**Nacelle:** contains the gearbox, low- and high-speed shafts, generator, and brake.

**Hub**: Part of the turbine's drivetrain, turbine blades fit into the hub that is connected to the turbine's main shaft.

**Rotor:** The blades and hub together form the turbine's rotor.

**Bearing**: is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts.

**Main Shaft Bearing**: Part of the turbine's drivetrain, the main bearing supports the rotating low-speed shaft and reduces friction between moving parts so that the forces from the rotor don't damage the shaft.

**Generator:** Converts the mechanical power into electrical power. Some generators are driven by gearboxes and others are direct-drives.

**Gearbox:** convers the slow high torque rotation of the rotor into a faster rotation

**Controller:** turns off the turbine at higher wind speeds to avoid damage to different parts of the turbine.

**Gen\_RPM:** how many times the generator completes a cycle in a minute.

**Gen\_Bear\_Temp:** temperature of generator bearing. High bearing temperature can lead to generator failing.

**Gen\_Phase1\_Temp\_Avg**: Measures average temperature of first phase generator. Single-phase generator deliver one constant wave of power, but the power level varies with the electrical current coming in. That means that power levels can and do drop to zero during the cycle.

**Gen\_Phase3\_Temp\_Avg**: Measures average temperature of three phase generator. Three-phase generator produces three separate waves of power, delivered in sequence. This ensures a continuous uninterrupted flow of power that never drops to zero and makes three-phase generators more powerful than single-phase generators.

**Hyd\_Oil\_Temp\_Avg**: Average temperature of Hydraulic oil. Hydraulic oil is used as a lubricant for wind turbines.

**Gear\_Oil\_Temp\_Avg**: Average temperature of gearbox oil. Oil is used as a lubricant for gearbox.

**Gear\_Bear\_Temp\_Avg**: Average temperature of gearbox bearing.

**Rtr\_RPM:** how many times the rotor completes a cycle in a minute.

**Amb\_WindSpeed**: Speed of wind in surrounding area.

**Amb\_WindDir\_Relative\_Avg**: the relationship between the direction of wind flow and the wind turbine wing.

**Amb\_Temp\_Avg**: temperature of air in surrounding area.

**Prod\_LatestAvg\_TotActPwr**: total active power consumed by the wind turbine.

**Prod\_LatestAvg\_TotReactPwr**: total reactive power consumed by wind turbine.

**HVTrafo\_Phase1\_Temp\_Avg**: Average temperature of high voltage transformer. HV transformer is used to increase the voltage at the output of the generator to one that is suitable for distribution.

**Grd\_InverterPhase1\_Temp\_Avg**: average temperature of grid inverter. A grid-tie inverter converts direct current (DC) into an alternating current (AC) suitable for injecting into an electrical power grid.

**Cont\_Top\_Temp\_Avg, Cont\_Hub\_Temp\_Avg, Cont\_VCP\_Temp\_Avg, Cont\_VCP\_ChokcoilTemp\_Avg**: ??

**Gen\_SlipRing\_Temp\_Avg**: Average temperate of generators slip ring. A slip ring is an electromechanical device that allows the transmission of power and electrical signals from a stationary to a rotating structure.

**Blds\_PitchAngle**: the angle between the propeller blade chord line and the plane of rotation of the propeller.

**Grd\_Prod\_Pwr\_Avg**: average power produced by grid. The power grid is a network for delivering electricity to consumers.

**Grd\_Prod\_CosPhi\_Avg**: Average of grid power factor. Power factor is defined as the ratio between the active power (W) and the apparent power (VA). Power factor will vary between 0 and 1, and be either leading or lagging.

**Grd\_Prod\_Freq\_Avg**: average of frequency of the power grid.

**Grd\_Prod\_VoltPhse1\_Avg**: average of grid voltage. Grid voltage is the instantaneous potential difference between the grid and the cathode of a vacuum tube.

**Grd\_Prod\_CurPhse1\_Avg**: average of grid current. Grid current is the current flowing between the grid and cathode in an electron tube.

**Grd\_Busbar\_Temp\_Avg**: average temperature of grid busbar. The main purpose of a busbar is to carry electricity and distribute it.

**Grd\_Prod\_PsbleCap\_Avg**: average of possible grid capacity. Grid capacity is the maximum capability to supply and deliver a given level of energy demand at any point in time.