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Development of Wind Brain Construction Method

Wakachiku Construction Co., Ltd. has developed the "Wind Brain (wind-blade-install) Construction Method" for efficient assembly of large-scale onshore wind power facilities and has begun manufacturing the actual construction equipment. Manufacturing and testing are expected to take approximately one year, with field implementation planned for fiscal year 2024 and beyond.

The Wind Brain Construction Method assembles 4MW-class wind turbines using a jack-up system, eliminating the need for conventional large mobile cranes. The assembly equipment consists of support columns, an elevating stage (climbing device), and a portal frame. Except for the initial lifting of parts by medium-sized cranes, the wind turbine is assembled through the self-lifting capability of the equipment. Safety is significantly improved compared to conventional methods as each component, including the nacelle and blades, is lifted with the elevating stage and assembled on the platform.

A case study of constructing five 4.2MW wind turbines in mountainous terrain has confirmed that this method reduces construction site area by approximately 45% and construction costs by about 8%, while maintaining or slightly shortening the overall construction period. A major advantage of this method is its reduced environmental impact. With the construction site area reduced by approximately half, the forest clearing area is similarly halved, significantly reducing CO2 emissions associated with site preparation work.

Drawing on insights gained from constructing 180 wind turbines and leveraging its core marine civil engineering technology since its founding, Wakachiku Construction will contribute to expanding both onshore and offshore wind power capacity toward achieving carbon neutrality by 2050.

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