

July 1, 2026

Cosmo Energy Holdings Co., Ltd.

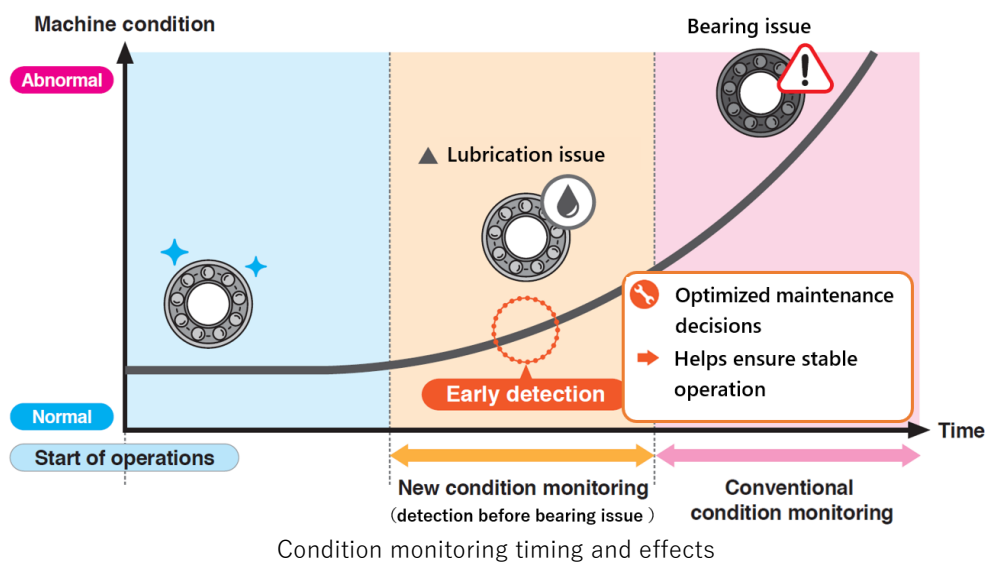
Cosmo Eco Power Co., Ltd.

NSK Ltd.

## NSK and Cosmo Eco Power Verify Bearing Lubrication Condition Monitoring Technologies in Real-World Wind Turbines

- Accelerating Initiatives for Extended Uptime and Advanced O&M -

Cosmo Eco Power Co., Ltd.<sup>\*1</sup>, a subsidiary of Cosmo Energy Holdings Co., Ltd.<sup>\*2</sup>, and NSK Ltd.<sup>\*3</sup> are advancing multiple verification experiments in a joint initiative aimed towards securing stable operation long-term and enhancing operations and maintenance (O&M) in wind turbines. As part of this initiative, the first field test<sup>\*4</sup> of proprietary technology from NSK for monitoring bearing lubrication conditions in wind power generation equipment was conducted, confirming its applicability for practical operations.



This technology enables earlier detection of changes in bearing conditions and is

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<sup>4</sup> Per research by NSK as of June 2026

expected to help enhance wind turbine reliability and improve maintenance efficiency. Moving forward, we will explore applicable implementations of this technology further.

Through this initiative, our companies will leverage insights gained to deliver new value to customers, helping to ensure a stable supply of renewable energy and to realize a carbon-neutral society.

## **Background**

Wind power generation is positioned as a major source of renewable energy in Japan, with additional expansion expected. However, the wind energy industry must further enhance its competitiveness in response to challenges such as growing equipment size, increasingly diverse and harsh installation environments, and shifting global conditions, including recent surges in material costs.

In this business environment, O&M is a crucial factor in realizing a project's viability after launch. Additionally, national technology strategies emphasize the streamlining and advancement of O&M alongside data-driven operational decisions as the means to support sustainable expansion in wind energy.

Rolling bearings are critical components in the main shafts and gearboxes of wind turbines. To improve efficiency and enhance O&M, operators must be able to implement continuous condition monitoring and diagnostics to accurately assess bearing conditions in equipment and use those insights to perform optimal maintenance. However, under current preventive O&M practices, operators often rely solely on past cases and on-site experience to make repair or replacement decisions when unexpected failures occur. For this reason, more sophisticated systems are needed to grasp the status of equipment and assess risks objectively and quantitatively, thereby improving decision-making accuracy in terms of operation continuity and maintenance policies.

## **Overview and Future Development**

In response to these challenges, Cosmo Eco Power and NSK are working together to validate a new approach to O&M that helps secure stable operation long-term with high uptime. As part of this initiative, we successfully conducted the first field test of proprietary technology developed by NSK to monitor bearing lubrication conditions<sup>\*5</sup> in a wind turbine operated by Cosmo Eco Power.

Combining Cosmo Eco Power's on-site knowhow in wind energy equipment O&M

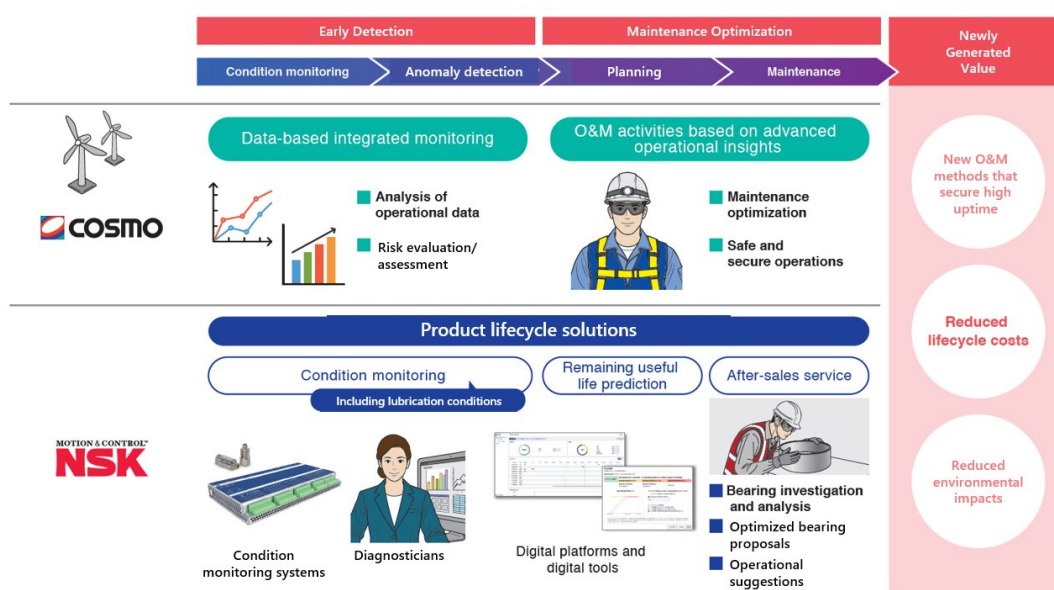
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<sup>5</sup> This development incorporates NSK-exclusive expertise in visualizing lubrication conditions. See the reference links below for details on relevant foundational technologies.

with NSK's condition monitoring and diagnostic technologies, we have actively shared our expertise in validating this technology's real-world applicability. Through testing, we confirmed that our implementation can detect changes in bearing lubrication conditions that are difficult to capture with conventional condition monitoring. Compared to methods that estimate changes in bearing conditions based on vibrations or similar, this development allows for maintenance planning much earlier.

Both our companies will continue evaluations with a focus on practical use, such as in optimizing replacement cycles for lubricants used in equipment and improving efficiency in equipment inspections and repairs. Looking ahead, we are also investigating the prediction of remaining useful life through the capture of changes in bearing conditions as quantitative risk factors for continued equipment operation.

By continuing these verification tests, both NSK and Cosmo Eco Power aim to provide new value through greater uptime, lower lifecycle costs, and reduced environmental impacts.



New value generated by Cosmo Eco Power and NSK

## ■ About Cosmo Eco Power

As a subsidiary of Cosmo Energy Holdings Co., Ltd., Cosmo Eco Power strives to develop and expand the supply of renewable energy, including wind energy, with the goal of achieving net zero carbon by 2050. Moving forward, the company will continue to strengthen collaborations with consumers driving decarbonization and help to advance the widespread adoption of renewable energy and development of a carbon-neutral society.

## ■About NSK

NSK produced the first bearings in Japan in 1916 and over the past 100 years, it has supported the development of industries worldwide by creating various innovative products and technologies in bearings, automotive parts, and precision machinery. Since the early 1960s, the company has expanded overseas and now has operations in about 30 countries. It ranks third in the world in the field of bearings and leads the world in ball screws, electric power steering, and other products.

For more information about NSK, please visit [this page](#).

## ■Reference Information

Product information

- [Condition Monitoring Solutions | NSK Global](#)

Technical information

- [Motion & Control No.35](#)

Press releases related to product lifecycle management (PLM)

- March 2021

[NSK Completes Acquisition of Brüel & Kjær Vibro | NSK Global](#)

- January 2022

[NSK Expands Bearing Lifecycle Cost Management Offering with New Site in Alliance, Ohio | NSK](#)

[Global](#)

- September 5, 2023

[NSK to Conduct Pilot Tests of New Linear Guide/Ball Screw Condition Monitoring System | NSK Global](#)

- October 2024

[NSK Expands Condition Monitoring Solution Supported by NSK's Expert Diagnostic Engineers | NSK Global](#)

- March 2025

[A First in the Mining Industry—Development of Reconditionable Large-Size Tapered Roller Bearings with High Load Capacity | NSK Global](#)

- July 2025

[NSK Publishes Japanese Bearing Industry's First Carbon Footprint of Products \(CFP\) Assessment for Reconditionable Large-Size Tapered Roller Bearings with High Load Capacity | NSK Global](#)

- September 2025

[NSK Launches Verification Program to Promote Bearing Reconditioning and Reuse | NSK Global](#)

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(End)

(The official language for Cosmo Energy Group's filings with the Tokyo Stock Exchange and Japanese authorities, and for communications with our shareholders, is Japanese. We have posted English versions of some of this information on this website. While these English versions have been prepared in good faith, Cosmo Energy Group does not accept responsibility for the accuracy of the translations, and reference should be made to the original Japanese language materials.)