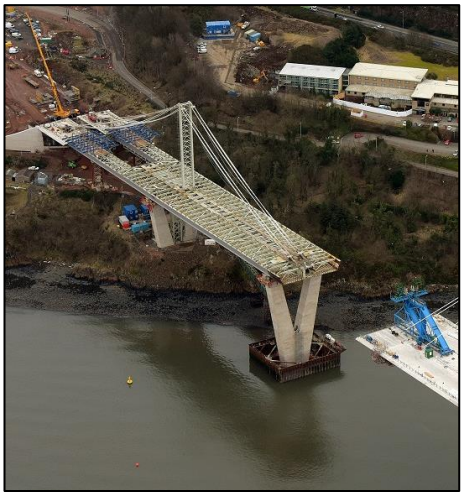
DLT were sub-contractors to FAST Consortium for the design and supply of two DL-SE500/35 bridge span erection gantries for final erection of 500 tonne, 35m long precast concrete bridge deck beams on the 16.7km long elevated section of Line 4 of the Riyadh Metro project. The equipment was designed to erect the bridge beams at an average rate of 1 per day, to erect bridge beams on a plan radius of 1200m and to pass through cast in-situ sections with a plan radius of 100m.

DLT were also responsible for a multi-span sideways skidding system for side shifting deck beams on a wider section of the viaduct which required 2, 3 or 4 precast deck beams side by side. This system consisted of skid units each end of each span, with strand jacks for pulling. The skid units were supported on a temporary frame which was supported on the permanent pier pile cap.

DL-SE1000/35 Span Erection Gantry – Honam High Speed Rail, South Korea

DLT were sub-contractors to Samsung C&T for design and supply of a DL-SE1000/35 span erection gantry for erecting the full length of section 4-1 on the Honam High Speed Railway project. The DL-SE1000/35 can erect precast spans weighing up to 1,000 tonnes and up to 35m long at a rate of up to 2 spans per day and is self-launching into the next span.

Reference Projects – Bridge Launching & Sliding



Launch of Approach Viaduct North – Queensferry Crossing, Scotland

DLT were appointed by the main contractor, Forth Crossing Bridge Constructors, as construction engineers for the launching of the North Approach Viaduct.

There are 3 spans of 223m, 104m and 101.5m between the north tower (NT) and the north abutment (NA) passing over two piers N1 and N2. The transition between single cable stayed box girder and the twin box girders is located just to the north of the last pier N2. The last 222m of deck weighing 6400t including this transition was erected by launching from behind NA.

A king post and stay system was used to allow the deck to cantilever the full span length. The launch support bearings had to be changed during the launch to accommodate the transition in deck form. An unusual feature of the launch occurred towards the end when the nose was lifted to pass over the last pier by sliding the rear end down temporary ramp walls built in the north abutment.

DLT developed and detailed the launch scheme, including permanent works interfaces and all temporary works, and provided site support during launching

Bridge Slide - A34 Wolvercote Viaduct Replacement Project, UK

The A34 Wolvercote viaduct in England carries a 4 lane highway across a railway line, a canal, a footpath and the A40 trunk road. To minimise disruption to traffic a new east carriageway was constructed alongside the existing 4 lane viaduct, followed by demolition of the old east carriageway structure and sideways sliding of the new structure across into final position.

DLT were contracted by main contractor Costain Limited to design, supply and operate a hydraulic lifting and skidding system to move the 254m long, 4920 tonne new east carriageway the 16.6m from its construction position into final position on 8 parallel skidding tracks. Jack-up, skidding, jack down and re-opening of the viaduct took place in an 18 hour overnight road and rail possession using our DL-SU350 bridge sliding system in March 2010.

Bridge Launch – M74 Port Eglinton Viaduct, Glasgow, Scotland

The Port Eglinton Viaduct carries a new 6 lane section of the M74 motorway over the West Coast Mainline railway in Glasgow, Scotland. It has a main span of 138m and a total length of 750m. A 200m length of each carriageway structure, weighing over 4000 tonnes, was launched 170m across the railway. The structures was moved by back-to-back 418t pulling and restraining strand jacks operating on a continuous cable running from one end of the launched structure to the other.

DLT were subcontracted by Cleveland Bridge UK, who supplied and erected the steelwork for main contractor Interlink JV. The scope of the subcontract was to provide construction engineering services associated with the launch, and supply strand jack equipment, operators and the launch master.

Bridge Launch – Ponte Verde Steel Arch Bridge, Italy

The 1,000-tonne superstructure of the Ponte Verde steel arch bridge in Padua, Italy, was launched into place by Edimo Metallo S.p.A using DLT Engineering DL-S185 strand jacks and with the assistance of our construction engineering and site supervision services. The complete arch bridge was fully assembled on site and then launched over the 90m span into final position, crossing ten railway lines that remained open throughout. Within the 90m span there were two temporary supports for launching, located between the railway lines. Two DL-S185 strand jacks were used for pulling and a further two DL-S185 strand jacks restrained the bridge from running away down the small slope and allowed the launch to be reversed in an emergency.

Transfer Deck Launch – Reading Railway Station, UK

DLT designed all temporary steelwork required for the launch of the 30m-wide and 135m-long transfer deck for the redevelopment of Reading Station. The deck was assembled in three sections adjacent to the station, before being slid into place using our S62 strand jacks. The station redevelopment took place as part of the preparations for the 2012 Olympic Games, as the station would be a key element of the transport infrastructure during the games.

Bishop's Bridge Replacement – Paddington Railway Station, London, UK

The original three-span masonry bridge and steel truss span, which passed over fifteen rail lines at the entrance to London's Paddington Station, was replaced in 2006 with a new six lane composite bridge. The masonry spans were demolished and the 941-tonne truss bridge was lifted 9.8m to allow assembly and incremental launching of the new 2,500-tonne bridge deck below. DLT were responsible for the conceptual and detailed design of all construction methods, and supply and operation of all jacking systems for the lifting and launching operations, all of which took place within limited railway possessions.

Incremental Deck Launch – Mary McAleese Boyne Valley Cable-Stayed Bridge, Ireland

DLT were responsible for the design of the superstructure (as an alternative to the client's design), detailed design of the erection methods for all elements of the deck, and for supply and operation of the strand jacking systems used to launch the deck into final position. The construction site was located in an environmentally sensitive area, and close to a site of historical importance at which the Battle of the Boyne took place in the year 1690. As a result of these limitations, the bridge was the first cable-stayed bridge in the world to be constructed using the incremental launching method. Precise calculation of the deck geometry and strand jack forces at all stages was required to enable site operations to be adequately controlled.

Reference Projects – Other Bridges

Erection Engineering – Infinity Footbridge, Stockton, UK

The award-winning Infinity Footbridge is a 2-span tied arch crossing the River Tees in Stockton, England. The main span of the bridge is 120m, while the side span is 60m. The arches are steel box sections and the deck is made from precast concrete segments that are post-tensioned together to form the arch ties. DLT provided expert advice to the designers on erection methods, and details for fabrication and buildability. DLT also contributed full erection engineering to the contractor, including stage by stage analysis, aerodynamic response analysis and detailed design of all temporary works. A strand jack system was also provided for use during erection of the bridge.

Sheikh Khalifa Bin Salman Causeway Bridge, Bahrain

DLT were responsible for erection engineering of the steel arch superstructure, involving offsite assembly of the 3,000-tonne main span, transport to site and lifting in one piece into final position using eight 500-tonne capacity strand jacks. The bridge spanned 404m as part of a causeway linking Hidd to Manama, carrying 3-lane carriageways in each direction.

Link Bridges, Hong Kong

DLT were responsible for the design, supply and operation of a strand jack heavy-lifting and horizontal skidding system for the erection of two 1,100-tonne pre-assembled link bridges in Hong Kong for main contractor, Gammon-Skanska.

Bridge Deck Lifting Gantries – TM to CLK Link, Hong Kong

DLT were subcontracted by Gammon Construction Ltd to provide bespoke equipment to aid their construction of the 1.6km long, southern connection viaduct section of the Tuen Mun to Chek Lap Kok Link in Hong Kong.

DLT designed and supplied equipment for a number of different types of gantries. This including strand jacks, secondary rams, hydraulic power units and computer control systems that were used throughout the project. The scope also included assistance with the conceptual design of the gantries and site support and training in the use of the equipment.

Erection Gantries – Passenger Bridge, Gatwick Airport, UK

The new airport passenger bridge at Gatwick Airport, UK, is designed to take 3.5m passengers per year over a busy aircraft taxiway to a new satellite building. The fully enclosed footbridge spans 128m across the taxiway with a clearance height of 22m and is supported on two steel pylon structures.

The central 175m long section of bridge superstructure was fully assembled at ground level in a temporary construction area 1.5km from its final location. This weighed 2,185 tonnes, including the steel frame, composite floor, roofing system, glazing and services. Two erection gantries were assembled around the bridge superstructure in the temporary construction area. The gantries were then used to lift the bridge superstructure 1.5m to allow self-propelled modular trailers (SPMT's) to be positioned under the bridge. The bridge and gantries were then transported together across the airport to the final location using the SPMT's. The gantries were then lowered onto prepared foundations ready for lifting the bridge. Strand jacks mounted at the top of the two gantries were then used to lift the bridge to approximately 2.4m above final level to allow installation of the pylons beneath. The two pylons were hung from the underside of the bridge and the complete assembly, weighing 2,660 tonnes was then lowered onto the permanent foundations. The gantries were then dismantled and removed from site. DLT were responsible for the detailed engineering required for the operation and for the design of the erection gantries.

Bridge Deck Lifting – Shibanpo Yangtze River Bridge, China

The Shibanpo Yangtze River Bridge in China is a multi-span in-situ concrete box girder bridge with an overall length of 1104m and is 19m wide. When constructed in 2006, the main span of 330m was the longest box girder span in the world.

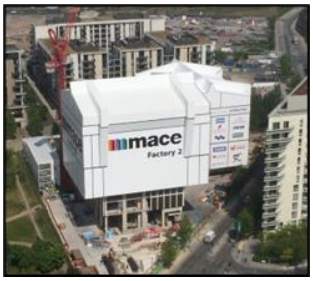
The central 108m of the main span was designed as a steel box girder to save weight and was delivered to site in 3 segments; a 1325 tonne, 103m long centre section and two smaller 100 tonne, 2.5m long steel transition pieces that connect to the concrete deck at either end. These 3 segments were lifted into place from barges on the river below using strand jacks. DLT were responsible for developing the erection concept, the temporary works design, the supply and site operation of the jacking systems and co-ordination and control of each lift.

Reference Projects - Buildings

Rising Factory – East Village Plots 8 & 9, Stratford, London, UK

DLT supplied a pinned climbing jack system and engineering support for the construction of two multi-storey residential towers. The 'rising factory' concept was developed by MACE Limited and was used to create a weatherproof factory environment for the construction of each floor. The scheme used a temporary steel framed factory building erected over the top of each tower during construction. Each factory included two 15-tonne capacity overhead gantry cranes for materials handling and various levels of platforms for welfare facilities and materials storage.

Construction of each tower progressed generally at a rate of one floor per week. When in operation, the weight of the factory was supported on four 230mm diameter, hydraulically operated pins supplied by DLT. After construction of each floor, the pins were withdrawn, the rising factory was lifted about 3.3m using four DL-CP250 pinned climbing jacks and the pins reinserted ready for the next floor to be built. The total weight of each rising factory during lifting was approximately 900 tonnes and each lift was completed in around two hours.



Lifting of Mega Trusses and Synchronised Jacking System – Calvary Church Convention Centre, Malaysia

DLT were contracted by Victor Buyck (Malaysia) to supply a 4xDL-S185 strand jack system for erection of two 200-tonne mega trusses.

DLT also designed and supplied a synchronised jacking system to open and close two 270-tonne ‘angel’ wings located on the roof. The angel wings open to allow fresh air to enter the main hall and also serve as an architectural feature. Each wing is supported by eight hydraulic jacks with strokes of up to 3.8m and all jacks are monitored and controlled centrally using a specially developed control system.

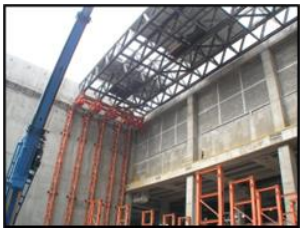
Roof Erection – HAECO Hangar 3A, Hong Kong International Airport

DLT were sub-contractors to China State – Leighton JV for the lifting of the 3,520-tonne pre-assembled steel roof. The roof was lifted 30m using eight DL-S418 strand jacks mounted on four 40m high DL-TS3000 free standing towers and six DL-S185 strand jacks mounted on the permanent concrete columns. The hangar itself is a world-class 16,000m2 aircraft maintenance facility that can accommodate two jumbo jets and one nose-in aircraft at Hong Kong International Airport.

Roof Erection – Venetian Theatre, Macao

DLT were sub-contractors for the erection of the 940-tonne steel roof structure for the new two-thousand seat theatre as part of 'The Venetian' Development in Macao. Our scope included erection engineering, equipment rental and site operation. The roof trusses were assembled on site at ground level and then lifted into position using a climbing jack system. The roof trusses were erected in three separate lifts, each weighing up to 400 tonnes.

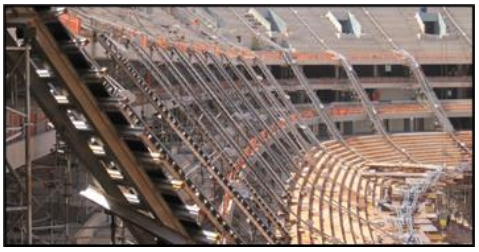





Stadium Roof Lift – Mané Garrincha, Brasilia, Brazil

As part of preparations for the FIFA 2014 Football World Cup, DLT worked with Protende to provide lifting equipment, advice and supervision for the lifting of the new roof at the reconstructed Éstadio Nacional Mané Garrincha. This included providing fifty modified S98 Strand Jacks (incorporating Protende cylinders) to be mounted at even spacings around the circumference of the existing stadium roof. The fifty strand jacks were synchronised to lift the new roof canopy support cables into positon, suspended above the pitch and stands.

Following the reconstruction, the increased capacity of the stadium made it the second-largest stadium in Brazil, and one of the largest stadiums in South America as a whole.

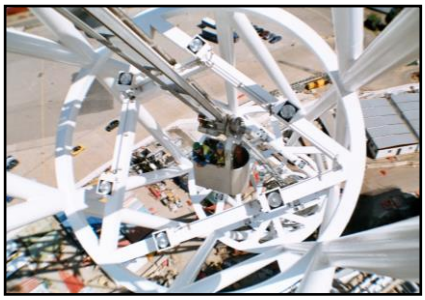




Detailed Erection Engineering – New Wembley National Stadium, London, UK

DLT were responsible for the detailed erection engineering for the 26,000 tonnes of structural steel involved in this project, including the stands, cable suspended roof and main arch structures.

The 1,490-tonne main arch was assembled flat and rolled up into position using strand jacks. DLT were also responsible for engineering and supervising this operation.

Detailed Erection Engineering – New Terminal 5, Heathrow Airport, London, UK

DLT were responsible for the detailed erection engineering for the 18,500-tonne steel roof structure of the new main terminal building, and for a 1,100-tonne air traffic control tower. Both were fabricated off-site and erected on-site using strand jack lifting systems. The roof box girders, purlins and cladding to the terminal building roof were erected in six 2,000-tonne lifts. The control tower was pre-assembled off-site into seven modules and assembled on-site using a unique vertical jacking technique.

Roof Erection – Virgin Atlantic Hangar, Heathrow Airport, UK

DLT were responsible for the detailed erection engineering for the lifting by strand jacks of an 800-tonne roof truss for this aircraft maintenance hangar at Heathrow Airport. The roof structure was assembled at ground level and then lifted using strand jacks mounted on the top of the permanent columns, which were stabilised by rented proprietary towers that were anchored down to the permanent foundations.

Roof Erection – Cairns Convention Centre Phase II, Australia

The roof to this convention centre is constructed from a complex series of curved 'V' shaped steel trusses, working with a plan tie system in the finished state to provide a rigid and stable structure. To reduce the roof erection cost and programme, the roof was assembled in fully clad panels adjacent to site and erected onto temporary supports within the building. DLT were responsible for the detailed erection engineering of the roof, including all temporary supports and stability bracing, which was required to withstand cyclone wind loads at any erection stage.

Roof Erection – HAECO Hangar 1, Hong Kong International Airport

DLT were responsible for the design, supply and operation of a strand jack lifting system together with associated erection engineering to lift two pre-assembled roof sections, each weighing over 1,000 tonnes. Each section of roof was lifted with nine DL-S185 strand jacks. Temporary works for the lift comprised three 300-tonne capacity jacking towers, plan bracing to stabilise the roof and a guide track against the concrete core structure.

Convention & Exhibition Centre, Hong Kong

DLT were responsible for erection engineering, heavy-lifting equipment supply, and operation for the erection of an 8,000-tonne prefabricated roof structure and a 5,500-tonne link bridge. The roof structure was fabricated and assembled in the Philippines into modules weighing up to 460 tonnes each, which were then shipped to the site for lifting and skidding into their final positions. The link bridge was erected 'piece small' by a stiff-leg derrick mounted on a purpose-built skid track.

Connection Design & Erection Engineering – HQ1 Building, London, UK

DLT were responsible for detailed connection design and erection engineering of the 6,600-tonne steel frame of this sixteen-storey office block. This included heavy lifting of a 650-tonne module, which was built on a lower floor and then raised 30m to the sixteenth floor. DLT were also responsible for the supply and operation of the strand jack system to carry out this lift, using four DL-S185 strand jacks.

Our engineering team have also been responsible for the detailed connection design and erection engineering of a number of other tower blocks in London, UK, including:

Canary Wharf Tower, London, UK (pictured left)

A 25,700-tonne steelwork frame for a fifty storey tower block.

HSBC Bank, London, UK (pictured right)

A 12,000-tonne steelwork frame for a forty-three storey tower block

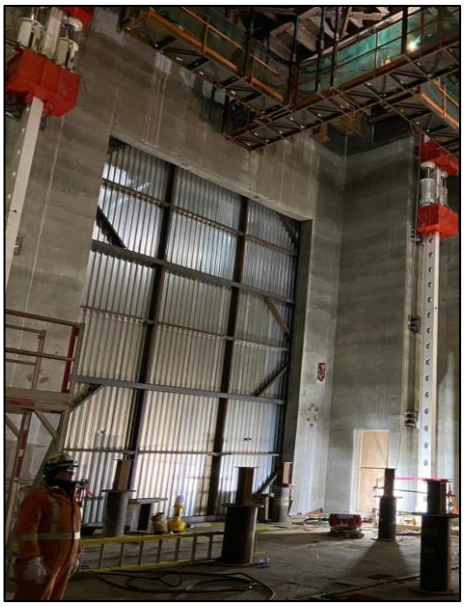
Bank of America Building, London, UK (pictured left)

A 6,400-tonne steelwork frame for a sixteen storey office block.

Clifford Chance Building, London, UK (pictured right)

A 12,300-tonne steelwork frame for a thirty-four storey tower block.

Reference Projects – Power & Industrial

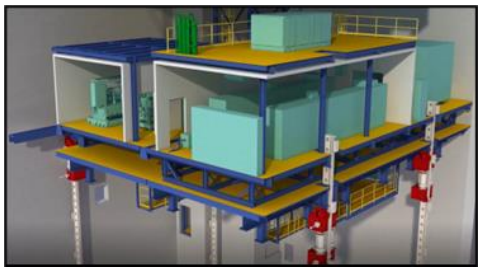


Pinned Climbing Jack System – MOSAIC K3 Mine, Canada

DLT Engineering designed and supplied a 4 x 250-tonne capacity pinned climbing jack system for use in an innovative construction system for the south shaft headframe required for an expansion of a potash mine. The pinned climbing jacks were used to lift and lower a construction platform within the headframe building.

The headframe building consisted of a slip-formed concrete tower with internal steel floors. The construction platform was used to lift each pre-assembled floor together with its associated equipment and to hold it whilst it was connected to the concrete structure.

DLT pinned climbing jacks provide a safe and effective means to move and hold heavy loads vertically, horizontally, or at any angle between, and can be centrally monitored and controlled using our DL-P40 computer control system.



Generator Installation Gantry, India

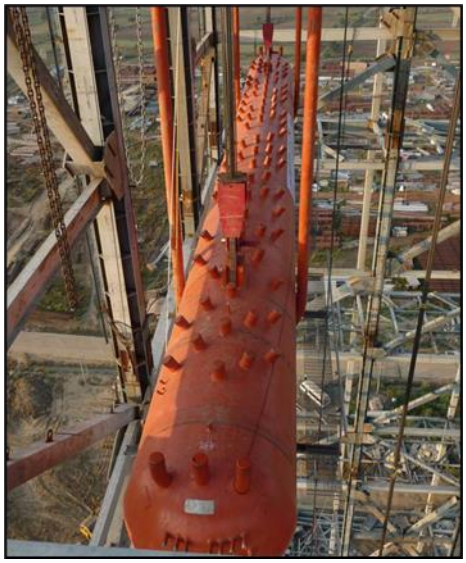
DLT supplied a 540-tonne capacity modular gantry for installation of generators to Lift and Shift India. The gantry is modular to accommodate the geometry of each site and incorporates folding strand jacks to allow the generator and strand jack carriage to move together into the turbine hall without the need to remove a section of the overhead crane rail to provide extra headroom. The gantry is able to lift, rotate and move the generator into final position and incorporates both transverse and longitudinal movement systems to allow the generator to be set accurately onto its foundations.

324 tonne Chimney Flue Lifting Systems, India

DLT supplied three sets of 3x108-tonne capacity strand jack lifting systems to Gammon India Limited. Gammon has used these systems throughout India for the erection of flue segments in reinforced concrete chimneys. Each system of three DL-S108 strand jacks is powered by one DL-L15/4/300/E electrically powered hydraulic power unit and uses the proven DL-P40 computer control system for monitoring, accurate synchronisation and control. The flue segments are erected in parts weighing up to 300 tonnes.

The segment is delivered and positioned directly under final position at ground level through a wheeled trolley over rails, then lifted vertically with strand jacks and transferred from the strand jacks to the permanent beams. The strand jack anchors are then lowered to lift another segment until the total erection of the flue segments is completed up to a height of around 275m.

BHEL 370-tonne Capacity Strand Jack System, India



DLT supplied a 370-tonne capacity strand jack lifting system to BHEL Western and Northern divisions in India for use in the construction of power stations. The system comprises two DL-S185 strand jacks powered by two electrically powered hydraulic power units for a lifting speed of 20m/hr and is controlled using our DL-M2 pendant control system. The steam drum is delivered and positioned at ground level directly under final position, lifted vertically to final height and then transferred from the strand jacks to permanent hangers. BHEL Western division has erected around ten steam drums using this equipment.

Steam Generator Replacement – California, USA

Rigging International requested DLT's aid in replacing a steam generator in the SONGS nuclear power plant in California. DLT provided a lifting system comprised of two DL-S418 strand jacks powered by one DL-L60/4/300/D diesel powered hydraulic power unit for a lifting speed of 14m/hr and controlled using our DL-P40 computer control system. The operation took place adjacent to a live nuclear reactor in an environment with very high electrical magnetic interference. Our DL-P40 computer control system was approved for use in this environment following a successful 24-hour continuous running test on the site.

Blast Furnace Re-Lining, Taiwan

DLT were sub-contractors for the installation of a new 40.75m high, 3,115-tonne furnace line in Taiwan. Our scope included full engineering of all temporary works required, together with supply of jacking equipment and site labour to carry out the work. The blast furnace was delivered to the site in eight segments, weighing up to 477 tonnes each, which were lifted and skidded into the furnace house before being jacked vertically and aligned for welding. The lifting operations were carried out using a mix of strand jacks and climbing jacks.

3,600-tonne Capacity Weighing System, Vietnam

DLT supplied a 3,600-tonne capacity computer-controlled weighing system to a client in Vietnam. The system consisted of four 600-tonne and four 300-tonne capacity weighing jacks, all synchronised, controlled and operated by a single operator using the DL-P40 computer control system.

The jacks were provided with load cells and the overall accuracy of the system was within 0.5%. DLT also trained the client's personnel in operation and maintenance of the system, to enable them use the equipment themselves.

Pinalito Hydroelectric Plant, Dominican Republic

DLT were employed by Odebrecht to supply equipment and site supervision to install a water distribution pipe which was required to pass over one of the Dominican Republic's many mountains. DLT's equipment and supervisors assisted in the installation of the pipe, pulling a total of seventy eight sections, from ten different locations using DLT strand jacks. The maximum pull was 132 tonnes, and the longest pull in terms of distance was 157m.

Lal-Pir Power Station, Pakistan

DLT were responsible for the design, supply and operation of a system to lift, skid, rotate and lower into final position a 350-tonne generator. The generator was delivered outside the building and was lifted from the transporter using four DL-S105 strand jacks mounted on a purpose-built transportation frame, which sat on a skid track running into the building. Once in the building, the generator was rotated 90-degrees on a purpose made turntable and skidded a further 10m before being lowered into final position.

Heat Exchanger Replacement, Indonesia

DLT were responsible for the design, supply and operation of a 60 tonne capacity gantry to replace 2 No. 60 tonne heat exchangers from deep within a steel framed structure on an industrial chemical site in Indonesia. Use of these purpose designed gantries in place of conventional cranes avoided the need to extensively dismantle the steel structure to gain access to the vessels, saving time and money.

Reference Projects – Offshore

2 x 1,000 tonne Jacket Load Out & Offshore Pushing System, Japan

DLT designed and supplied a 2 x 1000 tonne capacity (push/pull) jacking system to Nippon Steel in Japan for use on their offshore jacket installation barge. The jacking system comprised two DL-GP1000 skidding jacks and was designed to 'walk' along a bespoke skid track with anchorage slots at 1.25m centres. It is used for load-out of jackets onto an installation barge and for pushing the jackets off the barge at the installation site. It has a hydraulic load balancing system to ensure equal distribution of the anchor force to four slotted holes, reducing the cost of the skid track.

Platform Installation – BARD Wind Farm, North Sea

DLT were responsible for the design, supply and operation of two 4,704-tonne capacity systems for installation of the transformer platform to the BARD wind farm. The platform was designed to float out and self-install. A total of sixteen DL-S588 strand jacks were supplied, with eight jacks being used for lowering the jacket onto the sea bed and eight jacks for lifting the top side up the jacket into final position.

4 x 5,000 tonne & 4 x 3,750 tonne Float Over Jacking Systems, Arabian Sea

DLT undertook the design and supply of two synchronised hydraulic jacking systems for use in the float-over installation of a 13,400 tonne process platform and an 8,000 tonne living quarter platform for ONGC's B193 oil/gas process complex in the Arabian Sea, located 75km offshore of Mumbai in a water depth of 70m. With multiple rams in use at each support point to provide redundancy, the systems allowed for ease of transport and handling, resulting in maximum safety and flexibility for future use. Each system uses four hydraulic power units and has a central computer control system for accurate synchronisation and full data logging of the operations. The systems operate at a lifting speed of 70mm/min and a lowering speed of 1000mm/min.

Strand Jack Systems for Replacement of Thrusters, Worldwide

DLT have supplied and operated many strand jack systems for the installation and replacement of thruster units weighing up to 50 tonnes on drilling ships and floating platforms. Strand jacks provide a compact and cost effective solution for handling heavy thruster units and we have also developed a system of modular power units and jacks that can be taken through bulkhead doors into the thruster room.

14,000 tonne Topsides Load Out, Malaysia

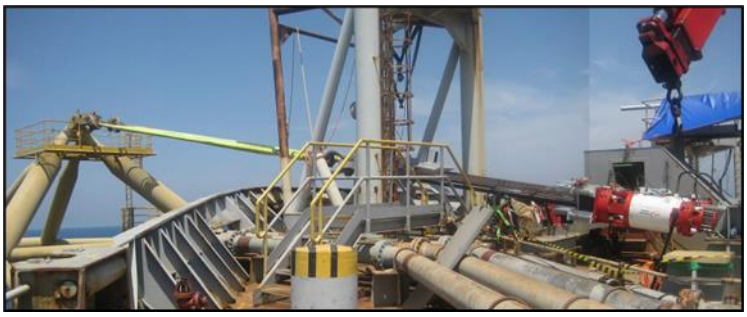
Working with local partner JWS Engineered Transport Sdn Bhd, DLT were responsible for the supply and operation of a 2,352 tonne capacity strand jack system for load out of the Tallisman Topsides onto the delivery vessel. We used four DL-S588 strand jacks, powered by two DL-L120/2/300/D diesel-powered hydraulic power units. JWS have since carried out numerous lifting and skidding operations using DLT strand jacks.

FPSO Mooring Pendulum Installation, Singapore

DLT were responsible for installation of two 120-tonne mooring pendulums for SMOE in Singapore, using strand jacks to achieve a positional alignment of +/- 0.2mm for installation of 5 tonne pitch pins.

Recovery of Mooring Yoke to Release FSO from Buoy, Mediterranean Sea

DLT were sub-contracted to provide a strand jacking system to raise a mooring yoke, in order to release a Floating Storage & Offloading (FSO) vessel from its mooring buoy, where it had been located for 20 years. The original 1,000 tonne capacity long-stroke ram used to install the yoke was unserviceable. DLT engineered a system using two DL-S418 strand jacks mounted on a T-frame, attached to the FSO using the existing long-stroke ram mounting point. The jacks were powered by a DL-L114/4/D diesel engine operated hydraulic power unit.



Jacket Erection – Maari Field Wellhead Platform, Malaysia

DLT were sub-contracted to design, supply and operate a skidding and jacking system to incrementally erect a 26m x 22m x 140m high 2,800 tonne jacket structure. The sections were lifted using our DL-TS3000 Mk1 jacking tower system, in four-tower configuration and using eight DL-C450 climbing jacks. The lifting operations took place in 2007.

Sea Drill Pontoon Launch – Jurong Shipyard, Singapore

DLT were sub-contracted to side-shift and launch two 3,600 tonne pontoon units at the Jurong Shipyard, Singapore, in 2007 for the Sea Drill floating platform #8. The pontoons were supported on inflated air bags for these operations and moved using two DL-S185 strand jacks and two DL-L30F/1/350/120/E hydraulic power units for a launching speed of 17m/hour, controlled using the DL-P40 computer control system.

Mooring Line Tensioning – Corocoro FSO, Venezuela

DLT were sub-contracted to assist in the installation of a FPSO mooring line system 32km offshore in the Corocoro Oil Field, Venezuela. DLT designed and supplied the strand jack tensioning system to pull pairs of mooring lines toward one another to achieve a 700 tonne bedding tension.

Load-Out of FPSO Pontoon, South Korea

DLT were responsible for the design, supply and operation of a strand jack system to load out a 14,500 tonne FPSO pontoon onto a delivery ship, for main contractor Hyundai. The deck was moved 125m using four 580 tonne capacity strand jacks.

Dismantling of the Brent Spar Oil Storage Platform, North Sea

DLT were responsible for the design of a 2,300 tonne capacity lifting gantry for handling cut sections of the Brent Spar as it was decommissioned in a Norwegian fjord in 1999. The gantry used four 580 tonne capacity strand jacks for lifting and a gripper jack system for longitudinal movement over the decommissioning barge. The legs and cross beams of the gantry structure were made from a proprietary tower system which were connected and braced using purpose designed steelwork.

Reference Projects – Tower Systems

MYQ5000 Jacking Tower System – Refinery Construction, China

DLT designed and supplied a 5,000-tonne lifting capacity jacking tower system to China Petroleum First Construction Corporation for use in the erection of heavy petrochemical vessels. The MYQ5000 jacking tower system is able to self-erect and self-dismantle and is also able to move with the vessel after lifting. The MYQ5000 was successfully function tested to 110% capacity (5,500 tonnes) and static load tested to 125% capacity (6,250 tonnes).

The tower system is designed to erect petrochemical vessels weighing up to 5,000 tonnes and 100m high. The system is also designed to lift smaller loads up to a maximum tower height of 160m. Vessels can be moved both longitudinally and horizontally and rotated after lifting. Four DL-S1394 strand jacks (1,394-tonne capacity per jack) are used for lifting and four DL-CP400 pinned climbing jacks (400-tonne capacity per jack) are used for longitudinal and transverse movements. Central monitoring and synchronised control of all jacking systems is provided using a customized, wireless version of our proven DL-P40 computer control system. High accuracy GPS stations are located at the top of each tower for monitoring the tower verticality. The GPS data is integrated into the DL-P40 computer control system.

DL-TS3600 / DL-TS7200 Jacking Tower Systems – Erection of Petrochemical Vessels, China

The DL-TS3600 is a jacking tower system designed and supplied by DLT to Sinopec Tenth Construction Company in China. The tower system has a gross lifting capacity of 3,600 tonnes in two tower configuration and 7,200 tonnes in four tower configuration. DL-CP600 pinned climbing jacks (600-tonne capacity per jack) are used and each tower can be fitted with two or three of these jacks. The vessel can be moved longitudinally & transversally and can be rotated 360 degrees with a swivel after lifting. The tower system uses our proven DL-P40 computer control system.

DL-TS3000 Jacking Tower System – Gunsan, South Korea

The DL-TS3000 jacking tower system can lift vessels up to 3,000 tonnes and 150m high. It is able to self-erect and dismantle and, with the optional 1500-tonne capacity tailing frame, is able to operate without a tailing crane. It can operate unguyed up to 70m high in storm winds of up to 40m/sec. All components are transported in standard shipping containers for economic relocation between sites.

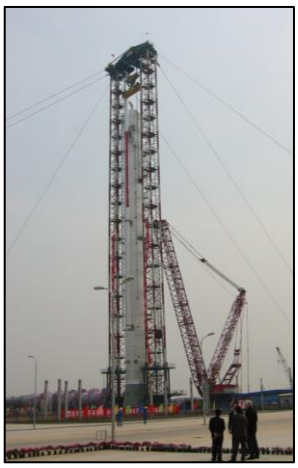
Jacking Tower System – Formosa Plastics Plant, Taiwan

For the construction of a new petrochemical plant in Taiwan, all the large vessels, weighing up to 1,557 tonnes and up to 114.5m long, were erected using a Jacking Tower System designed and supplied by DLT Engineering. The jacking tower system used strand jacks for lifting and guying. The system was capable of being used without guys for vessels up to 35 m tall and weighing 1100 tonnes. A 'U-frame' was also supplied that could be fitted to the top of the towers and allowed vessels taller than the towers to be erected.

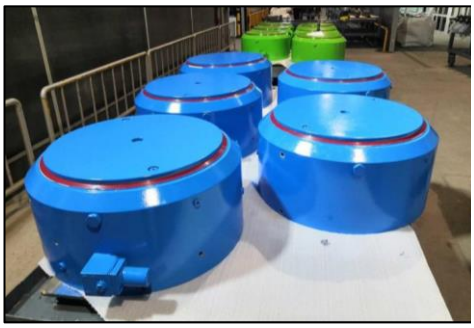
58 vessels were erected with the tower system with a combined weight of 54,000 tonnes. DLT provided site supervisors to oversee the majority of vessel lifts and also carried out vessel specific erection engineering.

2,500-tonne Strand Jack Tower System, China

DLT were responsible for the conceptual and detailed design of this 2,500-tonne lifting capacity modular strand jack tower system, specifically designed for the Chinese refinery construction market. The tower system is owned and operated by the No. 4 Construction Company of SINOPEC and has many new features including self-erection and dismantling, tower luffing under full load, integral base skidding system and reduced sensitivity to ground settlement / rotation under load.



Reference Projects – Specialist Equipment



Skidding System Jacks – Fehmarn Belt Fixed Link, Europe

Fehmarn Belt Fixed Link consists of a 17.6km long immersed tube tunnel linking Denmark to northern Germany. When complete, it will be the worlds longest immersed tube tunnel and the longest combined road and rail tunnel in the world.

DLT were responsible for the design, manufacture and supply of 2950 hydraulic jacks each with load capacities varying from 240 tonnes to 390 tonnes. The jacks are needed as part of the skidding system used to move precast concrete tunnel sections, each weighing 72,000 tonnes, from the casting facility to the dry dock ready for towing out to sea and then installation on the seabed. The jacks were designed to satisfy the demanding specification required for the project.

Hydraulic Sling Length Adjustment System – Çanakkale 1915 Bridge, Turkey

DLT supplied 4 No. 4x60 tonne capacity computer controlled hydraulic sling length adjustment systems and bespoke lifting beams used for the installation of the steel sections forming the main towers of the Çanakkale 1915 Bridge in north-western Turkey. The system is used to ensure that the slings and the lifting points are not overloaded and also for fine adjustment of the level of the section prior to lowering into position.

Tunnel Gantry/Crane – Crossrail, Liverpool St. Station, UK

DLT were sub-contracted by Laing O'Rourke Construction Ltd to design and supply heavy-lifting equipment to aid them in transferring precast concrete station platform components through the newly constructed Crossrail tunnels. This meant designing bespoke gantries and cranes suited to the exact requirements of the tunnel system to allow for the easiest possible movement of components.

These large pieces of equipment also had to be lowered safely into the tunnels piece by piece, and consequently the designs had to take into consideration ease of assembly in an underground environment with limited space.

Self-Propelled Transporter – Honam High Speed Rail, South Korea

DLT supplied a 16 axle line transporter for carrying precast concrete bridge beams weighing up to 1000 tonnes and up to 35m long, from the casting yard to the bridge span erection gantry for the construction of the Honam High Speed Railway project. Each bridge beam was supported at each end on the transporter and the load then distributed evenly on the previously erected bridge deck.

DLT self-propelled transporters are custom designed for the specific requirements of each project, with careful consideration given to the support requirements of the load and the effect of the transporter tyre loads onto the supporting surface below. A typical application is to transport heavy precast concrete bridge beams from a casting yard to the final erection location, travelling over a mix of compacted ground, ramps and the previously erected bridge deck.

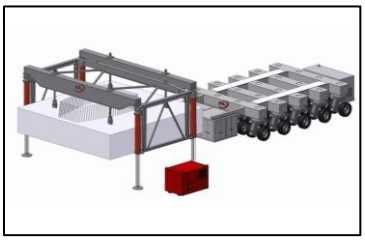
MOSE Flood Protection System – Venice, Italy

DLT were subcontracted by the Mantovani Group to aid in the construction of a jack-up crane barge used for lifting and transporting the flood gates at the entrance to the Venetian lagoon. This included supplying a computer-controlled strand jack system and providing on-site technical support.

Casting Yard Transporter – New Champlain Bridge, Montreal

DLT were responsible for supplying a 1,000-tonne capacity transporter to allow for the safe and efficient movement of concrete pile caps, footings and pier sections from the casting yard to the required site locations, for distances of up to 475m. The 40-wheeled, diesel-powered transporter could travel at speeds of 1km/hr loaded, and 3km/hr unloaded, and had to operate in Montreal's severe weather conditions, including snow.

DLT also supplied a jack-up system consisting of four 300 tonne capacity, 2.5m stroke hydraulic cylinders and a diesel-engine operated power unit. This was needed to lift the concrete blocks so they could be loaded safely onto the transporter.



Transporter & Straddle Carriers – Sheikh Jaber Al Ahmed Al Sabah Causeway Project, Doha Link, Kuwait

DLT were responsible for the detailed design of a transporter, and a pair of straddle carriers for the Sheikh Jaber Al-Ahmed Al-Sabah Causeway Project (Doha Link) in Kuwait. The Doha Link is a 12.43km sea crossing with twin parallel decks and is constructed from precast concrete deck beams supported on cast in-situ piers. The straddle carriers and transporter were all designed to handle precast concrete bridge deck beams weighing up to 1,700 tonnes, with a span range of 30m to 60m.

Transporters & Straddle Carriers – Riyadh Metro Project, Saudi Arabia

DLT were sub-contractors to FAST Consortium for the design and supply of two DL-TLC500 transporters and two DL-SC260/21.2/25 straddle carriers for the transport of 500 tonne, 35m long precast concrete bridge deck beams for the 16.7km long elevated section of Line 4 of the Riyadh Metro project.

Olmsted Locks & Dams Project – Illinois, USA

The Olmsted Locks and Dams project consists of twin 110-foot wide by 1,200-foot long lock chambers on the Ohio River at Olmsted, Illinois. The project as a whole was the largest and most expensive inland waterway project undertaken in US history. The lock chambers are constructed from heavy precast concrete units, that were cast in a yard on shore and then handled on land using a purpose made gantry crane and, in the water, using a purpose made heavy lift catamaran barge.

DLT were awarded the contract to design, supply and operate two 12,000-tonne capacity computer controlled strand jack systems for use as the main lifting systems on both the gantry crane and the catamaran barge.

If you would like further information about any of the products and/or services that we provide, please visit our website at www.dlteng.com and see our range of brochures available for download.

If you would like to discuss your requirements or obtain first-hand information about our engineering services, equipment and control systems, please do not hesitate to contact us using the following details:

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