

Paris Session 2022



Contribution for the improvement of protection health verification

B5 Protection & Automation

PS 2 - Integration of intelligence on substations

Question 2.05: What are the experiences to improve the practical application and verification of the protection in a real substation project?

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Group Discussion Meeting

1

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What are the experiences to improve the practical application and verification of the protection in a real substation project?

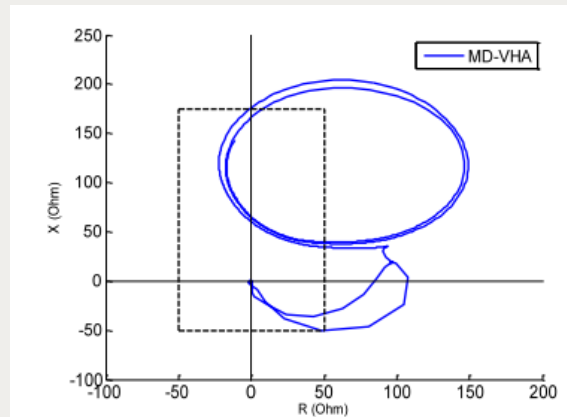
A: Regarding protection verification in a real substation project, our experience showed that

Real time simulation and hardware-in-the-loop testing is fundamental because:

- i) It reveals logic functions such as blocking logic which are not the core of the protection action, thus often are neglected and affect protection performance;
- ii) It reveals unwanted protection actuations or even incorrect actuations for specific system conditions;
- iii) It allows fine tuning of protection pick-up and temporization values.

What are the experiences to improve the practical application and verification of the protection in a real substation project?

Ex: During an out-of-step logic hardware-in-the-loop testing and adjustment, it was verified that the number of inputs was affected by short-circuit quantities, undesirably. An illustrative case is presented below.



A: Regarding protection verification in a real substation project, our experience showed that communications' performance can only be evaluated based on field testing and measurements.