



# SHORT CIRCUIT STUDIES

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# SHORT CIRCUIT STUDIES IN INDUSTRIAL ELECTRICAL SYSTEMS

## OBJECTIVES

Define and/or verify the capabilities of electrical distribution switchboards and other devices to withstand short circuit faults without suffering loss of continuity in service due to catastrophic damage and/or repairs.

The results of this study are used as input data for the protection coordination and arc flash studies.

## INTERRUPTING ELEMENTS

In the distribution switchboards there are an infinity of interrupting elements, among others we can mention: medium voltage circuit breakers (Vacuum, SF6), medium and low voltage power fuses, low voltage circuit breakers (power circuit breaker, isolated, molded case) and motor protection.

**The ability of the interrupting elements to interrupt short circuit faults is called the interrupting capacity and it is defined in KA or MVA.**

## RESULTS

### SELECTION OF INTERRUPTIVE CAPABILITIES IN NEW SWITCHBOARDS

This study defines the minimum interrupting capacity of a "new" switchboard and its elements to do the selection among the commercial interrupting capacities available.

Example: for 480V distribution switchboards with ANSI standard, manufacturers offer: 18 KA, 20 KA, 25 KA, 35 KA, 42 KA, 50 KA, 65 KA, 85 KA, etc.

### EVALUATION OF INTERRUPTIVE CAPACITIES IN EXISTING SWITCHBOARDS

This study verifies that each and every one of the distribution switchboards and their elements that are in operation in an electrical system, safely withstand and interrupt short-circuit faults and also identifies those that have their integrity compromised in fault conditions.

## OTHER RESULTS

- This study gives input results for other electrical engineering studies among which we can mention:
- Protective relay coordination studies.
  - Arc Flash studies.

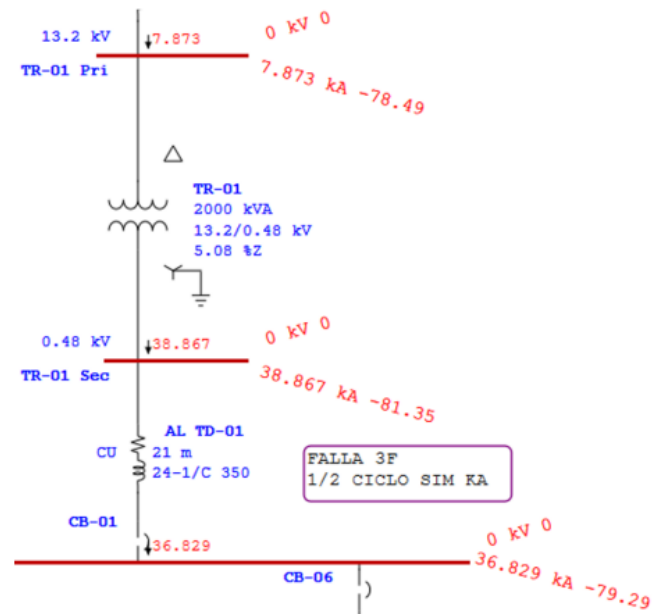


Fig.1 Graphical results for a short circuit study.

## ANALYSIS SOFTWARE

- ETAP.
- Reference Standards IEEE, ANSI, IEC.

## ETAP SOLUTION PROVIDER

**RADTHINK** is recognized as an **ETAP Solution Provider**. It is awarded by the ETAP brand to engineering firms that have staff with the skills, knowledge and resources to develop electrical engineering solutions using ETAP analysis software.





 81 3849 1587

 [ventas@radthink.com.mx](mailto:ventas@radthink.com.mx)

 Av. Topo Chico 570-Interior 4A, Anáhuac, 66450  
San Nicolás de los Garza, N.L., Mexico

 [radthink.com.mx](http://radthink.com.mx)