Criteria for oil selection suitable for use as insulating liquid in UHV oil filled equipment

The use of ultra high voltage electrical equipment in modern day transmission systems is increasingly being used in many countries, the main drivers being safety, reliability and ease of transport of electricity with minimum loss. These equipments are expensive and need to be reliable and viable all time. Insulating liquid is used for insulation and cooling in this equipment and this liquid plays an important role in the safe operation of these units. Insulating liquid used in UHV transmission is constantly subjected to high electrical stress, which could lead to oil and paper deterioration. As a result, oil looses its electrical properties with an increase in DDF. Clearly such oil is not fit for purpose as high DDF of the oil leads to electrical losses in the equipment, consequently, insulation deterioration and equipment failure. Therefore oil selection for UHV is an important factor and oil with high resistance to deterioration, good electrical properties and high cooling efficiency should be used.

It is also important that such oil is able to sustain these properties during service life of these units. There are oils available in the market being beyond the severe requirements of IEC 60 496, High Grade Oil. Such oils are used for UHV and are usually referred to Super Grade Oil. To produce such oil, selection of correct crude oil, refining technique and knowledge of proper use of distillates for production of Super Grade Oil is vital. Viscosity index of the oil plays an important role for heat dissipation and oil with high solvent power are preferred option. Pour Point is also complemented to the above factors and can influence performance of the oil over the life of the equipment.

Transformer, mineral Insulating oil, Specification, High grade oil, UHV equipment
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