

Power Transmission and Distribution

**Graphic Tool SIGRA 4 –**  
System-wide fault analysis and  
offline distance-to-fault location  
enhance system restoration

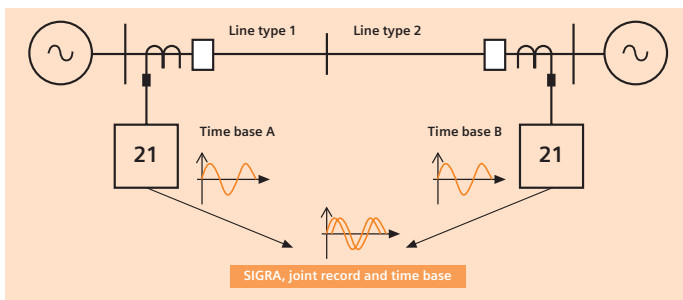
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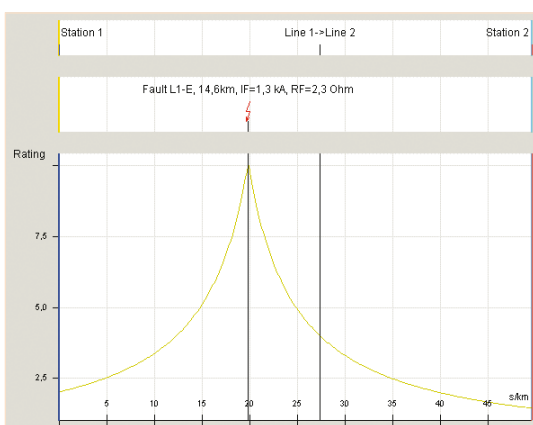
# Graphic Tool SIGRA 4 – System-wide fault analysis and offline distance-to-fault location enhance system restoration.

Following a power system fault, a fast and complete analysis of the disturbance is decisive for fast and appropriate countermeasures to restore the system, and keep the outage time to a minimum. The graphic software SIGRA 4 is the right answer; an intelligent tool for user-friendly and comprehensive analysis of fault records downloaded from relays or recorders. This software displays fault records in different forms. SIGRA also retrieves events from distributed databases, and reconstructs them in a new record on a joint synchronized time base. This is unique to the market, and enhances significantly the fault analysis, particularly for inhomogeneous relay and recorder data bases.

Conventional tools allow you to analyze only one fault record. With SIGRA 4, you can add further fault records. Not just by opening a new window, but adding to existing fault record (e.g. from the remote line end). SIGRA 4 collect data from different fault records and presents them in the same diagram on a common time base.



Viewing fault records of parallel lines at the same time requires only a few mouse clicks. A cursor adjusts all records to a common time base (characteristic position). The "Synchronize Fault Record" function shifts both fault records in such a way that the cursors fall on one instant. Then, comprehensive system-wide fault analysis involving more than just one relay has become feasible.



## Implemented fault locator!

In addition to a comprehensive power system fault analysis, precise fault localization is of particular interest. If the fault location is precisely known, the service personal save valuable time needed for system restoration. Thus SIGRA 4 also supports the system restoration process.

### Application 1:

#### Fault location using data from one line end

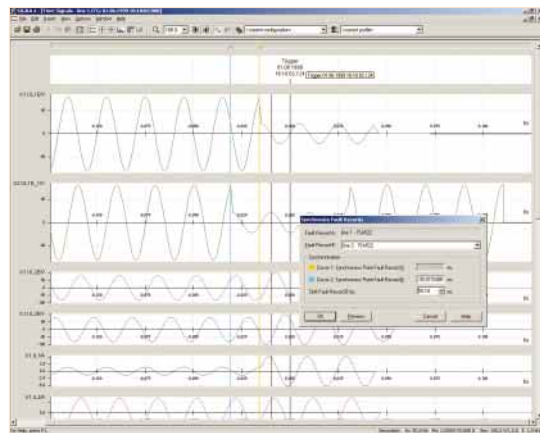
The fault record (measured current and voltage values) is imported from the digital protection relay in SIGRA 4 or any other make that supports. You simply start the fault calculation process and get the distance in % or kilometres displayed.

### Application 2:

#### Fault localization with data from both line ends

The algorithm used by the fault locator does not utilize zero phase-sequence components; this mutual impedance from the parallel line does not affect the accuracy. Even resistive faults on lines with double-ended infeed are measured precisely.

Since data from both line ends is available, both influence errors mentioned are eliminated. Before fault calculation, the imported data are synchronized on a common time base. The fault location readings are not affected by zero sequence components and the system infeed conditions, thus ensures precise readings and fast line inspection at the fault location.



If you have any questions about Power Transmission and Distribution, our Customer Support Center is available around the clock.

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The information in this document contains general descriptions of the technical options available, which do not always have to be pre-sent in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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