

Background and objectives

Within the EU/EEA-area in Europe, work is in progress to standardize the requirements of generating units. The objective is to increase the operational security of the power system.

In the Nordic power system, the hydroelectric generation is widely spread throughout the transmission grid. Single short circuit events in such a system will have impact on a number of nearby units. These short circuit events imply heavy strain to the generating equipment.

The capability of hydroelectric generating units to stay in synchronism through short circuit events in the connected power network is investigated.

The impact of the electric relaying system on the dynamic properties of generating units which are interconnected in a comprehensive grid system is also investigated.

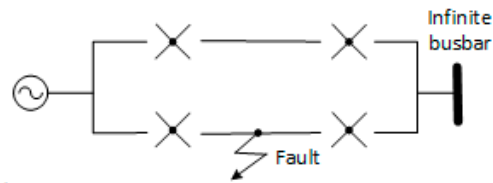
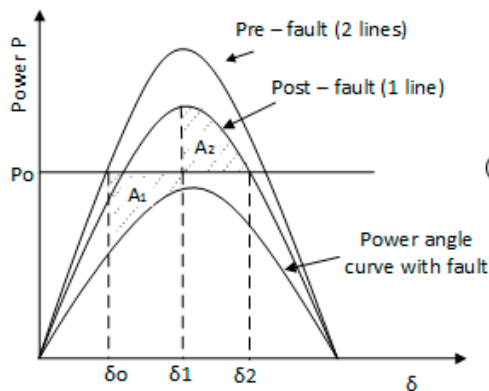


Figure: Fault on one line of two lines in parallel. Equal-area criterion. Resistance neglected. 1 is critical clearing angle for input power P_0 [Reference: B. M. Weedy, B. J. Cory, N. Jenkins, J. B. Ekanayeka, G. Strbac, *Electrical Power Systems*, Fifth edition, 2012, page 289]

Manjula Edirisinghe



Process, Energy and
Automation Engineering

2016 – 2020

Transient stability in
high voltage power
systems

Supervisor:
Gunne Heggli
Co-supervisor:
Svein Thore Hagen

HSN University College
of Southeast Norway