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**Wind energy industry**

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**Renewable Devices**

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**Stainless steel deep groove ball bearings**

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## Increased efficiency for rooftop wind turbines

The world's first silent, building-mountable wind turbine, from Renewable Devices, was made possible using the latest SKF bearing technology. The SWIFT turbine is capable of providing a cost-effective renewable energy source for domestic, community and industrial use, and can either be grid-connected for embedded power generation or alternatively linked to an immersion water heating system.

Throughout the design process for the SWIFT turbine, safety was a major issue (the turbine was needed to be able to meet safety standard BS EN 61400/2) as well as reliability and silent operation. SKF bearings were chosen to ensure both nacelle and rotor would be able to turn with maximum efficiency and reliability.

The turbine's innovative carbon-fibre rotor is supported by two W6208-2Z stainless steel, single row, deep groove ball bearings, which were specifically selected to cope with the immense gyroscopic and thrust loads that are imposed by the aerodynamics of the turbine, especially in high winds.

To ensure minimal transmission of oscillations from the wind turbine to building, the SWIFT turbine mounting brackets incorporate damping systems designed to absorb a wide range of frequencies. The patented ring diffuser also minimises turbine noise by preventing the creation of turbulent vortices at the blade tip. In addition the five-bladed design

allows for a slower speed of rotation to reduce noise further, making the SWIFT Rooftop Wind Energy System the quietest wind system currently available.

The rotation speed and system integrity are controlled in such conditions by a unique regulation mechanism, which consists of a patented twin-vane progressive mechanical furling system coupled with a sophisticated electronic control system.

The optimum amount of power can then be taken from the turbine under all wind and loading conditions without stalling, representing an important development in the accurate and safe control of small wind turbines. The mechanical furling mechanism incorporates an SKF stainless steel, single row, deep-groove ball bearing within its yaw mechanism, to allow the turbine to track the wind direction as it changes. The bearing is responsible for carrying the main yaw loads, which in turn is backed up by an additional 6005-2Z bearing to increase the overall stability of the yaw assembly.

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