



MAGNETO-INDUCTIVE CABLE TESTING

FOR CABLES UP TO 250 MM DIAMETER

MAGNETO-INDUCTIVE TESTING

WHAT FOR?

Because ...

- ... it is a **logical supplementation** of the visual inspection to **detect damages** inside the cable.
- ... **wire breaks** and considerable **quality reductions**, e.g. due to strong corrosion, **can be determined**.
- ... **responsible planning** requires information on a **possible damage course** under all circumstances.

MAGNETO-INDUCTIVE TESTING

YOU WILL RECEIVE...

- ... a **test report** pursuant to DIN EN ISO 17025.
- ... a **reliable** documentation **of all** wire breaks and cross-section weakening across the **entire** testable **cable length**.
- ... an **estimation** of the carrying strength loss as the basis for evaluation of proper safety.
- ... a **recommendation** to remove any damage found.

MAGNETO-INDUCTIVE TESTING

VALIDATION

We **measure** and record only **verifiable conditions** and make them transparent.

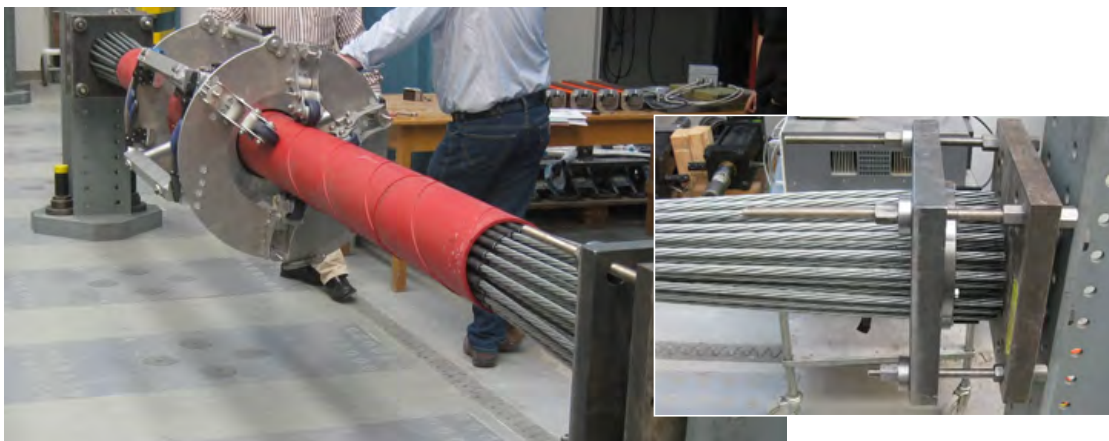
We **evaluate** based on comprehensive tests and material tests.

We rely on the **experience of many years** and can evaluate damages or damage courses **realistically**.

MAGNETO-INDUCTIVE TESTING

VALIDATION MODEL A

For PE-sheathed, wire and strand bundle cables with \varnothing up to 250 mm



This mock-up can be used to simulate all cable conditions. We work only with results that are verifiable and trackable.

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VALIDATION MODEL B

For \varnothing 20 mm to 160 mm



artificially produced fault points that must be detected in the inspection

MAGNETO-INDUCTIVE TESTING

TESTABLE SURFACES

- blank cable
- paint-coated cable
- extruded cable
- shrunken cable
- wrapped cable
- greased cable
- PE-sheathed cable

MAGNETO-INDUCTIVE TESTING

LIMITS

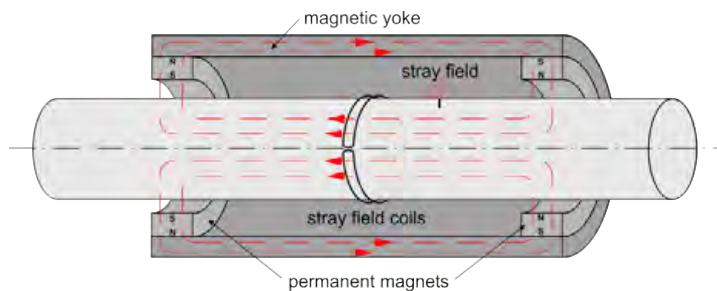
- Cable connection areas, anchoring constructions
- Inspection of strongly fluctuating cable diameters

Solution:

- Reinforcing visual inspection
- Ultrasound examinations

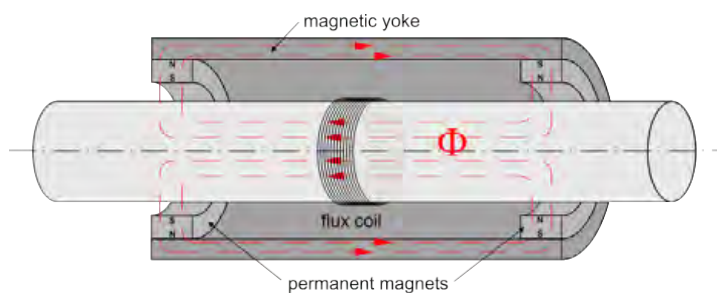
MAGNETO-INDUCTIVE TESTING

FUNCTION PRINCIPLE



Source: DMT

- quantitative detection of local faults (LF) e.g. wire breaks, notches
- qualitative proof of corrosion and wear from loss of metal cable cross-section (LMA)



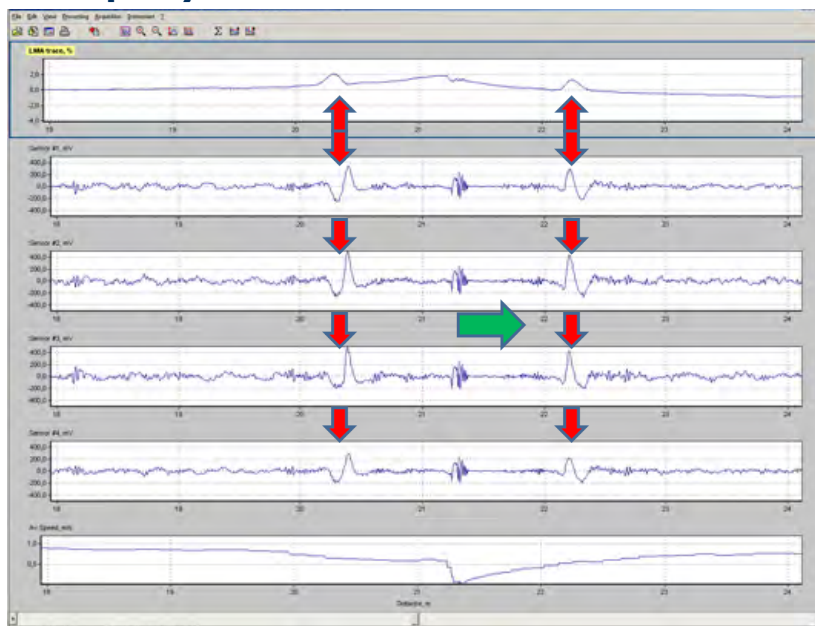
Source: DMT

- qualitative proof of local faults (LF)
- quantitative detection of corrosion and wear from loss of metal cable cross-section (LMA)

MAGNETO-INDUCTIVE TESTING

RESULT

Exemplary evaluation



➔ Inner wire breaks
➔ Return

Source: DMT

MAGNETO-INDUCTIVE TESTING

DEVICES

Up to 150 mm cable diameter
Magnetisation by permanent magnet



*self-driving up to 120 mm
cable diameter*

Up to 250+ mm cable diameter
Magnetisation by electromagnet



indirectly moved

MAGNETO-INDUCTIVE TESTING

SATURATION MAGNETISATION

Why? - Because only magnetisation to saturation ...

... **guarantees for reliable recognition** of wire breaks across the entire cable cross-section.

... **ensures comparability** in repeat tests.

... **avoids wrong signals** due to magnetic interference fields on the cable.

MAGNETO-INDUCTIVE TESTING

ACCESS

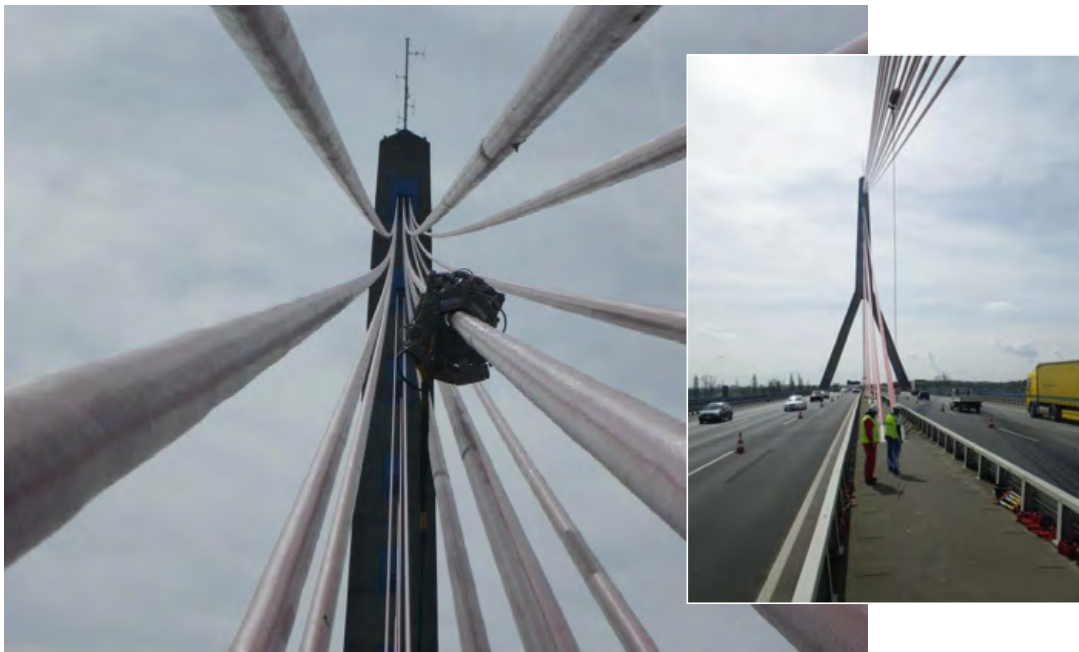
For each project optimal coordinated access and driving technology enables:

- short operation times on site,
- low impairment of traffic,
- no need for scaffolding and lifting platforms,
- driving speeds up to approx. 2 m/s,
- test devices self/driven or indirectly moved.

MAGNETO-INDUCTIVE TESTING

REFERENCES

Flehe Bridge, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Flehe Bridge, Germany

Building: Motorway bridge, cable stayed bridge with fan and harp system

Cable type: Full locked cables, coated

Cable diameter: 93 mm – 111 mm

Total cable length: approx. 18.800 m, 2.090 m tested

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Elbe Bridge Schönebeck, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Elbe Bridge Schönebeck, Germany

Building: Road bridge, cable stayed bridge with fan system

Cable type: HDPE-sheathed strand bundles

Cable diameter: 160 mm – 200 mm

Total cable length: approx. 3.500 m

Measuring procedure: Saturation magnetisation stray field (LF)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Waschmühltal Bridge Kaiserslautern, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Waschmühltal Bridge Kaiserslautern, Germany

Building: Motorway bridge, extradosed bridge

Cable type: HDPE-sheathed strand bundles

Cable diameter: 200 mm

Total cable length: tested 435 m

Measuring procedure: Saturation magnetisation stray field (LF)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Mole Bridge Dresden, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Mole Bridge Dresden, Germany

Building: Pedestrian and bicycle bridge, cable stayed bridge with fan system

Cable type: Full locked cables, coated

Cable diameter: 45 mm

Total cable length: approx. 270 m

Measuring procedure: Saturation magnetisation stray field/flow density (LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

VW customer center Wolfsburg, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

VW customer center Wolfsburg, Germany

Building: Cable supported roof construction

Cable type: Full locked cables, uncoated

Cable diameter: 42 – 80 mm

Total cable length: approx. 1.200 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Motorway Bridge A30 Bad Oeyenhausen, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Motorway Bridge A30 Bad Oeyenhausen, Germany

Building: Motorway bridge, extradosed-bridge

Cable type: Full locked cables, coated

Cable diameter: 154 mm

Total cable length: approx. 700 m

Measuring procedure: Saturation magnetisation stray field (LF)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Köhlbrand Bridge Hamburg, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Köhlbrand Bridge Hamburg, Germany

Building: Road bridge, cable stayed bridge

Cable type: Full locked cables, coated and wrapped

Cable diameter: 58 mm – 118 mm

Total cable length: approx. 8.700 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

1st and 2nd Bosphorus Bridge Istanbul, Turkey



MAGNETO-INDUCTIVE TESTING

FACTS

1st and 2nd Bosphorus Bridge Istanbul, Turkey

Building: Motorway bridges, suspension bridges

Cable type: Spiral cables

Cable diameter: 1st bridge 58 mm
2nd bridge 85 mm

Total cable length: 1st bridge approx. 2.500 m
2nd bridge approx. 11.500 m

Measuring procedure: Saturation magnetisation stray field/flow density (LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Hajj Terminal Jeddah, Saudi Arabia



MAGNETO-INDUCTIVE TESTING

FACTS

Hajj Terminal Jeddah, Saudi Arabia

Building: Cable supported roof construction

Cable type: Spiral cables, shrunk

Cable diameter: 32 mm and 41 mm

Total cable length: approx. 4.100 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Pedestrian- and Bicycle Bridge Saarhölzbach, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Pedestrian- and Bicycle Bridge Saarhölzbach, Germany

Building: Pedestrian- and bicycle bridge, cable stayed bridge

Cable type: Full locked cables, shrinked

Cable diameter: 42 mm

Total cable length: approx. 400 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Tannenheger Bridge Dessau, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Tannengeger Bridge Dessau, Germany

Building: Pedestrian- and bicycle bridge, suspension bridge

Cable type: Full locked cables, uncoated

Cable diameter: Suspension, 20 mm – 28 mm
Suspension cables, 100 mm

Total cable length: approx. 150 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Raiffeisen Bridge Neuwied, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Raiffeisen Bridge Neuwied, Germany

Building: Road bridge, cable stayed bridge with fan system

Cable type: Full locked cables, coated

Cable diameter: 102 mm – 118 mm

Total cable length: approx. 7.000 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Neckar Bridge Zwingenberg, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Neckar Bridge Zwingenberg, Germany

Building: Road bridge, cable stayed bridge with fan system

Cable type: Full locked cables, coated

Cable diameter: 70 mm – 95 mm

Total cable length: approx. 1.200 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Bridge to Sterncenter Potsdam, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Bridge to Sterncenter Potsdam, Germany

Building: Pedestrian bridge, cable stayed bridge with harp system

Cable type: Full locked cables, coated

Cable diameter: 68 mm

Total cable length: approx. 150 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Osthafenbrücke Frankfurt a. M., Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Osthafenbrücke Frankfurt a. M., Germany

Building: Road bridge, arch bridge

Cable type: Full locked cables, uncoated

Cable diameter: 62 mm

Total cable length: approx. 1.600 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Lifting bridge Trollhättan, Sweden



MAGNETO-INDUCTIVE TESTING

FACTS

Lifting bridge Trollhättan, Sweden

Building: Railway bridge, lifting bridge

Cable type: Wire cables, greased

Cable diameter: 44 mm – 64 mm

Total cable length: approx. 1.200 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Bucket excavator open-cast mining Nochten, Germany



MAGNETO-INDUCTIVE TESTING

FACTS

Bucket excavator open-cast mining Nochten, Germany

Building: Bucket excavator for coal mining

Cable type: Full locked cables, coated

Cable diameter: 116 mm

Total cable length: approx. 700 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Ship loader los Pelambres, Chile



MAGNETO-INDUCTIVE TESTING

FACTS

Ship loader los Pelambres, Chile

Building: Ship loader, offshore

Cable type: Full locked cables and wire cables

Cable diameter: 70 mm and 32 mm

Total cable length: approx. 160 m and 800 m

Measuring procedure: Saturation magnetisation stray field/flow density
(LF + LMA)

MAGNETO-INDUCTIVE TESTING

REFERENCES

Rhone Bridge St. Maurice, Switzerland



MAGNETO-INDUCTIVE TESTING

FACTS

Rhone Bridge St. Maurice, Switzerland

Building: Motorway bridge, cable stayed bridge with fan system

Cable type: PE-sheathed parallel wire bundles

Cable diameter: 140 – 200 mm

Total cable length: approx. 400 m downstream bridge
approx. 350 m upstream bridge

Measuring procedure: Saturation magnetisation stray field (LF)