

NEWSLETTER

Asia • North America • South America • Middle East • Australasia • Africa • Europe

Volume 1, Spring 2007

Morgan Schaffer releases new product line : Calisto Expert Series

In an effort to offer more value to its customers, Morgan Schaffer is proud to introduce its new line of options specially designed for professionals. Clients now have access to even more customization choices.

The new **Expert Series - Oil Temperature Sensor** is used to report %RH at real temperature. Installable in 30 minutes, its rugged design is EMC immune and can withstand the worst climates.

Our **Stainless Steel Lines** are built to last, fully customizable and safe. Their easy installation make them the logical choice when installing a new monitor.

Finally, we now offer an **Isolated Ethernet Kit**. UV and oil resistant our Ethernet Kit provides easy communication and is designed for harsh environments. Detailed specifications are available, just contact us at sales@morganschaffer.com to learn more.

MS MORGAN SCHAFFER SYSTEMS
Transformers - The Inside View

Get more out of your Calisto

Calisto
EXPERT SERIES

Morgan Schaffer's Calisto on-line monitor can now be upgraded and customized with the new "Calisto - Expert Series" product line.

Oil Temperature Sensor

- Reports %RH at Real Temperature
- Truly Accurate
- EMC Immune
- No Calibration Required
- Designed for Harsh Environments
- 30-Minute Installation

Stainless Steel Lines

- Easy to Install
- Customizable
- Safe
- Built to Last

Isolated Ethernet Kit

- Customizable
- Easy Communication
- UV and Oil Resistant
- Can Withstand the Worst Climates

Calisto
of Hydrogen & Water Monitor

MS

Morgan Schaffer is a pioneer in the development of DGA, has been providing the electrical industry, worldwide, with reliable and accurate results for over 40 years.



Morgan Schaffer, at the 2007 International Conference of Doble Clients in Boston.

The team from Morgan Schaffer was in Boston at the end of March. Agents and clients from around the world came to meet us and share their ideas.

Thanks to all who dropped by, we hope to see you next year!

Morgan Schaffer wins first order from NASA!



NASA has acquired four Calisto On-line fault detectors to monitor the transformers feeding the launch pad in Cape Canaveral.

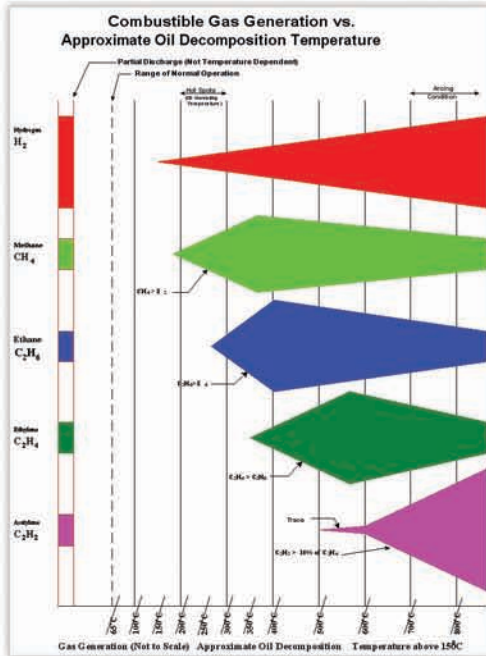
Myrkos meets China's LDL requirements

Chinese transformer experts were glad to learn that Morgan Schaffer's Myrkos, portable DGA analyzer, fully complies with China's LDL requirements of 1 ppm when measuring Acetylene (C₂H₂).

The key to detecting incipient faults : Hydrogen monitoring

Most experts will agree that using hydrogen to **diagnose** the nature of transformer faults is not possible. Then why bother monitoring it? Because hydrogen is a key fault gas generated in ALL types of faults. This and the fact that hydrogen has a very low solubility in oil make hydrogen a perfect gas for the early **detection** of a changing transformer condition. Users can then take appropriate actions and avoid unpredicted outages and loss of revenue.

Dissolved fault gases	Corona	Overheating		Arcing
		Insulation	Oil	
Hydrogen (H2)	High	Low	Low	High
Carbon monoxide (CO)		High		
Methane (CH4)	Low	Traces	Medium	Low
Ethane (C2H6)	Traces		Medium	Low
Ethylene (C2H4)			High	Low
Acetylene (C2H2)			Low	Medium



Hydrogen comes first

Not only is hydrogen present in all transformer faults, it is also the gas appearing first when a problem is developing. This means that detection of hydrogen traces is the best way to find out that something is going on.

Unlike most other gases, the generation rate of hydrogen increases proportionally to fault severity. The more serious the problem, the more hydrogen is generated! This behavior, coupled with the fact that hydrogen very rarely varies with load, makes it truly representative of the transformer status, at all times.

When acetylene shows up and is detected in the transformer, it may already be too late to take action. By that time, very large amounts of hydrogen are usually generated at the fault location.

Looking for trouble

Hydrogen can be found in transformer oil at different concentrations, sometimes limited to a few PPM, but can also reach levels as high as 5,000 to 10,000 PPM. It is important to note that a stable hydrogen concentration is indicative of a stable transformer condition. Sudden increases in hydrogen concentration are a clear indication that something is starting to go wrong. Constant monitoring of hydrogen is also important because hydrogen can escape or dissipate after being generated. Testing an oil sample at the laboratory days or weeks after the event may then lead to an incomplete or wrong diagnosis.

Monitoring transformer condition and load

Calisto, through the monitoring of both dissolved hydrogen and moisture, allows your clients to assess transformer condition AND load. If a fault occurs, they can then make the best possible decisions using easy to understand and reliable signals.

