

# Delphi Application Note: Power Transformer Case Study

## Role of On-Line DGA Monitoring

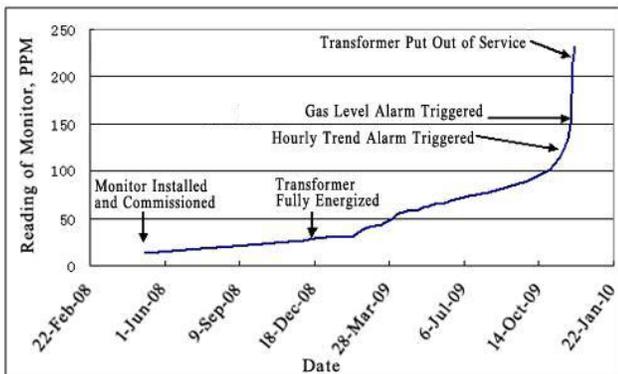
On-line DGA monitors provide confidence in the condition of power apparatus between regular laboratory DGA samples. The application of such sensors has been common for over twenty years.

## Case Study: A Save by Delphi

In 2008, a Beta of the Delphi was installed and commissioned on a 110-35 kV, 31.5 MVA power transformer; the transformer was put in service in December of 2008. For almost a year, the monitor recorded expected composite gas level readings.

### Trouble

In October of 2009, regularly scheduled DGA samples were taken from the transformer, and showed normal readings. In November of 2009, the Delphi on-line monitor showed a significant increase in gas level. This rise triggered both the trending alarm and the gas level alarm in a short period of time. The graph below shows the sudden rise in gas levels.



When the alarms were received, site personnel performed an external inspection of the transformer, and took another DGA sample.

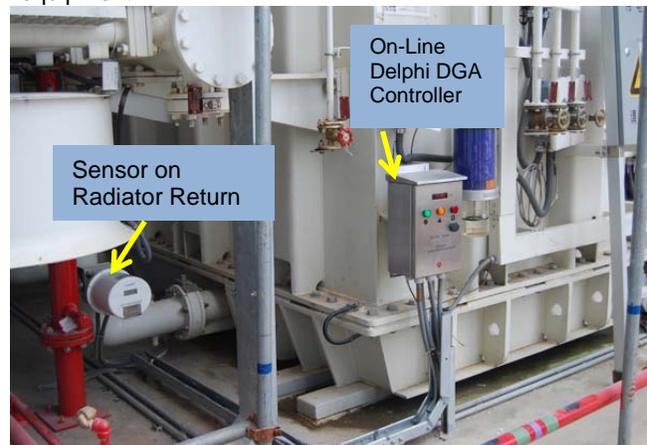
The DGA report showed elevated levels of hydrogen and other hydrocarbons, including acetylene, and confirmed what the Delphi had shown. Based on these results, it was suspected that an internal fault was developing.

### Decision Time

Based on the elevated gas levels, the transformer was removed from service. An internal inspection was done, and the inspection confirmed the diagnosis of a developing internal fault, saving the transformer from a possibly catastrophic fault.

### Conclusion

Had the Delphi not been installed on this unit, the routine DGA tests would not have been enough to catch the developing fault in time. Having the Delphi On-Line monitor installed on this transformer saved the transformer from a possibly catastrophic failure, which could have resulted in collateral damage to other equipment.



## Doble Expertise

More than any other company in the world, Doble experts have been dealing with issues in transformers and insulating fluids for over 80 years. Doble is always willing to help our customers with the equipment that we provide and interpretation of data from the Delphi sensors.

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