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Tutorial - Understanding Transient Recovery Voltages

When a high voltage circuit breaker interrupts a fault or load current, the voltage across its terminals goes almost instantaneously from a low arc voltage to a much higher recovery voltage. This latter voltage is known as the transient recovery voltage or TRV for short. The characteristics of TRVs are dependent on the type of current being interrupted, the system grounding arrangement and the reaction of the associated circuit to the change of state. The reaction involves power frequency components with superimposed oscillations dependent on circuit damping and travelling wave effects. This tutorial gives an overview of the origins of TRVs for the various fault current cases and capacitive and inductive load current switching.

Tutorial Instructor

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Dr. David Peelo, a former switching specialist at BC Hydro, is an independent consultant. He is actively involved with IEEE, CIGRE and IEC in fields related to circuit breakers and surge arresters. He is a past convener of IEC Maintenance Team 32 Inductive Load Switching and Maintenance Team 42 Capacitive Current Switching Capability of Disconnectors and a member of IEC MT 57 Application Guide for IEC 62271-100 and Other Circuit Breaker Related Standards. He teaches advanced courses on circuit breaker and surge arrester application worldwide and has authored or coauthored over 60 papers. He is the author of a recently published textbook titled Current Interruption Transients Calculation.