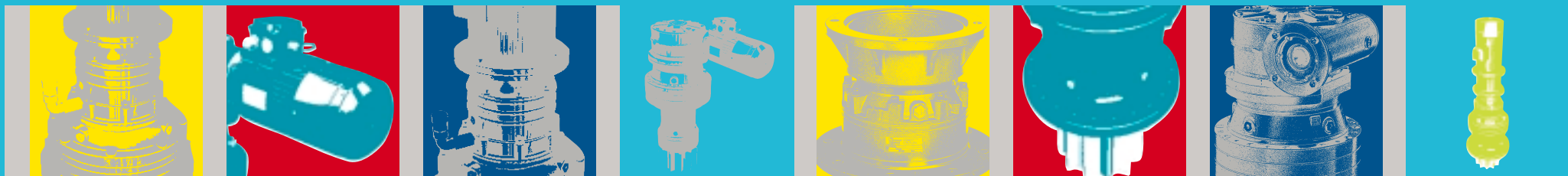
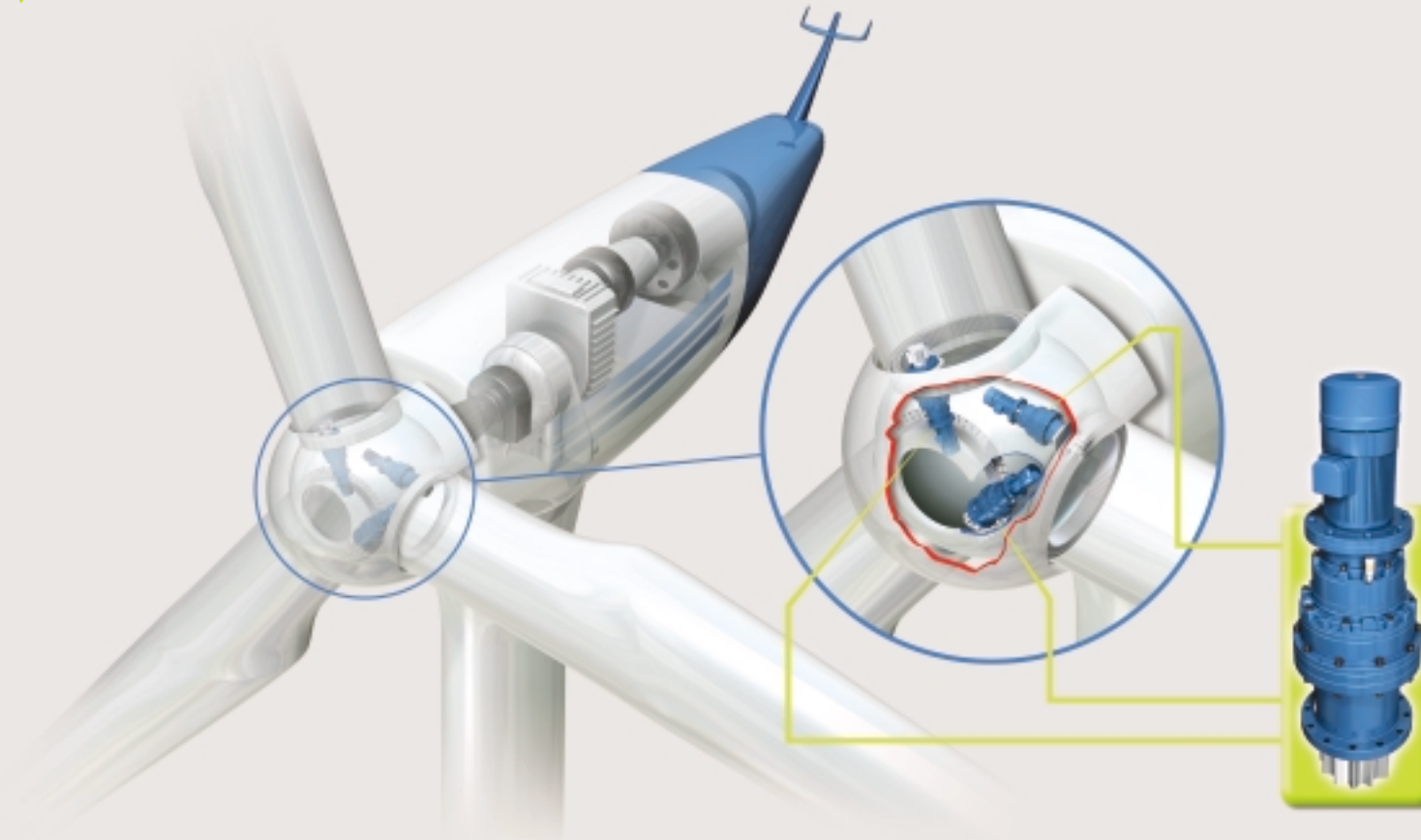




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Planetary Gears



**Compact, high efficiency
Brevini planetary gearboxes:
the first choice for
wind generators.**

The levels of efficiency and compactness demanded from gearboxes in wind turbines mean that only one type is really suitable for use in this type of application: the epicyclic planetary. As evidence of this, Brevini's planetary range is being used in horizontal axis wind turbines all across Europe.

The horizontal wind turbine comprises a rotor that captures the force of the wind, and an energy conversion system, which uses a gearbox in combination with a generator to transform the mechanical power into electricity.

In order to get the maximum energy out of the wind, and since the direction of the wind changes constantly, the rotor has to be forced into a position, which is perpendicular to it.

This position is calculated by a microcomputer, based on data regarding the direction of the wind and the present position of the turbine.

The results are then used to operate a motorised slewing planetary gearbox from Brevini's RPR range.

Each wind generator may have one or more of Brevini's slewing drive gearboxes, depending upon its size.

The gearbox is mounted in the vertical position at the top of the tower with its pinion facing downwards. The drive can be generated either by an electric or a hydraulic motor.

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In addition to ensuring the correct tower position, another major factor in the efficiency of the turbine is the correct orientation of the turbine blades. This is also ensured by the microcomputer in conjunction with a two or three stage planetary gearbox from Brevini's Standard series range.

In respect of gearbox/pinion configurations, several different options are available. These range from standard units with a splined output shaft and a separate pinion, to special RPR series gearboxes with an integral pinion.

Brevini's planetary gearboxes have become a standard for wind-turbines due to a number of factors.

Firstly, the planetary drive can be up to 98% efficient and, critically, is able to provide extremely low speeds without any loss of efficiency.

Secondly, planetary gear trains are able to deliver high reduction ratios in small packages, and to transmit several times the torque of similarly sized, conventional gear units.

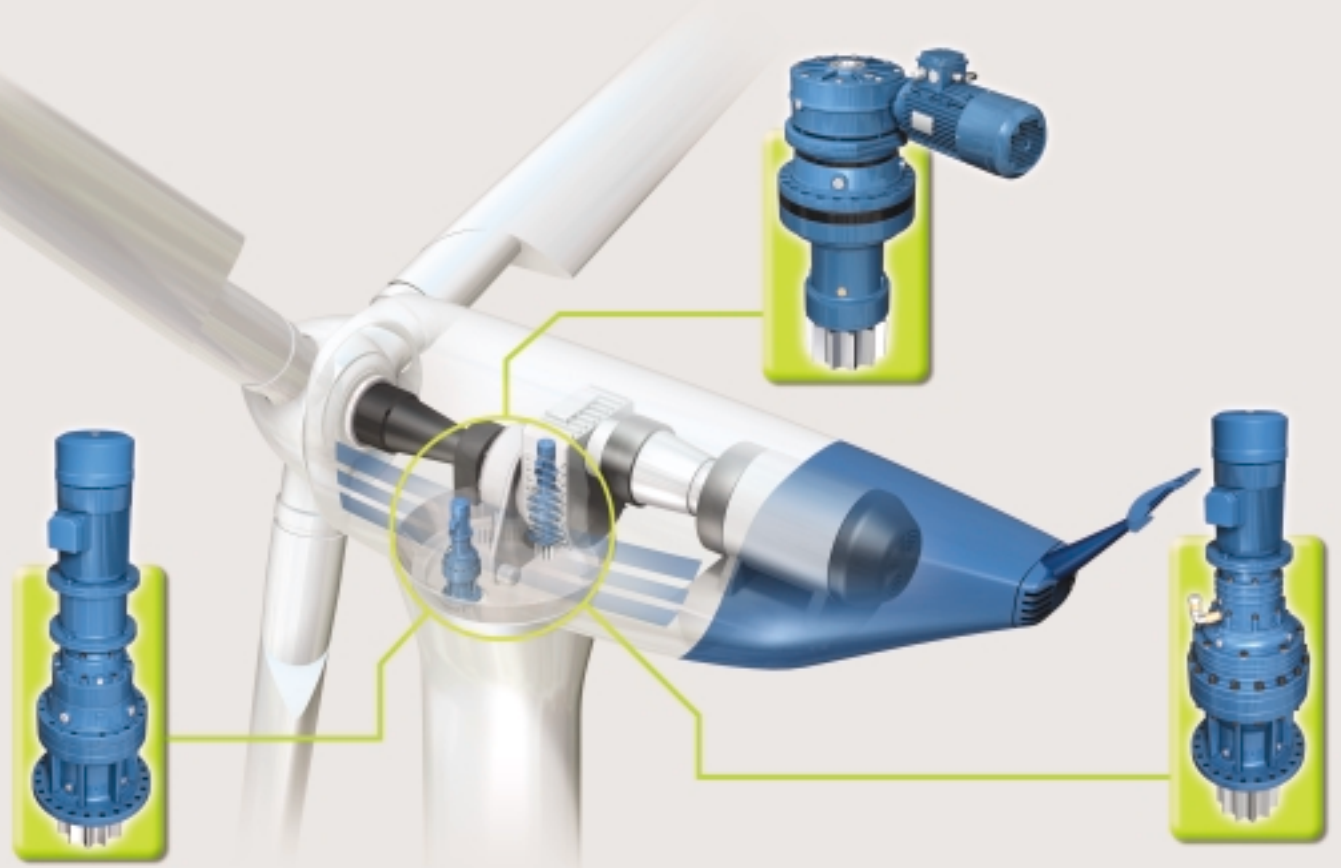
Thirdly, they are remarkably compact and lightweight, and require little installation space.

Finally, high levels of reliability are a feature of the planetary design, thanks to the distribution of stress among several load-bearing components.

Added to these features is the facility of modular design, based upon the planetary cell, to provide ultra-compact multiple reduction units.

The advantages of this arrangement to the designer are twofold.

The planetary stages can be combined to match the increasing torque being transmitted through a gearbox. They can also be assembled to provide reduction ratios right up the scale: to a value of 15,000:1 if required.



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