Transformer On-line DGA Monitoring System

Description:

DGA is an established technique and is recognized as the important test item for oil immersed power transformer. By DGA, transformer potential faults could be found out so that preventative measures could be taken in advance.

APT Online DGA system could monitor your transformer condition in real time. Together with its software diagnostic tools help you to avoid unplanned failures, lower maintenance costs and extend the transformer useful life.

Composed of:

Four high-integrated modules and auxiliary units:
- Chromatographic data collection and processing module
- Gas-oil separation module
- Gas detection module
- Air source module
- Auxiliary units including transformer interfaces, oil pipe, communication cables and power cables
Standards conformed to:

IEC60529:2001 Guide to the IP: The protection level of the system and communication unit reaches IP56. Comply with IEC60529 standard requirements.
IEC61000. The monitoring system conforms to IEC61000 standard, the performance of anti-interference is outstanding.
IEC61850. It supports 61850 communication protocol, so that it can realize concentrated remote diagnosis in a certain area.

Benefits:

**Non-cylinder design**
No Pressure vessel beside the transformer, so without any hidden danger at all.

**Oil and gas are separated at a faster rate**
It only takes around 10 minutes by vacuum degassing method, to reduce the influence of temperature, humidity changes on gas distribution coefficient.

**A new technique was used for the oil return**
Multilateralism isolation type back oiling (oil return) technology absolutely guarantees that gas will not be brought into the transformer body.

**Fault diagnosis ability is higher**
We provide the improved three ratio method, David triangle method and cube graphic method to give the diagnosis results.

Features:

- Seven gases are monitored online.
- High resolution and stable analysis results. The minimum limit of detection of C2H2 can reach 0.1-0.5 μL/L, it's equivalent to the portable resolution.
- It adopted double circuit and multi-mode thermostatic control with ±0.1°C temperature control accuracy.
- Data collection, adopted the oversampling technology Δ-Σ analog-digital converter with 24-bit resolution and automatic calibration, is highly reliable.
- Functional interface circuit adopted opt-coupler to further improve the ability of anti-interference.
- Embedded processor control system. The reliability and stability will be improved sharply.

Powerful analytical tools:

The software package also allows users to analyze and diagnose the monitoring data using the improved three-ratio method, Duval triangle and cubic graphic methods, and the corresponding analysis results are given at the same time.

The software allows the user to graphically display the peaks of the various gases measured each time and the amount of gas needed to be noted. You can print the data easily.
Technical Specifications:

Power supply:
AC 220 V ±10%, 50 Hz

The detection range (µL/L)

<table>
<thead>
<tr>
<th>Component</th>
<th>H₂</th>
<th>CO</th>
<th>CO₂</th>
<th>C₂H₆</th>
<th>C₃H₈</th>
<th>C₄H₁₀</th>
<th>C₅H₁₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1-10000</td>
<td>0-50000</td>
<td>0-50000</td>
<td>0.1-20000</td>
<td>0.1-20000</td>
<td>0.1-20000</td>
<td>0.1-8000</td>
</tr>
</tbody>
</table>

Optional H₂O:
1-800 µL/L

Total hydrocarbon:
1-8000 µL/L

Total air content:
0.2-15%

Measuring error:
±10%

Lowest detection value:
0.1-0.5 µL/L (hydrocarbon)

Working temperature:
-40 °C ~ +70 °C

Working humidity:
5~95%,RH (no condensing)

Monitoring content:
Monitor H₂, CO, CO₂, C₅H₁₀, C₇H₁₆, C₆H₁₂ in the aspects of Total hydrocarbon, relative growth rate and absolute growth value.

Test method:
The original chromatography.

Degassing method:
Vacuum degassing method

Equipped carrier gas:
Gas generator

Minimum detection period:
Range between 40 and 60 minutes, up to user’s settings. default 24 hours.

Sampling method:
Circulatory sampling

Data storage life:
≥ 10 years

Size & Weight:
535mm × 600mm × 1100mm, 125kg