PQ-Curve of Wind Power Plants with ATP

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Abstract

The use of renewable energies is steadily growing. Wind energy in Germany is the majority installed form of renewable energies. In Germany large wind parks are attached to high and very high voltage networks. Despite the high installed wind power, wind parks feed only active power into the network. The necessary reactive power for voltage control is produced up to now from the network and conventional power stations.
Wind power plants are built in four types: with a synchronous generator, with a synchronous generator and full converter, with an induction generator and with doubly fed induction generator. ATP is used as a calculation program to exam, which of the four types can produce reactive power to support the voltage control.