

KEMA Labs

Transformers' Oils go Green: are they worth the change?

Webinar

THURSDAY, JUNE 25, 2020 | 3:30 PM CEST



The World Leader for Independent Testing, Inspection & Certification

KEMA Labs



Quality

1.000

highly experienced
professionals

50+

ISO17025 accredited Labs

2.000+

certificates per year



Reach

7

Industrial facilities around
the globe

200.000+

tested objects per year

4.000+

global customers
every year



Legacy

350+

years of legacy

1st

UHV synthetic installation
in the World

1st

DER Test Field in Europe



Technology

N°1

testbed for Smart Systems
Validation in Europe

~30.000 MVA

Short Circuit Power

4

600 kV HVDC
Prequalification Lines

TIC Services for Clients Product Development & Innovation

Testing Laboratories



On-Site Services



Inspections & Product Certification



Digital Labs & Smart Technologies



Bringing Components from Development to the Field

Tested Components



Electromechanical components

- Circuit breakers
- Switchgears
- Transformers
- Cables
- Gas Insulated Switchgears
- Surge Arresters
- Insulators & Bushings

Testing Services



Type Tests

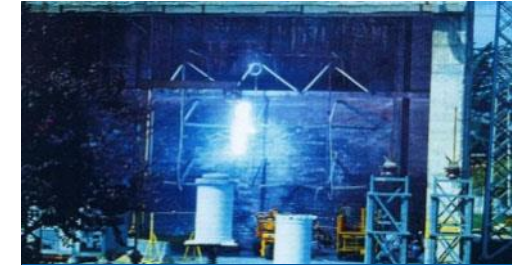


Routine Tests



Research & Development Tests

Testing Areas



Electrical



Mechanical



Climatic/Environmental

Tradition and Experience: Transformers Testing

Testing Services



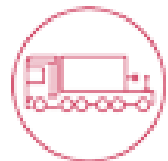
Type Tests



Routine Tests



Research &
Development Tests



On-site
commissioning Tests

Power Transformers



- **Type Test Certificate of Short Circuit Performance**
- **Routine Tests** after **short circuit** and **out of tank inspection** at manufacturer's laboratory under witnessing of **KEMA Labs inspector**
- **Type Tests** and **Special Tests** at manufacturer's laboratory under witnessing of **KEMA Labs inspector**

Distribution Transformers



- **Type Test Certificate of Complete Type Tests**
- Type Test Certificate of **Short Circuit Performance**
- Type Test Certificate of **Dielectric Performance**
- Type Test Certificate of **Temperature Rise Performance**
- **Climatic, Environmental and Fire Behavior testing** for dry-type transformers

30.000 MVA, Next to Our Clients

Arnhem, NL



13.000 MVA

- **Short Circuit HV** up to 1200 kV, 100 kA
- **High Power Trafo** up to 800 kV
- **Dielectric Test HV** up to 550 kV
- **Cable Prequalification** up to 550 kV
- **Temperature Rise** up to 25 kA

Milan, IT



4.000 MVA

- **Short Circuit HV** up to 420 kV, 63 kA
- **Direct Test** up to 36kV/31.5kA
- **Dielectric Test HV** up to 1.600 kVac
- **Cable Prequalification** up to 800kV
- **Temperature Rise** up to 10kA

Berlin, DE



3.000 MVA

- **Short Circuit LV** to 250kAac/150kAdc
- **Direct Test** up to 36kV/25kA
- **Dielectric Test HV** up to 550 kV
- **Cable Prequalification** up to 500 kV
- **Temperature Rise** up to 50kA

Prague, CZ



2.500 MVA

- **Short Circuit MV** up to 36 kV, 25 kA
- **Power arc insulators** up to 63 kA
- **Power Trafo** up to 230 kV, 63 MVA
- **Short-time current** up to 280 kA/2.5s

Mannheim, DE



800 MVA

- **HVDC cable** up to 600 kV
- **Direct Test short-circuit** up to 800 MVA
- **Dielectric Test HV** up to 800 kV
- **Cable Prequalification** up to 400 kV
- **Pollution test** up to 600 kV

Chalfont, USA



3.200 MVA

- **Short Circuit MV** up to 36 kV, 25 kA
- **Short Circuit LV** up to 300 kA
- **Dielectric Test HV** up to 245 kV
- **Temperature Rise** up to 30 kA

Coming Soon

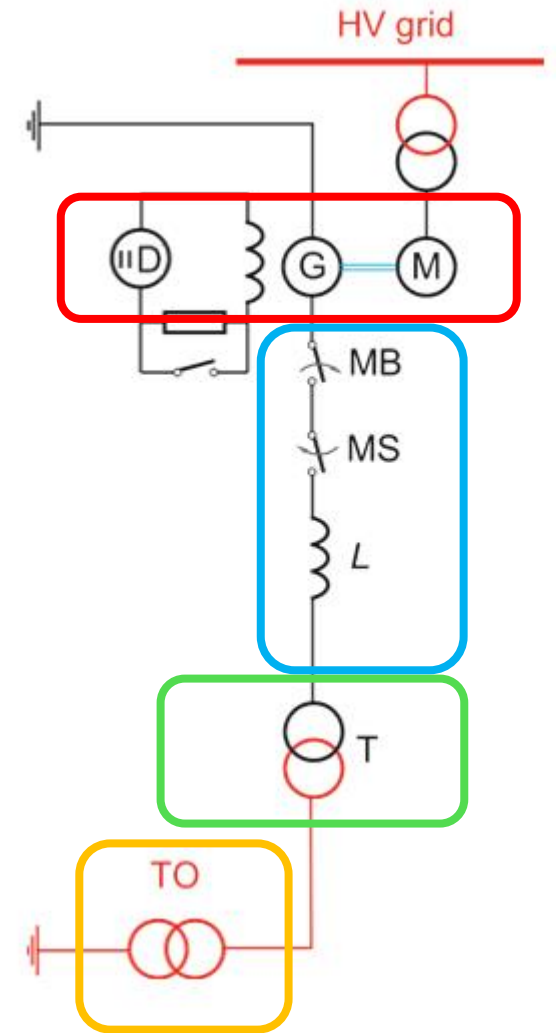
Dammam, KSA



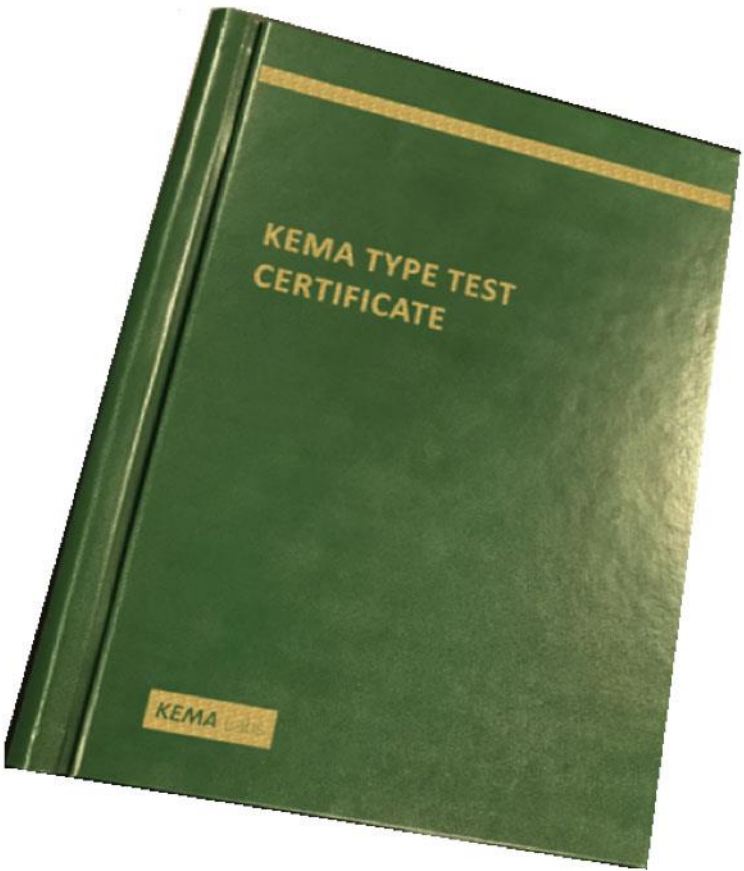
2.500 MVA

- **Short Circuit HV** up to 550 kV/63 kA
- **Direct Test** up to 40kV/80kA
- **Dielectric Test HV** up to 1.600 kVac
- **Cable Prequalification** up to 800 kV
- **Short Circuit LV** up to 250kAac/150kAdc

Short-circuit testing at KEMA Labs



KEMA Labs Certificate: a Synonym for Quality and Excellence Worldwide



Type Test Certificate Gold



Report of Performance Silver



Test Report Grey

KEMA Labs

KEMA TYPE TEST CERTIFICATE OF DIELECTRIC, TEMPERATURE-RISE AND SHORT CIRCUIT PERFORMANCE

Object

A three-pole SF6-insulated vacuum circuit breaker with non autoreclosing-function, associated with a three-pole three-position SF6-insulated disconnect-earthing switch, in an SF6-insulated metal-enclosed switchgear

111JB-191

Type

ABC

Serial No.

12345

Rated power

100 kVA

Rated voltage

33 kV ± 2 x 2.5% / 400 V

Connection symbol

Dyn11

Rated frequency

50 Hz

Manufacturer

Insulator: MOR Engineering, Arnhem, The Netherlands

Fittings: MOR Engineering, Arnhem, The Netherlands*)

Client

MOR Engineering, Arnhem, The Netherlands

Tested by

KEMA B.V., Klingelbeekseweg 195, Arnhem, The Netherlands

Date of tests

31 November 2018

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with the complete type test requirements of

IEC 60076-1:2011, IEC 60076-2:2011, IEC 60076-3:2011, IEC 60076-5:2006, IEC 60076-10:2005

This Certificate has been issued by KEMA Labs following exclusively the STL Guides.

The results are shown in the record of proving tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standards and to justify the ratings assigned by the manufacturer as listed on page 5 and the dynamic ability to withstand short-circuits.

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same type references as that tested rests with the manufacturer.

as declared by the manufacturer

This Certificate consists of 38 pages in total.

KEMA B.V.

Laboratory

Arnhem, 31 November 2019

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KEMA

CESI

IEC

EGE

CESI

CEP

Transformers' Oils go Green: are they worth the change?

Main challenges and opportunities linked to the shift to natural esters. Three points of view will be presented from different perspectives: the Oil Industry, the Transmission Utility and the Independent Test Laboratory

Frank Busse

*Senior Consultant for Power and Distribution Transformers at **KEMA Labs***

Fabio Scatiggio

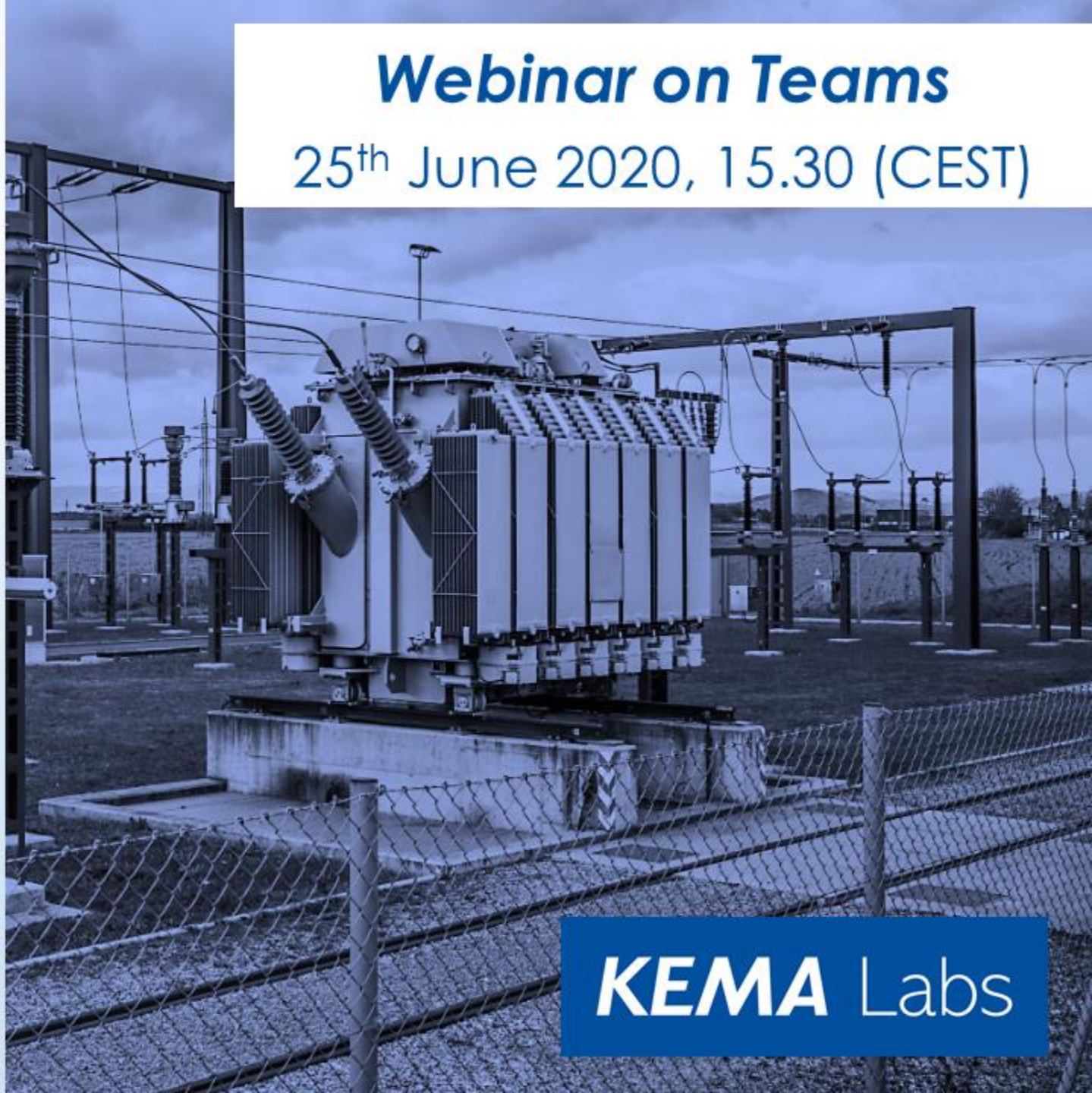
*Chemical Laboratory Manager at **Terna Rete Italia***

Kevin Rapp

*Principal Scientist at **CARGILL Bioindustrial***

Webinar on Teams

25th June 2020, 15.30 (CEST)



KEMA Labs