GE
Grid Solutions

Kelman TRANSPORT X

Portable DGA and moisture in oil

Dissolved Gas Analysis (DGA) has long been recognized as the single most powerful technique for fault detection/prediction in mineral oil filled transformers. It has been at the forefront of progressive utilities' monitoring strategies for the last four decades to avoid expensive failures, extend the life of their ageing assets and help develop an asset replacement strategy.

Gas and moisture measurements have traditionally been performed by collecting an oil sample on site and sending it to a remote laboratory that would process the sample and eventually provide gas measurements that would then need to be analyzed by an expert. The length (and cost) of the cycle can vary from several hours to several days depending on the location and urgency.

The Kelman™ TRANSPORT X is a fully portable device, that can be easily carried to site and quickly setup in the field. It can perform DGA and moisture measurements in approximately 30 minutes, enabling on site assessment of the situation. Hence it has often been referred to as a "lab in a box".

It is capable of analyzing mineral insulating oil for diagnostic gases and moisture to a resolution and accuracy comparable to that achieved in the laboratory. The TRANSPORT X has an embedded PC which allows for immediate analysis of the results utilizing embedded transformer diagnostic algorithms.

Key Benefits

- Fully portable and economical
- Measurement of all 7 diagnostic gases plus moisture in oil
- Simple to use with on-screen step by step instructions
- Fast and full diagnostic in approximately 30 minutes
- Immediate insight into transformer condition
- Perfect for responding to alarms, trip events and for urgent field decision making
- Ideal complement to GE's single gas online DGA monitors for transformer diagnostics

Applications

As the average age of generation, transmission and distribution transformers increases, the possibility of rapid deterioration and even catastrophic failures also increases. Traditional annual lab DGA analysis is no longer sufficient and can now be complemented or even replaced with on-site DGA analysis using the Kelman TRANSPORT X.

The TRANSPORT X offers power utility and industrial sector customers accurate, economical and portable dissolved gas analysis and diagnostic in an easy to use portable instrument also suited for :

- Mission critical industrial transformers
- Distribution transformers
- Buchholz relay gas
- Tap changer tanks
- Instrument transformers
- Oil filled circuit breakers

Full Portability

- Standalone DGA instrument capable of measuring all diagnostic gases plus moisture
- Controlled via touchscreen and embedded PC, no requirement for separate computer
- No consumable gases means this unit can operate autonomously in the field indefinitely
- Unit is just 11kg (24lb) and is contained within a rugged carry case

Cutting Edge Technology

- Automated headspace gas extraction
- State of the art Photo-Acoustic Spectroscopy (PAS) detector technology
- Capacative moisture-in-oil sensor built-in within the instrument
- No field calibration required
- Capable of making a full DGA measurement in approximately 30 minutes

Ease of Use

- Step by step instruction displayed on-screen
- Built-in printer for hard copy of results on site
- Over 16,000 records stored in internal memory
- Synchronizes results directly to GE's Perception™ software for historical analysis
- Easy CSV export format

Built-in Diagnostics

- On-board internationally recognized DGA diagnostic methods (Duval's triangle, Roger's ratio, Key Gas Methods, Japanese ETRA)
- More diagnostics by uploading data to Perception software

imagination at work

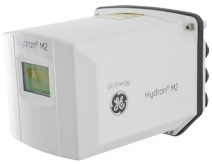
Application Example

The Kelman Transport X is the ideal partner when used in conjunction with the GE line of single gas DGA monitors. These units (such as the Intellix™ GLA 100, Hydran™ 201Ti and Hydran M2) will monitor the transformer and raise an alarm when an abnormal level of fault gas is reached or when the rate of change of this gas level increases rapidly. Such events always require further investigation before a valid conclusion can be reached.

Traditionally, a sample would be taken and sent to a lab for analysis. This can be a lengthy process before a diagnostic can be made. By going to site with a Kelman Transport X, the sample can be taken and analyzed on site, giving comprehensive diagnostic information in approximately 30 minutes.

Intellix GLA 100

Hydran 201Ti



Hydran M2

Technical Specifications

MEASUREMENTS	
Hydrogen (H_2)	5 - 5,000 ppm
Carbon Monoxide (CO)	2 - 50,000 ppm
Carbon Dioxide (CO_2)	20 - 50,000 ppm
Methane (CH_4)	2 - 50,000 ppm
Acetylene (C_2H_2)	0.5 - 50,000 ppm
Ethane (C_2H_6)	2 - 50,000 ppm
Ethylene (C_2H_4)	2 - 50,000 ppm
Measurement Accuracy*	±5% or ±LDL (whichever is greater)
Moisture (H_2O)	0-100% relative humidity
Moisture in Oil Accuracy	±3%

*Accuracy quoted is the accuracy of the detectors during calibration; gas-in-oil measurement accuracy may be affected by sampling, oil type, environmental conditions and/or product usage cycle.

Note: For Buchholz gas samples, LDL is 50 ppm, accuracy is ±30%, for all gases.

ENVIRONMENT	
Operating Temperature Range	5 to +50°C (+41 to +122°F)
Operating Altitude	Maximum 2,000m
Operating Pressure	760 - 1040 millibar
Power Supply	115 - 230 Vac, 50/60Hz; 40 W
Enclosure	IP20 (operating)
Oil Sample Volume	50 ml
Gas Sample Volume	5 ml
Dimensions	453 mm x 357 mm x 176 mm (unit only), 18.5" x 14.1" x 6.9" (unit only)
Weight	11 kg (24 lbs) (unit only)

FEATURES	
LCD Size	6.5 inch, Color, Touchscreen
Resolution	640 x 480
Computer interface	USB
Output	CSV file format
Hardcopy output	2 inch thermal printer

ADDITIONAL OPTIONS

Gas check kit for verification of on-going accuracy

Kit for collection and analysis of Buchholtz gas samples

Transit case provides extra protection during air travel and harsh environment transportation (IP66 rating when closed)

Sample cooler box to rapidly cool hot oil samples for immediate analysis, doubles as a secure sample transportation container

GE Grid Solutions
Lissue Industrial Estate East
Unit 1, 7 Lissue Walk
Lisburn BT28 2LU
United Kingdom
Tel: +44 (0) 2892 622915

GEGridSolutions.com

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