

Capacity of main transformer in wind solar and storage field





Overview

An increase in electricity demand and renewable penetration requires electrical utilities to improve and optimize the grid infrastructure. Fundamental components in this grid infrastructure are transformers, which.

What is dynamic sizing of transformers & wind farms?

Effective sizing of the transformers and wind farms. Using dynamic rating for efficient and economical sizing of wind sites. Dynamic rating allows to fit up to 30% extra wind power generation using existing substation transformer.

Is it necessary to over design transformers for wind power applications?

When the transformer's lifetime is doubled from 20 years to 40 years, the NPV only increases by 7% and the capacity by 6.5%, which also indicates that it is unnecessary to over design transformers for wind power applications. Fig. 14, Fig. 15 shows that the NPV and capacity relation to the transformer lifetime is close to being linear.

How many types of power transformers are there?

The model is executed for 4 different types of power transformers: 63 MVA, 100 MVA, 200 MVA and 400 MVA. As a result, it is obtained that the net present value for the investment and the capacity of the wind farm increase linearly with respect to the size of the transformer.

How can wind farm connected transformers be more efficient?

In two different strategies for more efficient utilization of wind farm connected transformers are proposed: increasing the load (expansion of the site) or choosing a smaller transformer. In a strategy of expanding wind power sites using the same transformer unit is studied.



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