

High Voltage Insulation Laboratory (HVIL)

Co-Ordinator: Dr. B Ramchandra

Electric power systems comprises a large number of power equipment's like generators, HV motors, transformers, cables which are quite expensive and form the significant portion of plant assets. More importantly they are vital components for reliable delivery of electric power. However, the reliability of this equipment depends to a large extent on the healthy condition of their insulation. Failure of the insulation directly or indirectly will result in failure of power equipment which in turn results in forced outages, reduced reliability and increased maintenance and repair cost.

Research and Development Works identified in HVIL:

- High voltages are used for wide variety of applications covering the power systems industry and research laboratories. The principle media of insulation used are gases, vacuum solid, liquid or a combination of these. For achieving reliability, the knowledge of the causes of insulation deterioration is essential.
- Insulation engineering is one of the thrust areas identified worldwide in high voltage engineering. Lot of work is going on at various organizations and education institutes for futuristic materials which include fiber, composites, plastics, conducting plastics, glass, ceramics, gases, ceramics and super conductors.
- Liquid dielectrics are used mainly as impregnates in high voltage cables and capacitors and for filling up of transformers, circuit breakers etc. Liquid dielectric, also acts as heat transfer agents in transformers and as arch quenching media in circuit breakers.
- Partial discharge studies on mineral oil and synthetic ester liquid with solid dielectrics.
- Partial discharge studies on vegetable oils with solid dielectrics.
- Characterization of partial discharge pulses in voids in different solid dielectrics under different ambient conditions.
- Ageing analysis on PD experimental data in solid and liquid dielectrics.