



Impact of the PLL dynamic on operation of thyristor-, VSC based-electrolyser and Static excitation systems in weak networks

With the increasing share of converter-based generation, the quality of the grid voltage is decreasing. With decreased available short circuit power, the high impedance network seen by the controls can cause negative effects on their stability. Even though this is very well known and researched aspect in current controlled converters, its impact on the excitation systems is not well researched.

The impact of the synchronization on the Power System Stabilizer (PSS) is also not well documented.

Due to the high inductance in the supply network, the PLL parameters become even more important for the stability of the control.

This scenario is mostly applicable for the cases where we have

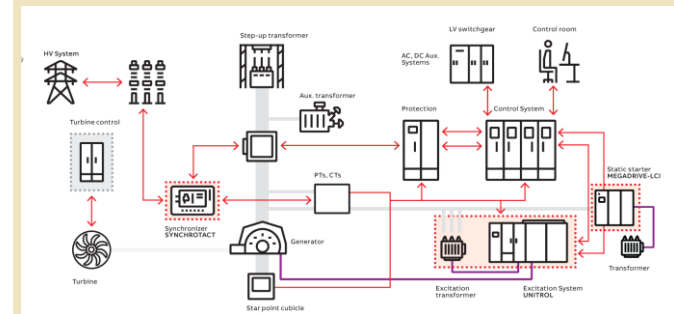
1. Auxiliary supplied excitation of synchronous generators
2. Line supply (before generator synchronization)
3. The ability of the PLL to continue sending the voltage zero crossing information in case of severe faults.
4. The impact of the PLL on the Power Oscillation Damping Controller (POD)

Such investigations will be done in HIL setup. The HIL setup is important here since the real control with actual measurements need to be simulated. The objective of the research is the PLL (single or three phase) impact on the controller stability in weak networks.

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