ENABLING ELECTRICAL POWER SYSTEMS INTEGRATION

The shift to distributed generation is changing long-established concepts about how electricity should be produced, transmitted, and used. Power flow through the grid is becoming more decentralized and bidirectional. Local measurement, fault detection, and remote control are now essential for stability and intelligent load management. A new approach is needed that encourages greater use of renewable sources and facilitates interconnection of distributed power generation using advanced monitoring, communication, and control. Woodward is recognized as a leader in the field of advanced power generation and distribution control products.

We continue to build on our legacy by creating cutting-edge control and protection devices, designed to work in complex systems to meet the needs of tomorrow’s smart grids. Our global strategy is melding all aspects of power generation and distribution to enable electrical power systems integration.
WHAT IMPACTS THE RELIABILITY OF POWER GENERATION?

Unexpected events may happen even in safe systems, but for system reliability, worst case considerations have to be carried out and their results need to be considered for defining and programming appropriate protection devices. Thus a safe operation is given even in the case of defects and malfunction. Starting with the single line diagram, Woodward Power Solutions calculates key values for worst case considerations, such as maximum and minimum short-circuit current. Based on these values, a cross-check can be performed whether the selected switchgear is designed properly. The lowest short-circuit current has to trigger the protection device even under all possible scenarios. That is why Woodward Power Solutions is using a simulation tool (DiGILENT PowerFactory), which performs all calculations in different switching scenarios on a micro-second time base. High precision simulation even calculates the contour of the transition currents and gives good advice for protection relay settings. Network Studies by Woodward Power Solutions constitutes an excellent opportunity to verify and approve the dimensioning of network elements – for new or for extensions of existing installations!

HIGH PRECISION SIMULATION. WHY?

Load steps in a certain branch may lead to transition currents in the entire system. These currents may exceed trigger levels for a very short time but if this leads to cutoffs of branches, the safe operation of the grid is impeded.

INVESTMENT PROTECTION. CLARITY, VERIFIABILITY, CERTIFICATE

Staring into the crystal ball is a thing of the past. Woodward Power Solutions issues an extensive document for your Network Study, containing all relevant information as calculation and verification, based on high precision network simulation and setting lists for your selected protection devices.

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OUR SERVICES INCLUDE:

As a recognized provider of System Solutions, Woodward Power Solutions offers a wide range of services, aligned with the needs of Power Generation and Distribution operators:

- Overview documentation
- Network topology
- Network element data
- Load Flow Study
- Short circuit calculation acc. to IEC 60909
- Calculation of max. 3-phase short circuit currents
- Calculation of min. 2-phase short circuit currents
- Calculation of 1-phase short circuit currents
- Protection Single Lines
- Protection Study
- List of Protection Settings
- Verification of Protection Coordination
- Calculation and verification of current transformers
- Load Step and Fault Event Simulation
- Validation of protection device tripping

NETWORK STUDY, A FEW HUNDRED PAGES OF EXPERTISE

Since 1968, Woodward Power Solutions has realized remarkable projects in the field of cement plants, airports, naval bases, power ships and, naturally, classic stations generating up to 1 GW of power. In so doing, a great many individual conditions had to be considered, e.g. ship specifications for power ships or special requirements for a power station in Chile with a maximum altitude of 5200 m asl.