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Author(s) Name	M. T. Alam and N. Islam		
Contact Email(s)	tawhidul.alam@aiub.edu		
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Abstract

Simultaneous AC-DC power transmission system can improve both load ability and stability of a power system with long transmission line. But, there is a tradeoff between load ability and stability i.e. increase in the improvement of one parameter causes the decrease in the improvement of other parameter. This paper presents two mathematical models; one for the maximum load ability improvement keeping the stability margin same as original AC system and other one for the maximum stability improvement keeping the load ability margin same as pure AC system. Both the models are validated for the justification of their accuracy. The models can be analytical tool for the power system planner to take the decision whether an existing AC system will be converted into the simultaneous AC-DC system or not. The models also applied to a real system to verify their capability of evaluating the maximum load ability and stability of simultaneous AC-DC power transmission system.