DIDEE GMBH
TRANSFORMER LIFE MANAGEMENT SYSTEMS

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TRANSDIAG SPECECIFICATION

MEASUREMENT AND SAMPLING IN POWER TRANSFORMERS

THE FIRST STEP OF A RELIABLE SAMPLING STARTS AT THE SAMPLING COCK

TRANSDIAG ELIMINATES THE ROOTS OF THE PROBLEM:

- **HERMETIC CONNECTION TO THE SAMPLING COCK**
- **DIRECT CONNECTION TO UP TO DATE SAMPLING SYSTEMS**
- **DIRECT MEASUREMENT OF OIL HUMIDITY IS INTEGRATED**
- **DIRECT MEASUREMENT OF THE TEMPERATURES**
- **NO FLUSHING OIL LOSS**
- **ADDITIONAL MEASUREMENT SYSTEMS CAN BE INTEGRATED**
- **SINGLE OR TWO POINT MEASUREMENT**

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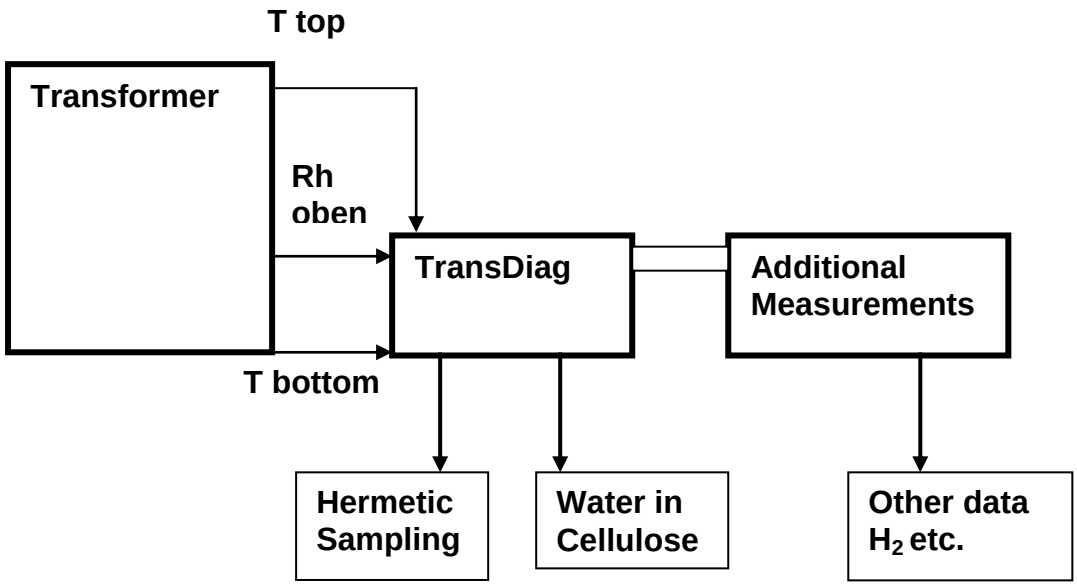

1.The use of TransDiag

The most reliable way to determine the water content in transformers is by determining the relative moisture. In that case both media have the same water content. The known characteristic conversion curves are used to determine the water content of the cellulose in vol. %. To that end the device is attached either to the "top" and "bottom" oil sample device or to the "top" or "bottom" oil sample device. The "top" and "bottom" temperatures are then measured via the sensors. This measuring process must be continued for an adequate length of time (i.e. at least 30 min) to ensure that the transformer is not in a dynamic condition of change

The rugged mechanic system allows also long term measurements. Other measurement systems can be integrated in order to have a temporary monitoring device.

Via threaded connections the sample will be send hermetically in the sample bottle (i.e. Gatron EGS) avoiding any contamination by atmospheric Influences.

Due to this really reliable samples can be easily taken.

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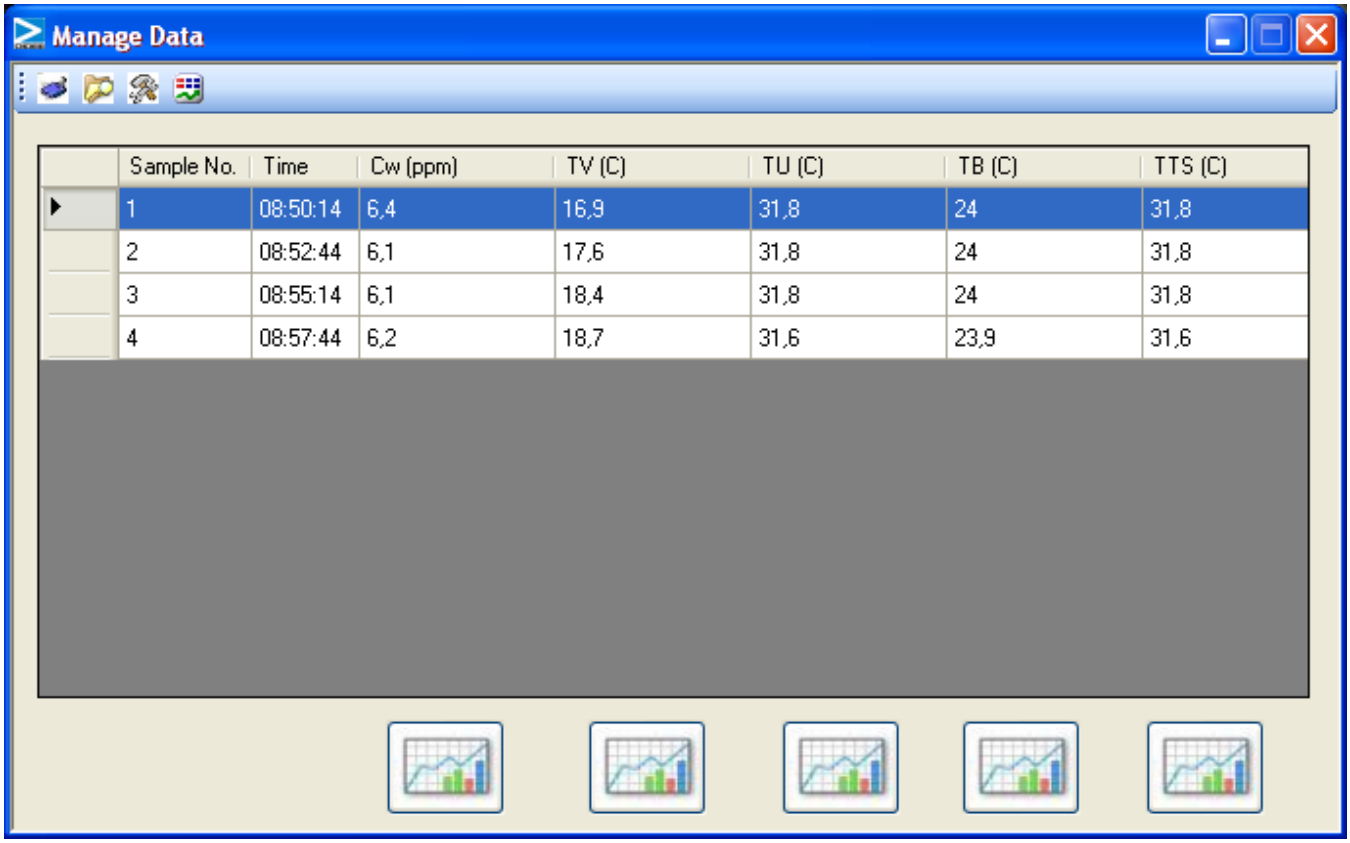

DATA READING OF TRANSDIAG

2. FEATURES AND TECHNICAL DETAILS:

Main functional groups:

- **Vacuum pump**
- **Gear pump**
- **Control and storage glass**
- **PLC**
- **Vaisala probe**
- **Temperature measurement**

3. Description of the internal function:

3.1. The vacuum pump produces in the connection hose(s) a vacuum inorder to flush these hoses with oil in order to avoid any gas injection in the transformer
After the hose (in case of single point connection) or the hoses in case of two point connection are duly filled including the storage glass to a secure minimum, a fast circulation without measurement is started in order to move enough oil for having really life oil in the circuit.

3.2 After that starts the measurement cycle with reduced speed in order to avoid mixing of air or vacuum on oil avoiding contamination of sampling and degassing.

3.3 After the preselected number of measuring cycles the system stops and the Results can be loaded down to a Lap top.
It can also be decided to take now a sample via the additional sample cock

3.4 For the next measurement the system will be prepared by a special purging cycle, where the remaining oil will be sent back to the transformer.

3.6. All modes can be preselected and will be follow a menu controlled cycle.

3.7. The following modes can be selected:

- **Single point connection (In case, that only 1 sampling point is available)**
- **Two point connection**
- **Sampling**
- **Purging**

4. Technical data:

Max measurement cycles:	**220**
Fast speed:	**20l/min**
Measurement speed	**0-20l/min adjustable**
Main source	**220V/50 Hz**
Storage glass	**ca. 1,5l**
PLC	**Mitsubishi**
Temp Measurement	**2x PT 100**
Water measurement	**Vaisala**
Weight without tubes and auxiliaries	**18 kg**
Auxiliaries tubes connection adapters	**10kg**
Dimensions LxHxW	**55X44X22 cm**

DO NOT HESITATE TO CONTACT US:

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The DIDEE -

Industriedienstleistungen GmbH

We are No. 1 in transformer competence, thanks to more than 30 years of experience in power transformers and more than 10 years of specialized experience in overaged transformers and their problems! Together with our competent partners, we offer a wide range of services and technologies entirely unique in the industry.

We have the answers to your questions:

- How are my transformers?
- What measures should I take, what measures are economically sensible?
- Where do I get the best solutions without getting lost in a tangle of service providers and technologies?

Increasing electricity prices and precarious raw materials markets make it ever more important to deal wisely with energies and resources and hence to one one's strengths and keep them stable.

We have tomorrow's solutions for today's problems.

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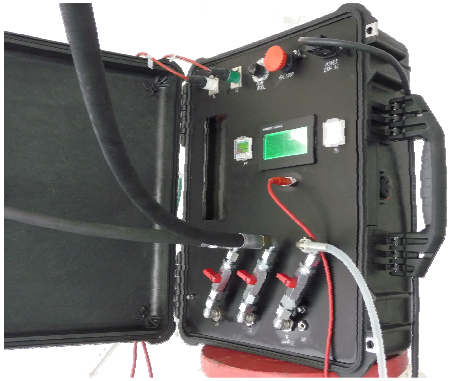
Reference Sampling with TransDiag



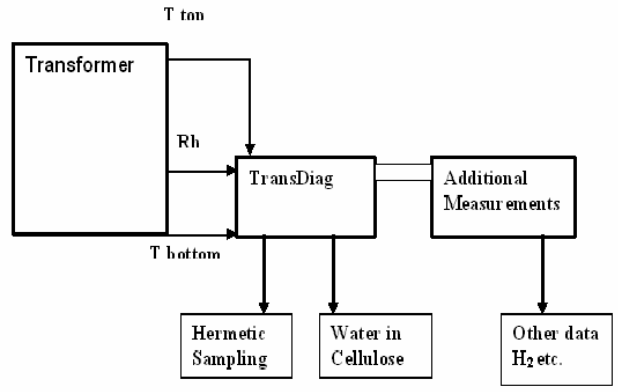
Measurement and sampling in Power-Transformers

TransDiag

The first step of reliable sampling starts at the sampling cock.

TransDiag eliminates the roots of the problem:

- **Hermetic connection to the sampling cock**
- **Direct connection to up to date sampling systems**
- **Direct measurement of oil humidity is integrated**
- **Direct measurement of the temperatures**
- **No flushing oil loss**
- **Additional measurement systems can be integrated**



Our offer for clarifiying contradictionary results:

3 Labs = 5 Results?

We send a specialist with the ultimate state of the art systems.

The measurements will be carried out by the most reliable laboratories with perfect up to date procedures.

We provide a detailed report using the very latest experience and know-how.

We provide optimized solutions!

Do not hesitate to contact us!

Contact us

Please tick off, where applicable and return your reply via Fax or E-Mail

- ☐ We have a problem with our Transformer and need help
- ☐ We need a reference sampling with analysis and assessment
- ☐ We receive „non-logical“ data from our LAB and need a recheck from you
- ☐ We need more information on the following products
  - ☐ TransDiag
  - ☐ TransCond
  - ☐ BF

Remarks:

Name

Address

Tel.:

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ITXASMARINE
Electrical Engineering & Applications
Marine & Industrial

TEST CERTIFICATE

We, hereby, certificate that the under mentioned product is in compliance with the test standard to be applied, as shown in the attached TEST REPORT (Ref. No. PC03.F10).

Applicant (name & address)	ITXAS MARINE S.L. Txirrita Maleo, 2-D 20.100 Errenteria Gipuzkoa (SPAIN)
Name of product	On-Line Transportable Transformer Oil Diagnostic System **TransDiag**
Reference:	11026
Date of issue:	January 23, 2012

Juan Carlos Miranda
Production Manager
ITXAS MARINE S.L.

ISO 9001
ISO 14001
OHSAS 18001
BUREAU VERITAS
Certification

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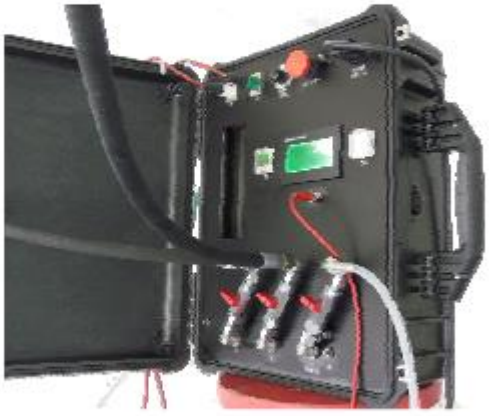
UID-Nr. DE241803697
St.-Nr 244/124/50279

DAEMISCH INDUSTRIEDIENSTLEISTUNGEN GMBH

TransDiag

References

Reference Sampling with TransDiag



Measurement and sampling in Power-Transformers

Year	Project	No. of transf.	Size of transf.MVA	Type of transf.	HV/LV	Mode
2008	Vatttenfall Wedel	6	10-150	Aux + GSU Trfs	110/20 kV	Lifetime assessment TPM
2008	Stadtwerke Chemnitz	4	80	GSU Trfs	110/20 kV	Lifetime assessment TPM
2008	Stadtwerke Bietigheim Bissingen	4	40	Grid Trsf	110/20 kV	Lifetime assessment TPM
2009	Freital Steel Mill	20	Mai 50	Feeder Aux. Furnce Trsf	110/15 kV	Lifetime assessment TPM
2009	Steag Bergkamen	4	Mai 30	Aux Trsf. Power PL.	20 kV	Lifetime assessment TPM
2009	Stadtwerke Bietigheim Bissingen	16	0.25-5	Distribution Trsf.	20 kV	Condition assessment TPM
2009	Vattenfall Wedel	4	2 x 214 2 x 25	GSU Trsf. Aux Trsf.	110 kV	Condition assessment TPM
2009	Vattenfall Europe Hamburg	4	31,5/40	Grid Trsf	110/20 kV	Condition assessment TPM
2009	Currenta	4	2 x 5 2 x 30	Grid Trsf	33/6 kV	Condition assessment TPM
2009	Hydro Alu Neuss Germany	14	35/17kA	Rect Trsf	33/0,6 kV	Update of TPM based on ref. process
2009	OVAG	19	31,5	Grid Trsf.	110/20 kV	Condition assessment TPM
2009	EON Velthein	1	220	Grid coupler	220/110 kV	Condition assessment TPM
2009	EON Mitte	18	31,5/40	Grid Trsf.	110/20 kV	Condition assessment TPM
2009	BABCO Refinery Bahrain	45	0,6-2000	Distrib Industrial	12/06 kV	Condition assessment TPM
2009	Aprilasia Sumatra Indonesia	300	Jun 60	GSU+ industrial Trfs	20-60 kV	Condition assessment TPM
2010	Pfalzwerke Germany	10	250	Interbus couplet	220/110 kV	Condition assessment TPM
2010	Evonik Herne Block 3 Germ	4	2 x 240 2 x 20	GSU Trsf. Aux Trsf.	220/20 kV 20/6 kV	Condition assessment TPM
2010	Evonik Herne Block 4 Germ	4	2 x 240 2 x 20	GSU Trsf. Aux Trsf.	220/20 kV 20/6 kV	Condition assessment TPM
2010	Vattenfall Europe GmbH Hamburg	12	2 x 214 2 x 25 kA Div aux and Spare	GSU Trsf. Aux Trsf.	110/10/6 kV	Extension of Lifetime 10 years
2011	OVAG	20	31,5	Grid Trsf.	110/20 kV	Condition assessment TPM
2011	Pfalzwerke Germany	8	250	Interbus coupler	220/110 kV	Condition assessment TPM
2011	NICICO/Iran	1				Delivery/Training/Comiss.
2011	RIAU PRIMA ENERGI Indonesia	1	63	Grid Trsf	150/21 kV	Failure assessment
2012	Vatttenfall Europe Wedel	9	10-150	Aux + GSU Trfs	110/20 kV	Lifetime assessment TPM
2012	Suralaya Power Plant Indonesia	4	470	GSU	23/500 kV	Lifetime assessment TPM
2012	Bayer Material Science AG Brunsbüttel	13	20-63	Aux + GSU Trfs	10/0,69 kV	Lifetime assessment TPM
2012	Stadtwerke Kiel AG	4	12,5	Grid Trsf	30/6 kV	Lifetime assessment TPM
2012	Valorec Services AG Switzerland	5	25	Industrial Trsf	6,4kV	Lifetime assessment TPM
2012	AGE SA Switzerland	8	10	Grid Trsf	45kV	Lifetime assessment TPM