

Protection in the Presence of Renewables

Presence of renewables

Study Committee B5, PS 1

Q1.01: Are existing protection algorithms and devices with appropriate settings sufficient to protect the grid in most cases or are new algorithms or methods required?

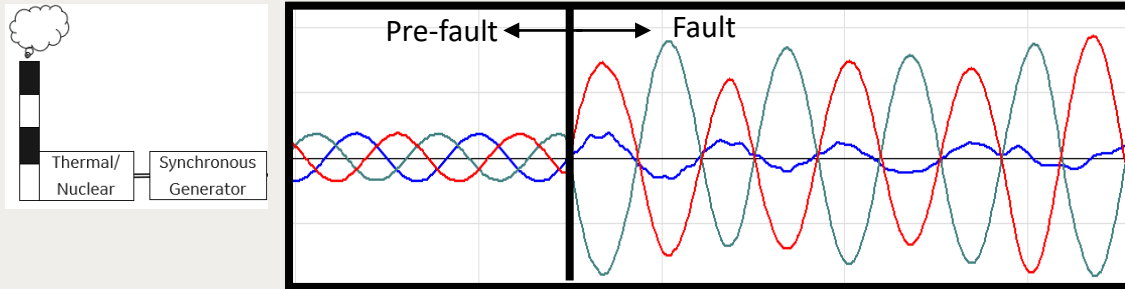
Venkatesh Chakrapani (UK)

John W Wright (UK)



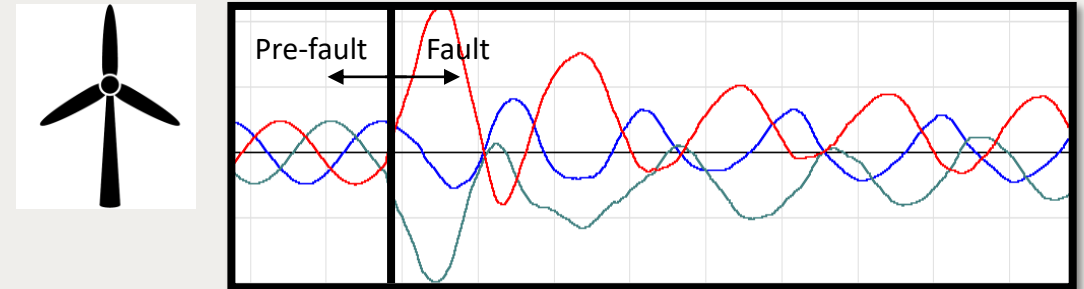
Fault Signature

Sync. Gen response for AB fault



- Design parameters – limited variations
- Deterministic fault signature
- Slow controller
- Aids protection

IBR based Controller response for AB fault



- Variations in grid code, standards, controller design parameters & operating modes
- Non deterministic fault signature
- Fast fault current injection - limited fault current
- Challenges with protection, such as distance protection phase selection

Group Discussion Meeting

Conclusion

- From Experience:
 - Some existing distance protection algorithms have challenges
 - Enhancements are required and solutions have been adopted
- Evaluate The Risk, Considering:
 - Existing protection / algorithms installed base
 - Generation mix
- More research & testing:
 - Understand limits of existing protection
 - Gain confidence in new approaches