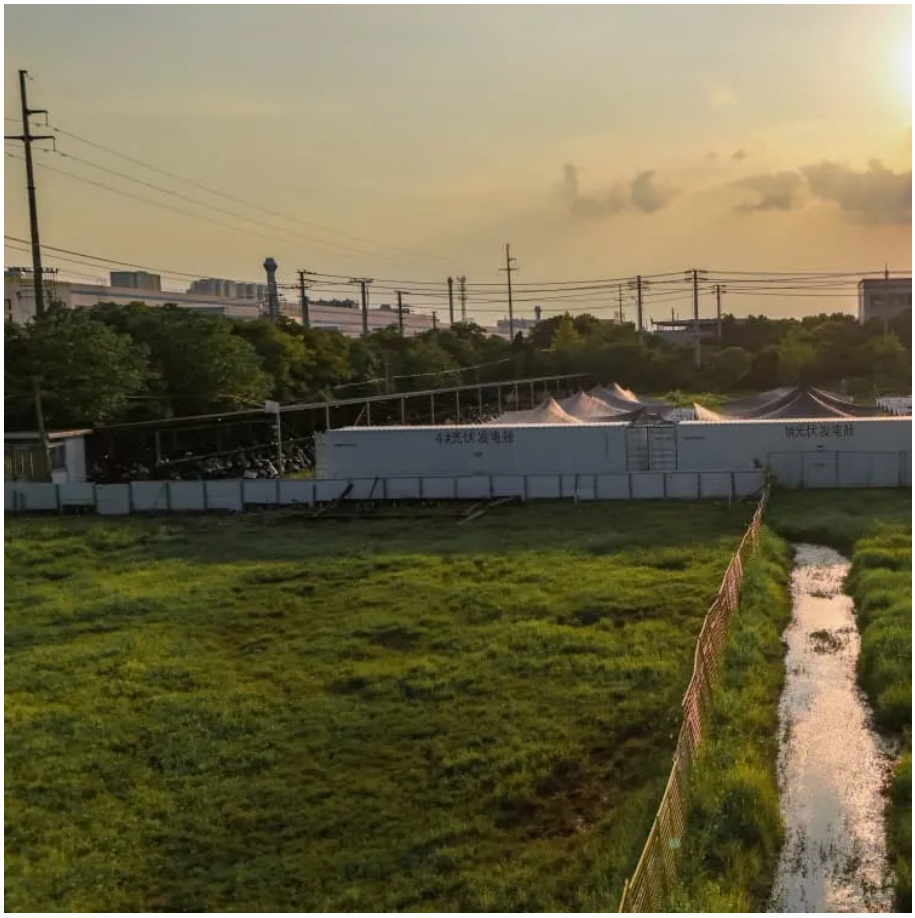
ŁOTWA SYSTEM

# Refrigeration system in wind power generation



## Overview

Can a wind generator circulate a refrigerant?

In the case of rotational machines with high-speed rotation, natural circulation of the refrigerant is possible by utilizing centrifugal force. However, in wind generators, the rotational speed of superconducting generators is around two orders of magnitude slower than that of turbine generators (about 10 rpm).

How is refrigerant circulated in a rotational system?

In the rotational system, the refrigerant is circulated by its own pump. Fig. 1 shows a schematic of the cooling system in a superconducting wind generator, with a heat exchanger between the stationary system and the rotational system, and a pump installed in the rotational system. Fig. 1.

Can YBCO wire be used to wind a refrigerator?

A group from Furukawa Electric Co., Sophia University, and Niigata University has developed a field winding by using YBCO wire. Since installing a refrigerator in the rotational system is difficult, the refrigerant must be supplied from a stationary system to the rotational system, to cool the superconducting rotating machines.

What is a rotational cooling system?

In the cooling system, the refrigerants in the stationary and rotational systems are completely separated; heat between the two systems exchanges using a rotational-stationary heat exchanger. The refrigerant in rotational system is circulated by highly reliable pumps.

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