

VOLTAGE STABILITY IMPROVEMENT OF WIND FARMS USING SHUNT FACTS DEVICES BASED ON DYNAMIC MODELING

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ABSTRACT

Expanding the capacity of utility scale wind power generation brings new opportunities and also problems to both utilities and customers. It is obvious that higher penetration of wind farms increases reactive power demand. So, if this need is not be readily satisfied, their impacts are likely to be more influential. The reactive power shortage due to the wind farm connection may lead to an increase in the overall network losses, and has adverse effects on voltage stability. In order to investigate the impact of a wind park on the voltage stability of the power system, accurate dynamic models are required. This study is carried out using a computer analysis performed on one of Iran's wind farms; the simulation results show the effects of using FACTS devices including SVC and STATCOM on power system dynamic performance and other important aspects, like voltage stability margins.