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Abstract

In high voltage long AC transmission line the power flow is much lower than its thermal limit due to the constraints related to stability and corona discharge. However, in case of simultaneous AC-DC transmission system the power flow can be very close to its thermal limit. Simultaneous AC-DC power transmission system generally increases the load carrying capability and stability of an existing long AC transmission line. In this system, conductors transmit usual AC along with DC. It is possible to convert existing AC transmission line into a simultaneous AC-DC power transmission line without the alteration of conductors, insulator strings. In this paper a detail analysis is presented on different approach of the conversion of AC system into simultaneous AC-DC system. Such as; the voltage profile if only pure DC is injected into the existing AC line, the nature of electric field if AC and DC both are injected in existing AC system and the necessity of using zigzag transformer. Lastly the approach of loadability and stability improvement are clearly discussed.