



CONSULTING & SERVICES  
INSULATION COORDINATION AND  
TRANSIENT PHENOMENA ANALYSIS



**PROTASIS is an Independent Electrical Engineering and Consulting Company.**

With a dynamic, flexible and highly competent Engineering team **PROTASIS** is an ideal partner for Independent Power Producers (IPP), Utilities and Industrial Clients seeking high quality power systems consulting and systems integration services.

The company is divided in three departments, the **Power System Studies & Consulting Department (PSS&C-D)**, the **Power System Applications Department (PSA-D)**, and the **Metering & IT Applications Department (M&ITA-D)**.

Transient events in power systems can provoke excessive overvoltages and inrush currents which can stress the equipment and cause its premature aging or malfunction. The **Power System Studies & Consulting Department (PSS&C)** of **PROTASIS** uses state of

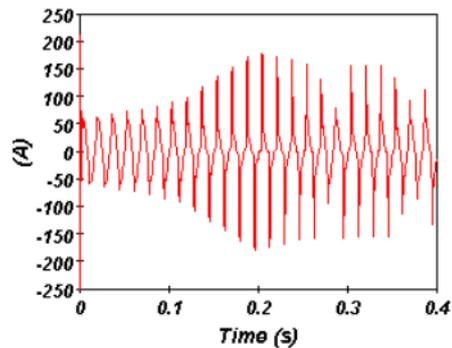
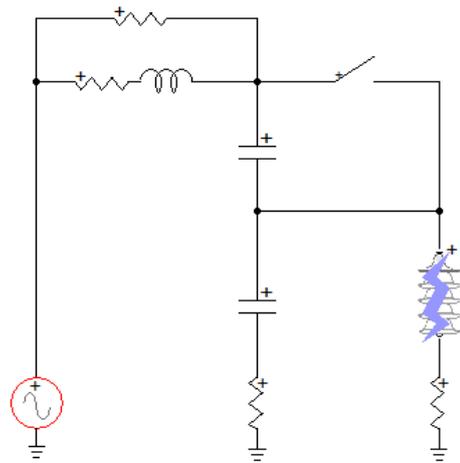
the art simulation software and has the knowledge and experience to conduct studies related to electromagnetic, electromechanical and control system transients in power systems. These services apply to Independent Power Providers, Transmission System and Distribution Network Operators and industrial clients.

Below is a detailed list of expert services and studies provided by **PROTASIS**, regarding transient phenomena in power systems:

- Insulation coordination studies according to the international standard IEC 60071. Insulation coordination is the procedure for the selection of the dielectric strength of the equipment, considering the available preventing and protective devices (surge arresters, insulators etc.), based on an economically acceptable risk of failure. Insulation coordination studies can be applied on overhead lines, underground and submarine cables, outdoor and indoor substations;
- Switching studies such as energization or reenergization of transmission lines and cables, fault appearance and elimination, capacitor, reactor and transformer switching;



- Lightning studies including direct lightning strokes, back-flashover and induced lightning;
- Ferroresonance, an oscillatory phenomenon which can appear by the combination of non-linearities (power transformers, reactors, VTs) and network capacitances. The software used provide a wide variety of models valid over the frequency range of interest capable to simulate and analyze ferroresonance conditions and examine the possible mitigation options;
- Cable sheath induced voltages and currents calculation. Several connection scenarios such as the earthing of the cable sheaths at one or both ends and the application of sheath cross-bondings can be examined, in order to select the optimal configuration for the specific application;
- Switchgear special issues such as TRV (Transient Recovery Voltage), current chopping, zero missing and arc interaction;
- Unbalanced network topologies;
- Detailed design of Power Electronics, FACTS, HVDC systems and Wind Parks.



**PROTASIS** has built an international reputation for technical expertise through constant innovation, with Clients in several regions worldwide including European, North African and Middle East Countries.

*Contact our company for more information and details on how we can better serve your key infrastructure Project needs and how we can solve important aspects challenging your operations.*



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