CONDITION MONITORING OF POWER TRANSFORMER - BIBLIOGRAPHY SURVEY 2

Jashandeep Singh
Bahra Group of Institutions, Patiala Campus, Punjab, India

Key Words: Dielectric response, Dissolved gas analysis (DGA), Condition monitoring, Oil Insulation, Paper Insulation, Bubble effect, Drying process, Mechanical strength, Copper sulphur, Partial discharge (PD), Moisture.

Key Phrase: There is a universal requirement for up-to-date bibliographic information on insulation system of power transformer in the academic, research and engineering communities.

I. INTRODUCTION

Power transformers are one of the most expensive elements in a power system and their failure due to any reason is a very bad event also to maintain & rectify the problems related to insulation failure become more expensive. Power transformers are mainly involved in the energy transmission and distribution. Unplanned power transformer outages have a considerable economics impact on the operation of electric power network. To have reliable operation of transformers, preventive maintenance of power transformer is gaining due importance in the modern era and it must be taken into account to obtain the highest reliability of power apparatus such as power transformers. The well-known preventive maintenance techniques such as DGA, conditioning monitoring, partial discharge measurement, effect of moisture, Paper insulation, Oil insulation, mechanical strength, thermal conductivity, copper sulphur, bubble effect, drying process, thermal degradation, fault diagnosis, etc. are performed on transformer for a specific type of problem.

There is a universal requirement for up-to-date bibliographic information on insulation system of power transformer in the academic, research and engineering communities. The same topic was earlier updated in 2008 and it is observed that many new areas have been identified by the researchers such as bubble effect, copper sulphur, mechanical strength, etc. This article lists relevant references grouped according to the topics described above. The research scholars can find all the research which have been carried out till date in this paper.

II. DISSOLVED GAS ANALYSIS (2014-2008)


and ‖ al network (ANN) application in chromatographic methods to monitor faults in power transformers.”


III. MOISTURE (2014-2007)


IV. DIELECTRIC RESPONSE (2014-2008)


V. FAULT DIAGNOSIS (2014-2008)


VI. CONDITION MONITORING (2014-2008)


VII. OIL & PAPER INSULATION (2014-2007)


VIII. AGING STUDY AND LIFETIME ESTIMATION (2014-2007)


IX. MECHANICAL STRENGTH (2014-2007)


XI. ALTERNATIVE INSULATIONS (2014-2000)


XII. PARTIAL DISCHARGE (PD) (2014-2007)


XIII. THERMAL DEGRADATION (2014-2007)


Effects of metal deactivator concentration upon the gassing characteristics of transformer oils in the field, in Insulating and collateral effects, corrosion of Copper sulphide deposit in paper insulations of transformer solid insulation dry process, and its influence on partial discharge.  

XV. BUBBLE EFFECT (2014-2000)


XVI. DRYING PROCESS (2014-2008)


XVII. OTHER IMPORTANT TOPICS ON POWER TRANSFORMER (2013-2005)


Table 1. Year wise Comparison of Research papers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Year</td>
<td>No of paper</td>
</tr>
<tr>
<td>4</td>
<td>Fault Diagnosis</td>
<td>Not Collected</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Mechanical strength</td>
<td>(1975-2006)</td>
<td>43</td>
</tr>
<tr>
<td>8</td>
<td>Thermal Conductivity</td>
<td>Not Collected</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Ageing Study and life time estimation</td>
<td>Not Collected</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Alternative insulation</td>
<td>Not Collected</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Copper Sulphur</td>
<td>Not Collected</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Bubble Effect</td>
<td>New Field</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Drying process</td>
<td>Not Collected</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Other important Topics</td>
<td>Not Collected</td>
<td></td>
</tr>
</tbody>
</table>

XVIII. CONCLUSION

This paper gives an overview of concept of power transformer with a bibliographical survey of literature. This paper will be helpful in the academics, research and engineering community in worldwide which is working on transformer. There is a worldwide need for up-to-date bibliographic information on power transformer insulation in the academic, research and engineering communities. The same topic was earlier updated in 2008 and it is observed that many new areas have been identified by the researchers such as bubble effect, copper sulphur, mechanical strength, etc. This article lists relevant references grouped according to the topics described above.

BIographies

Dr. Jashandeep Singh was born in Ludhiana (Punjab), India. He obtained his Diploma in Electrical Engineering in 1999, B. Tech in Electrical Engineering, M. Tech & Ph.D from NIT Hamirpur in 2002, 2004, 2011 respectively. He is presently working as Principal, Rayat Bahra Group of Institutions, Patiala Campus. His research interests are energy management, transformer diagnosis and electrical machines. He may be contacted at jashanjb@gmail.com.