

High-Strength Tension Members on Rope Guyed Structures

Endurance testing in practice



Tested and declared fit for purpose

No qualms about walking across a bridge? In no doubt about the stability of masts and cranes? Convinced that oil rigs will remain firmly anchored at sea? Then you will know about DMT and the continuous testing work we carry out on guyed structures.

Cover Page:
Guazu bridge
over the Rio
Parana in
Argentina

Magneto-
inductive rope
testing under
unfavourable
conditions

Brooklyn
Bridge,
New York



Our accredited laboratory for non-destructive and destructive testing -Rope Testing Centre- provides clients with reliable diagnosis results. From the production stage through to on-site analysis we can issue a comprehensive status report on the suitability for use and current condition of ropes and end connectors. We have developed equipment to meet customers' individual needs and our testing facilities are founded on more than a hundred years' experience in the business — a sure guarantee of our reliability.

Taken to the limit

Tension members in supporting structures, such as ropes, cables and anchors, are subjected to considerable stress in the course of a service life that may often last for decades. The stresses and strains acting on these structures can differ greatly from case to case. Static loads can have a massive impact on stability and an aggressive

environment (wind, rain and traffic) can also pose serious problems. Over time these conditions can lead to damage that may in turn threaten the safety of the installation. Weathering of the anti-corrosion coating means that wire can corrode and inner and outer strands can break. Faulty rope sockets and end terminations can adversely affect the stability of the entire structure.

On-site testing

DMT personnel are highly trained in the complex work of analysing safety-critical components and our technical teams have the capacity to solve any problem that you might face. Testing equipment and methods developed and continuously refined in-house provide the facilities we need to achieve the optimum result. Our principal aim is to maintain standards and to perform cost-effectively for our clients at all times. Regular on-site inspections allow us to monitor the onset of damage

The Store Great Belt Bridge, Denmark



Measuring rope tension at Lehrter Station, Berlin

from a very early stage. To this effect we apply a variety of non-destructive testing methods, ranging from the magneto-inductive testing of the freely accessible rope length to the ultrasonic testing of rope end sockets and anchorage connectors. We can also deploy different types of magneto-inductive testing equipment to match the diameter of the target rope. For ropes up to 150 mm in diameter we use testing instruments with permanent magnet heads.

One new testing system for cladding tube encased rope structures — the only one of its kind in Europe — also allows us to inspect parallel-wire bundles and even parallel-strand bundles. This system was developed by our Swiss partner EMPA (Eidgenössische Materialprüfungs- und Forschungsanstalt). As a result we are now able to carry out measurements yielding reliable results for rope structures whose low filling factor may mean having to deal with rope diameters of as much as 250 mm.



Pylon under construction, A44, near Ilverich

Laboratory testing

Safety does not just begin at the point of installation. At our Rope Testing Centre we have the facilities to put your components through a whole series of loading tests well before they are put into practical service. The performance and quality of your product is scrutinised in our testing programme to determine its mechanical and technological properties. Our standard test routine includes tensile strength and tension testing, as well as dynamic stability testing on wires and ropes. We can also determine whether the sample supplied conforms to the required standards and/or specifications laid down by the manufacturer or operator.



Fitting a rope testing device

The DMT Rope Testing Centre has become synonymous with safety. Try us out and be convinced.

Scope	Method			
Rope testing/inspection for	visual	magneto-inductive	ultrasonic	others
Outer wire breaks	■	■		
Inner wire breaks		■		
Incipient flaws		■		
Hidden wire breaks (under clamps, wedges and ducts)	(■)		■	
Deformation	■	(■)		
Corrosion	■	■	■	
Corrosion and wire breaks under non-magnetic covers in pipes		■		
Wear	■	■		
Condition of anti-corrosion coating				■
Material damages				■
Checking of anchorages for	visual	magneto-inductive	ultrasonic	others
Corrosion (wire)	■		■	
Wire flaws	(■)		■	
Settlement in resin socketing	■			
Design suitability (corrosion protection)	■			
Flaws			■	
Corrosion			■	

Non-accessible components e.g. anchor rods, tension members, foundation bolts can only be tested by ultrasonic methods. (■) = restricted scope

Certification

Accredited by Lloyd's Register

- DMT GmbH, Mining Services, Bochum
- Recognized Proving Establishment for Anchoring and Mooring Equipment

Accredited by the DAP (Deutsches Akkreditierungssystem Prüfwesen GmbH)

- DMT GmbH, DMT Laboratory for Non-destructive and Destructive Testing -Rope Testing Centre-, Bochum
- For manual non-destructive testing (UT, MT, PT, VT, magneto-inductive testing) and mechanical testing of metallic and non-metallic materials

Accredited by GLC (Germanischer Lloyd Certification GmbH)

- DMT GmbH, Essen
- Quality management system for consulting, exploration, raw materials, geo-engineering, drafting of expert reports, research & development, testing & certification and training complies with DIN EN 9001:2000

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