MORGAN® SCHAFFER
Transformers - The Inside View

Giving you The Inside View.

NEWSLETTER

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

Volume 2, Year 2008

New Products

Calisto 2

HYDROGEN - CARBON MONOXIDE - MOISTURE

CALISTO 2 is our latest innovation for early detection of transformer faults and monitoring conditions of insulation degradation.

Still featuring unequalled performance and stability for the measurement of moisture and dissolved hydrogen, CALISTO 2 also offers independent carbon monoxide measurement, a gas often generated in large quantities when transformer cellulose overheats.

Numerous standard connectivity features offer improved functionality, three isolated 4-20mA outputs and five NO/NC relays. Digital communication can be established using local USB-2.0, isolated RS-232, RS-485 and Ethernet ports. Native protocols include MSSP, Modbus, DNP3 and an optional IEC 61850 kit.

CALISTO 2 now brings additional protection value to the transformer specialist, allowing him to better protect large fleets of transformers using a cost efficient solution.

Technical Benefits

- Unit can be field installed and commissioned in less than 5 hours
- Easily integrated to existing data acquisition or transformer/sub-station monitoring systems
- Reliable, accurate and stable signals
- Eliminates sampling and analysis for moisture content
- Fast response to fault onset
- Vacuum tolerant
- Programmable dual-level and trend alarms for H2, CO and H2O

Features

- Accurate Hydrogen and Carbon Monoxide measurements
- Continuous moisture monitoring
- High sensitivity and wide range
- Continuous oil circulation with flow monitoring
- Proven dissolved gas extraction technology
- Extensive connectivity features and protocols
- Optional Calisto Expert Series accessories

Foreword

Morgan Schaffer just completed a series of shows to introduce its Calisto 2, the most precise and accurate hydrogen monitor available on the market for on-line detection and monitoring of incipient faults in oil-filled transformers.

We were astonished by the interest this new product raised. Transformer owners are increasingly recognizing the value of on-line monitoring, and know the features they want: protection value, connectivity and data management functionality. Calisto 2 additionally offers CO monitoring which, in case of transformer overheating, can lead to timely diagnosis of accelerated cellulose deterioration.

Of all the benefits transformer monitoring brings, protection value is probably the most important. So, how can more transformers be better protected? The answer lies in sound choices of technologies and on-going collaboration.

Morgan Schaffer products and services are developed to be used widely, on as many transformers as possible. Our True North Quality Assurance Program helps utility laboratories increase and maintain their measurement efficiency, allowing utilities to benefit from test results quality that applies to all the transformers they test, year after year. Similarly, our Calisto monitors are designed to maximize fault detection and connectivity. For a given budget, transformer owners can protect more transformers or integrate additional protection from other key vendors in our industry such as LTC and bushing monitoring.

Transformer monitoring is becoming a strategy game where structured technology deployment and team work are the solution to long term success. Morgan Schaffer's personnel, authorized agents and key partners are moving full speed ahead to become the team to beat in transformer protection. So, if you believe in working with professionals, and see your vendors as partners, contact us!

We look forward to working with you!

Morgan Schaffer attended Doble in Boston, IEEE PES in Chicago and EPower China in Shanghai

April 2008 was a busy month for Morgan Schaffer's team. We attended shows at Boston, Chicago and Shanghai.

We launched Calisto 2, our new hydrogen, carbon monoxide and moisture on-line monitor at Doble 2008.

Morgan Schaffer's agents and clients from around the world came to meet with us and share ideas. We received positive feedback on our new Calisto 2 and on the performance of all our products.

We thank all attendees who dropped by and we look forward to seeing you again.

The show season is not over yet, we invite you to visit us at booth 61, next August 25-29, at CIGRE 2008 in Paris.

Monitoring fault severity - SIMPLE

Transformer owners often ask about our Calisto's ability to monitor fault severity. Calisto being a hydrogen monitor, the question really is "How can hydrogen concentration alone be used to monitor fault severity?" The answer is simple: rate of generation.

Hydrogen is one of the very few gases whose generation rate directly varies with fault severity. A stable fault will generate hydrogen at a constant rate whereas an evolving fault will increasingly generate hydrogen.

How does this translate in monitor signal? Figure 1 shows a beautiful case of constant hydrogen generation rate, i.e. a stable fault. In such a case, the hydrogen concentration increases at a steady rate – here 100 ppm per month – thus leading to a diagnosis of "steady condition".

It is interesting to notice that in the case of breathing transformers, a flat hydrogen signal might be indicative of a steady fault condition where the hydrogen generation rate would be equal to the hydrogen loss to the atmosphere.

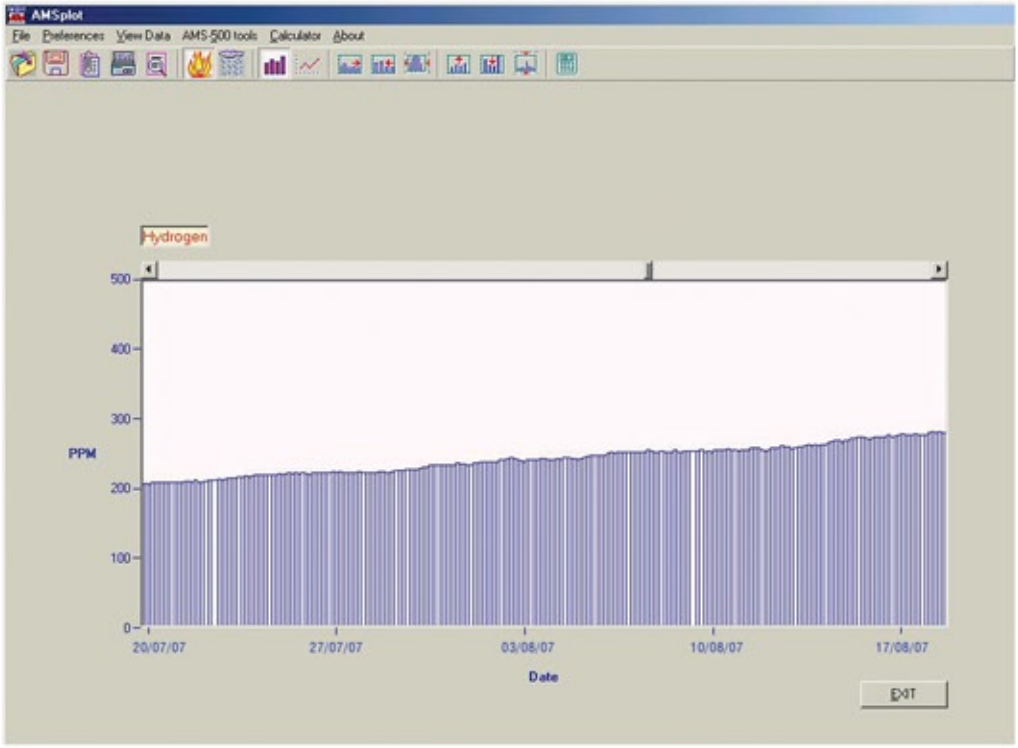

Figure 1 - Hydrogen increase, 100 ppm/month

Figure 2, below, shows a sudden change of generation rate. This is clearly indicative of an important change of transformer condition. Though the fault is still steady after the sudden change, the higher generation rate is indicative of a more serious condition.

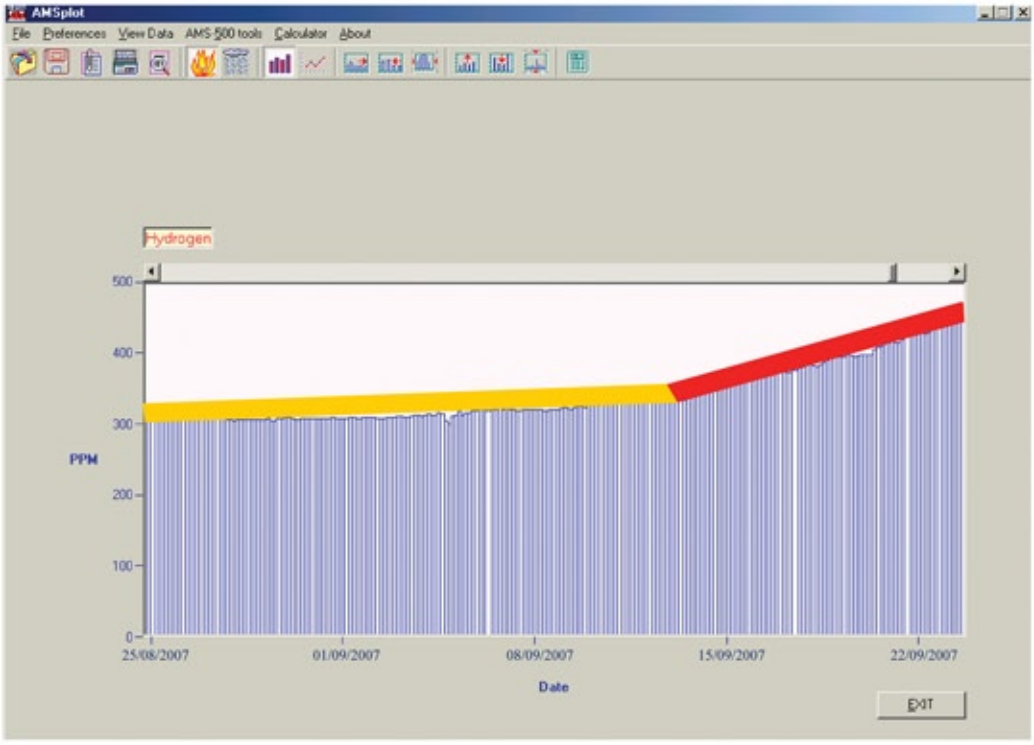

Figure 2. - Sudden condition change

Monitoring fault severity (cont'd)

Figure 3 shows an escalating fault where fault severity is rapidly becoming critical. In this case, immediate attention was given to that transformer which was shut down urgently. In all these figures, each bar is a hydrogen measurement stored in memory at a storage frequency of once every three (3) hours.

It is therefore interesting to note that fault evolution is a rather slow phenomenon, which allows asset managers to use the best possible technologies and techniques to assess the nature of the fault once it has been detected by the on-line monitor. In all these cases, measurement accuracy, precision and stability is a great help when monitor readings are to be compared with laboratory test results.

In future articles, we will see how hydrogen behavior can be correlated with load to even better understand the criticality of a given transformer condition.

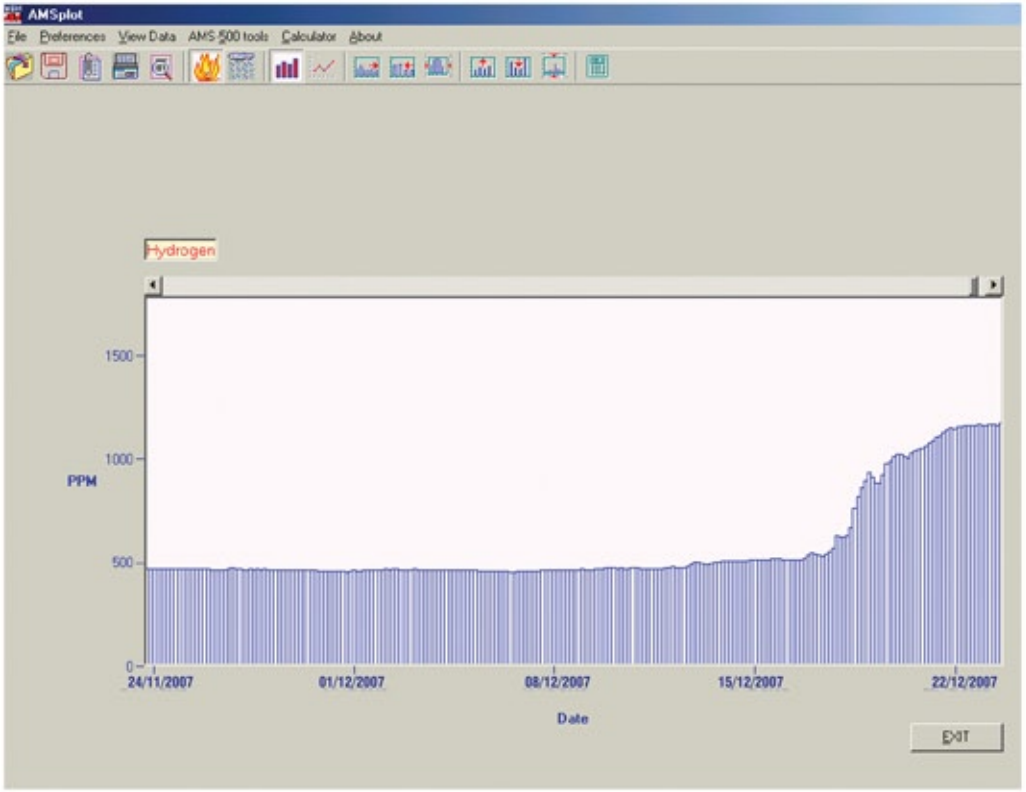

Figure 3 - Escalating condition

In-house training

Morgan Schaffer's authorized representatives receive continuous updates on the new features of all our products.

IEEE was an excellent opportunity for agents attending the show to learn first hand the new technology incorporated to our new on-line monitor, CALISTO 2.

Here, a group of agents takes a pause at a breakfast meeting at the Four Points by Sheraton in Chicago.

It was an enriching experience and we thank all attendees for their presence and on-going collaboration. As always, we look forward to seeing you soon!

Feedback is Welcome

If you are interested in certain products, need a quotation or have any other feedback, we'd love to hear from you! Email us at sales@morganschaffer.com