Turning wind turbines into second chances

Second-life wind turbines are fast becoming a key enabler of global renewable energy growth and one company is leading the charge. Marco Scharobe, Managing Director of RE:Solut, explains how repurposing decommissioned German turbines is creating cost-effective, sustainable energy solutions for emerging and established markets alike.

PES: Thank you for joining us, Marco. Could you briefly explain your mission in the field of second-life wind energy assets?

Marco Scharobe: It's a pleasure to be here. Our mission is to extend the operational life of wind turbines by giving decommissioned units from Germany a second life in international markets. We identify high-quality assets with strong remaining potential. We manage the entire process, from site selection and technical assessments to transport and recommissioning.

Our goal is to ensure that each turbine delivers reliable and efficient performance in its new environment. Ultimately, we help investors and developers access cost-effective and sustainable energy solutions with significantly reduced lead times and environmental impact.

We see significant opportunity in what is often viewed as the end of a turbine's useful life. Many of the turbines currently being dismantled in Germany still hold considerable mechanical and economic value. What they often lack is a path forward that is structured, technically sound, and financially de-risked. That is the gap we aim to fill.

By creating a comprehensive and fully managed framework around these second-life assets, we can bring them to markets where demand for wind energy is growing and where capital constraints often make new installations difficult. In doing so, we reduce waste, preserve valuable infrastructure, and lower the barrier to entry for clean energy development in emerging regions.

For us, this work is about creating reliable and bankable wind energy opportunities by giving proven turbines a second chapter.

PES: How do you ensure investors find reliable, technically sound turbines?

MS: We maintain a continuously updated database of turbines slated for decommissioning in Germany. Each candidate undergoes a rigorous two-stage assessment: Analytical Review and Practical Inspection.

The Analytical Review is our first filter. We collect and analyze historical performance data for each turbine, looking at how it was operated, the loads it has experienced, and how it has performed over time. That includes SCADA data, maintenance logs and any available condition monitoring system outputs. We compare this information against defined thresholds that help us assess remaining service life.

This is not a guesswork process. We apply well-established reliability engineering principles to understand degradation patterns and failure likelihood. It allows us to project how much productive time a turbine has left and how suitable it might be for relocation.

Once a turbine meets those initial technical and statistical requirements, we proceed to Practical Inspection. This is where our onsite partners conduct detailed physical assessments of the turbine's key components: blades, drivetrain, tower, nacelle structure and control systems. These inspections are hands-on and include visual and instrumental evaluations, sometimes even non-destructive testing if necessary. The aim is to identify mechanical wear, corrosion, fatigue, or any component-specific risks that may not show up in the performance data.

Only turbines that perform well in both of these stages are approved for relocation. This dual approach means investors are not only getting machines with proven past performance, but also current physical integrity. It's what makes the offering bankable and credible for project stakeholders.

PES: Once a turbine passes these checks, what's the next step?

MS: We evaluate potential at the target site by modeling wind regimes and grid compatibility, then produce a site-specific performance forecast. This forecast drives the business case for investors, backed by a guaranteed yield estimate.

The site assessment phase is where we start integrating the turbine into its future environment. No two wind sites are the same, so we must understand the local wind profile, terrain features, air density and grid access parameters. We take meteorological data from the region, sometimes combined with onsite measurements or mesoscale modeling, and input that into our performance simulation tools. These tools let us forecast annual energy production with a high degree of accuracy, taking into account the turbine's specific power curve, elevation and technical adjustments made during refurbishment.

Marco Scharobe

Grid compatibility is another key factor. We look at how the turbine's electrical systems match with local voltage, frequency, reactive power requirements and fault ride-through standards. If necessary, we adapt or upgrade the control system to ensure full compliance. This is part of what makes our service turnkey, we do not leave compatibility issues to the developer to figure out later.

The outcome of this stage is a site-specific energy yield model, complete with conservative and expected scenarios. We offer investors a guaranteed minimum performance level based on that model. That guarantee isn't theoretical, it's backed by technical evidence and our confidence in the refurbishment and relocation process. It becomes a foundation for project financing, insurance and operational planning.

PES: Can you explain how the physical transfer works?

MS: We coordinate the entire logistics chain: dismantling in Germany with certified contractors, refurbishment at our partner facilities, replacing worn components and updating control systems and transportation and reassembly on the new site followed by commissioning tests to validate performance.

That process begins with detailed planning to align turbine availability in Germany with site readiness abroad. Once a turbine is scheduled for decommissioning, our teams coordinate the dismantling process with experienced contractors. This includes careful labeling and handling of each component to preserve integrity during transport. We aim to minimize exposure and potential for damage, especially with sensitive systems like the generator and blades.

Next, the turbine components are delivered to one of our refurbishment partners, where the turbine is stripped down, cleaned, inspected and rebuilt. This stage often includes component replacements, for example, bearings, pitch motors or outdated electronics, and software upgrades to improve performance and compliance. We may also integrate remote monitoring systems to provide real-time diagnostics once the turbine is operational again. Everything is documented thoroughly, so the final product has a clear refurbishment history and traceability for every major system.

From there, the turbine is shipped to its new location. We handle all aspects of the logistics, permits, customs, transport routes and site delivery. Once onsite, our team or local installation partners carry out the reassembly. Foundations are prepared or adapted, electrical systems are integrated, and the turbine is re-erected. Finally, we perform commissioning tests to confirm the turbine meets performance and safety expectations before it begins operation.

PES: What benefits does this offer project developers abroad?

MS: They gain cost-effective, proven turbines with transparent technical due diligence. This reduces project risk, accelerates deployment timelines and maximizes return on investment while contributing to circular economy principles and sustainable growth.

Cost is the most immediate advantage. Developers can access high-quality turbines at a fraction of the cost of new equipment, which makes a huge difference in early-stage project economics. But it's not just about lower prices. These turbines come with detailed technical assessments, documented refurbishment, and guaranteed yield forecasts. That means lower uncertainty for investors and faster access to financing.

Deployment speed is another big benefit. With supply chains for new turbines often stretched and lead times pushing into years, second-life turbines can be delivered and installed within months. That makes it easier for developers to capitalize on market windows, secure feed-in tariffs or meet regulatory deadlines.

There's also a reputational and environmental value. By reusing turbines, developers reduce the embodied carbon of their project and demonstrate a commitment to sustainable development practices. In regions where ESG metrics are increasingly important to investors and stakeholders, that makes a difference.

PES: Thank you, Marco. Any final thoughts?

MS: Second-life turbines represent a huge opportunity to decarbonize faster and more affordably. At RE:Solut, we're proud to make that transition seamless for investors and developers worldwide.

The energy transition needs practical, scalable solutions. Reusing proven technology, when done responsibly and with technical rigor, is one of the smartest ways to achieve faster deployment and better financial outcomes. We believe second-life turbines will become a standard part of the development toolkit, especially as demand continues to grow and supply chains tighten. Our job is to make that process transparent, predictable and profitable for everyone involved.

re-solut.com