

Wind Farms and Southern States Products—The Natural Connection

Wind energy is rapidly growing in popularity, spurred on by a general worldwide concern about the effects of the airborne emissions produced by some of the types of conventional power generation (such as coal, natural gas, and oil) on global climate change. Wind farms are popping up in many states in the US, in many provinces of Canada, and in a variety of other locations around the world. In fact, wind power is the fastest growing power generation source in the world today. Like any generation source there are various items of electrical substation equipment required to connect the generated power to the utility grid. The nature of wind power makes it ideally suited to the use of a variety of Southern States products as noted below.

Wind farms typically generate power at 34.5 kV, regardless of the available grid interconnect voltage. Since wind is an intermittent energy source, wind farms can cause power quality problems for the grid. These power quality problems are commonly addressed through the use of capacitor banks at the wind farm. It is very common for wind farms to have 6 capacitor banks, 8 capacitor banks, or more. Each of these capacitor banks requires a capacitor switch to do transient mitigated switching, thus presenting a perfect application for Southern States *CapSwitcher*[®].

In most cases even though the wind power is generated at 34.5 kV, the system voltage of the grid interconnect is normally a higher kV; thus a power transformer is required to step up the generated voltage to the grid interconnect voltage. This power transformer will need a protective device, and the typical choices of a power transformer protective device are either a circuit switcher or a set of power fuses (with the choice of which of these to select typically being a function of the size of the power transformer. In many applications if the power transformer is less than 15 MVA then power fuses are used as primary side protection. If the power transformer is 15 MVA or more then a circuit switcher is used as primary side protection.). Since Southern States makes a full line of power fuses (types **BP**, **BPA**, and **HPA**) and a full line of circuit switchers [horizontal interrupter non-blade model (type **CSH**), horizontal interrupter with integral vertical break blade model (type **CSH-B**), vertical interrupter “candlestick” non-blade model (type **CSV**), vertical interrupter “candlestick” with integral double end break “Vee” blade model (type **CSV-DB**), and vertical interrupter “candlestick” with integral center break “Vee” blade model (type **CSV-CB**)], we are ideally positioned to handle this power transformer protection need at the wind farm.

Next, since wind power is an intermittent power source, it is desirable to be able to quickly and simply disconnect this source from the grid when the wind is not blowing. This is ideally done via single point switching without the need for complex switching schemes. Fortunately, Southern States has the perfect solution for this need as well, the **LLS-II** Load and Line Switcher supplied on a vertical break disconnect switch. The **LLS-II** can do single point switching of loads, lines, and loops all equally well; providing great convenience and versatility.

Other Southern States products can also be applied at the wind farm. No-load disconnect switches can be furnished to provide visual isolation points on the capacitor banks, on the secondary side of the power transformer, and on the primary side of the power transformer. Ground switches can be furnished to ground the capacitor banks.

As shown in detail above, Southern States is the logical choice to contact for the electrical substation equipment needs of your wind farm project. With a broad range of product offerings for switching and protection we stand ready to assist in your wind farm project and are equally adept at furnishing products and solutions for any of your other substation, subtransmission system, transmission system, and EHV transmission system needs as well.

Choose Southern States Products And Make Your Wind Farm Project A Breeze.



Southern States, LLC 30 Georgia Avenue Hampton, GA 30228 phone: 770-946-4562
 fax: 770-946-8106 e-mail: sales@southernstatesLLC.com website: www.southernstatesLLC.com

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