

# CONTINUOUS MONITORING OF WIND TURBINE NACELLE MECHANISM

## HIGHLIGHTS

- ✔ Wind turbines are an environmentally friendly and profitable way to harvest wind energy, but monitoring them isn't the easiest. Due to their extraordinary height and remote locations, their management demands automation.
- ✔ Creating a solution that enables remote and uninterrupted monitoring is the answer, but it calls for robust and reliable network connectivity that's difficult to promise in rural or offshore locations.
- ✔ Our RUT360 cellular router fits this solution like a glove, with data throughput speeds of up to 300 Mbps and 4G LTE Cat 6 network connectivity that ensures smooth monitoring and management processes of the nacelle mechanism.

## THE CHALLENGE – WHERE THE WIND BLOWS

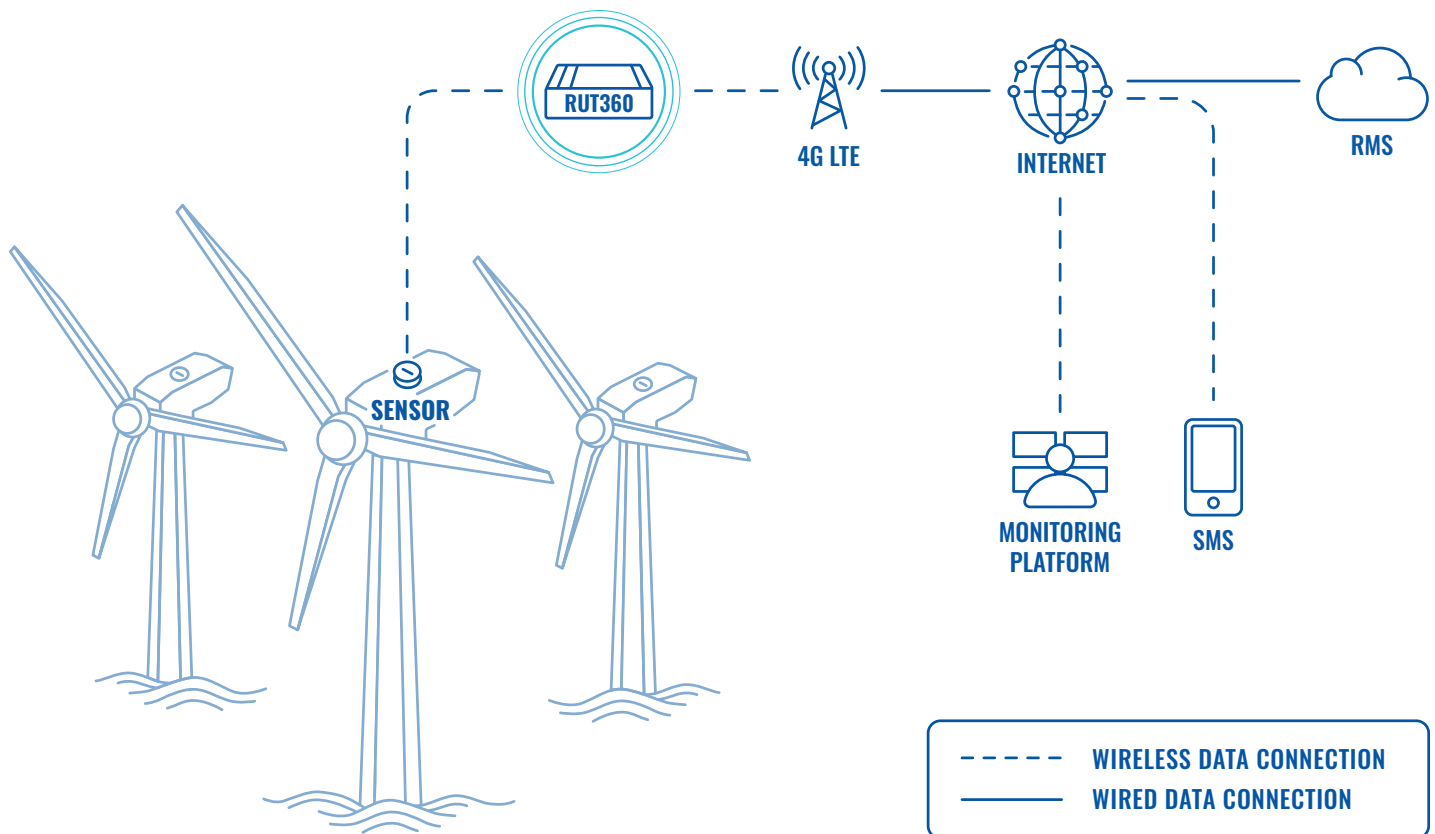
The saying “renewable energy sources are the fuel of the future” doesn't come from nowhere. Hydropower, solar, and wind are the most common renewable energy sources, and will soon replace non-sustainable ones. Why? To put it simply – it's way more environmentally friendly. To put it not-so-simply – renewable energy sources provide a reliable and inexhaustible energy supply with a significantly lower impact on global warming. And a great method for collecting that sustainable energy is, you guessed it: wind turbines!

Gigantic wind turbines are not only hypnotizing but also one of the most cost-effective ways to harvest wind power and thus generate electricity. Like every great device, wind turbines require continuous monitoring to ensure that wind energy isn't wasted due to broken or malfunctioning mechanisms. That's where the challenge begins.

The core mechanism of a wind turbine is placed inside a nacelle, so to access it, a specially trained professional needs to climb up around 80 meters (approx. 280 feet) every time to check the mechanism and its working status. In addition, to perform the tasks, the wind turbine needs to be shut down, so all of this maintenance can get very expensive very quickly.

Besides that, they are usually located far away from residential areas or offshore, which makes it even more troublesome for on-site monitoring. Embedding a sensor into the wind turbine mechanism can enable access to remote monitoring, but it wouldn't solve the challenge without a stable and robust network connection.

## TOPOLOGY



## THE SOLUTION – A ONE-WAY TICKET TO AUTOMATION

Our RUT360 cellular router connected to a sensor that tracks the nacelle mechanism’s vibration, magnetic field, and temperature has irreversibly changed how the mechanism is monitored and controlled remotely.

Thanks to RUT360, the sensor is equipped with robust network connectivity, allowing it to remotely transmit real-time data to internal systems. Since RUT360 can establish throughput speeds of up to 300Mbps and supports 4G and LTE network connectivity, there’s no need to worry about latency or interruptions. Thus, if the turbine mechanism displays abnormal behavior, like increased temperature or low oil levels, the sensor immediately sends alerts via SMS messages or a particular monitoring platform.

The router is compatible with our Remote Management System (RMS), through which you can easily manage the device and track network connectivity transmission. RUT360 is also easy to set up, so its installation process in the solution doesn’t require any particular know-how or a specialized technician.

With the cellular RUT360 router, this solution saves time and money, which would otherwise be wasted on manual nacelle monitoring. All tasks like preventive check-ups and inspections are now like a breeze with remote access and robust connectivity.

Doesn't that sound nice?

