Introduction to electrical grids.

A few important"terms" for "non electricians".

Voltage levels

Voltage levels, measured in kV (kilo volt or 1000 Volts)
The highest level for transmission is 400 kV – 1000 kV, some countries do not exceed 400 kV.
The next level is typically around 150 kV for transmission/interconnection and for connecting wind farms > 100 MW
The third level is around 50 kV for distribution up to around 50 km in less populated areas and for Wind Farm connection for wind farms > approx. 30 MW – 100 MW
The fourth level is normally around 10 kV for distribution and supply at large consumers and Wind Farms up to around 30 MW
The fifth level is typically 0,1 – 0,5 kV for supply

It is appropriate to connect at lowest possible level while the component costs increase much by voltage level. The limiting issue is partly the costs and losses, partly the voltage variations, that are limited by the operating characteristics for e.g the WTG generators.
The WTG generators at modern WTGs (MW-class) are typically around 700 Volt. There is a transformer at each WTG transforming from the 700 volt to between 6 kV and 33 kV, depending on the grid system to connect to. For large wind farms sub station are established, which collect all the e.g. 15 kV lines from each WTG transformer to a transformer that brings the voltage level further up to next level. It is possible to leave out a level, e.g with a 150 kV/15 kV instead of going trough the in-between level like 50 kV.

It is often the used local components that will be used due to the spare part situation. For large projects that can afford to have own spare parts this would not be needed.

Watt and VA

It is important to know the difference on Watt, typically written as MW (Mega Watt or 1.000.000 Watt) and VoltAmpere (VA), also written as MVA.
The relation is that MVA = MW / cos(phi). (phi) is the angle between voltage and current, that appears while inductive or capacitive power (reactive power) is "traveling" in the grid lines together with the "normal" power, the MW. This is a physically phenomena, that increases the current for transporting a specific power. Increased current means more losses and higher cable and transformer dimensions. The modern WTGs will typically have a very advanced control system, that minimizes the reactive power, but even if the WTGs do not "require" reactive power, the grid itself generates reactive power, so it can't be fully avoided.

This is why a transformer has to be specified in MVA and not in MW – typically the size in MVA is around the wind farm power in MW/0,9 – but this can deviate.