ContainerPower Energy Solutions

Wind turbine internal cooling system

Overview

How to cool a wind turbine?

Through the years challenges of cooling systems for wind turbine caused the new cooling systems. A simple way to cooling the turbine is using the small part of inlet air to the nacelle and filling the needed part and finally exhausting the air from nacelle . These days in MW wind turbines use oil or water for cooling.

How wind turbine cooling system works?

As previously described enough wasted heat produce in wind turbine especially in MW turbine. In this study, a conceptual design of a new wind turbine cooling system is proposed. In this system, the heat which is generated by wind turbine using a coolant comes to ORC cycle and gives the heat into the refrigerant.

Is natural air cooling sufficient for wind turbine cooling?

As the power capacity increases, merely natural air cooling was not sufficient for cooling requirement. The current wind turbines adopt forced air cooling and liquid cooling prevalently, among which, the wind generating set with power up to 750 kW usually takes forced air cooling as a main cooling method.

Can a 750 kW wind turbine be cooled?

As to large- and medium-scale wind generating set with power more than 750 kW, a liquid recirculation cooling method can be implemented to satisfy the cooling requirement . Regarding MW wind turbine with a larger power capacity, the gearbox, generator and control converter all produce comparatively large amount of heat .

Why do wind turbine nacelles need a cooling system?

To ensure the life expectancy of the components inside the nacelle, the heat

generated by the process of energy conversion and solar radiation needs to dissipate. ICARUS develops complete and customized cooling systems that efficiently manage the heat within wind turbine nacelles.

Which heat source is used as coolant for wind turbine cooling system?

As a first study and based on previous studies for ORC heat source which comes from wind turbine cooling system 80 °C temperature is selected as minimum. Table 1 shows the simulation condition and results. The Water is used as coolant in this simulation.

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