

## SENSPIDER GIVES CITIZEN MACHINERY COMPETITIVE EDGE

### CITIZEN

“With SENSPIDERs vibration measurement, data is collected properly and the equipment is easy to use. The support is great. When we have questions, we get an answer quickly. The team even visits our site for troubleshooting.”

**Yasuhiro Kera**, Citizen Machinery



SENSPIDER by Macnica

### Industry Leader in CNC Automatic Lathes

Finding cutting edge ways to add value to its Cincom CNC sliding headstock automatic lathes and Miyano CNC fixed headstock automatic lathes is a major focus for Citizen Machinery. Their R&D program looks constantly for ways to improve durability and dependability of their machines. As a result, their customers depend on them to back up their products with processing know-how.

### Challenge: Develop Industry 4.0 Failure Prediction

When Germany proposed “Industry 4.0,” where AI analyzes sensor data from machines and links the data to failure prediction, Citizen knew this technology could replace two costly approaches to machine maintenance—either replacing parts on a set schedule or as they failed. Both rely heavily on human judgment and are costly. However, there was another benefit from this technology. They could improve the quality of their CNC lathes.

“For customers who replace spare parts as part of their regular maintenance, this means they no longer have to replace unnecessary parts and gain value at the cost level,” explains Yasuhiro Kera from the Development Planning Department.

Takaichi Nakaya, head of the department says, “We examined the weak points of our current lathes and found that our spindle bearing, which rotates at high speed, has a comparatively high failure rate, so we decided to develop failure prediction on this component.”



## Citizen Machinery Uses SENSPIDER to Improve the Quality of Its Lathes.

CITIZEN Machinery uses SENSPIDER in its factory production lines. Using this technology has supported significant quality improvements on their spindle bearing reducing the fail rate. “It used to take us a long time to understand the condition based on temperature and noise, but now we use SENSPIDER for visualization, which helps improve quality in the manufacturing process,” says Daigo Nakahara.

### “One of the benefits is that we’ve been able to expand the scope of customer support.”

In the past, when there was a problem with abnormal noise, the person in charge on site had to determine the situation based on years of experience and replace or reassemble parts to find the cause, which took a lot of time. “With the sensor system, it’s possible to determine quickly if the spindle isn’t balanced, if the bearings were assembled incorrectly, or if the bearings are wrong in the first place, and to quickly decide what to do about it,” says Ayami Misono. “Analyzing frequencies allows us to make reliable conclusions about abnormal parts.”

When a problem occurs with a machine after delivery to a customer, Citizen Machinery techs install SENSPIDER on site and monitor the situation on a case-by-case basis. Nakahara says, “With the web APIs implemented in SENSPIDER, it’s now possible to monitor data remotely.”

## Potential for the Future

Although the current focus is on vibration sensors, there are plans to use different sensors for different environments. “The scalability of SENSPIDER opens up a wide range of possibilities,” Nakaya says. “Also, the sensor technology is currently focused on spindle bearings, but those aren’t the only moving parts.” The team would like to consider applying it to as many elements as possible.

The development planning department began with an interest in adding Failure Prediction as a feature of their automatic lathes, By testing this concept in their own factories, they foresee making failure prediction, with SENSPIDER at the core, a standard feature of their lathes—positioning it as new added-value to the company’s machine tools.

To meet the needs for remote monitoring, they hope to eventually create an environment where information stored by SENSPIDER uploads automatically to the cloud via Wi-Fi. “We’d be happy if we could check the status of our customers’ machines from the day SENSPIDER is installed, even from remote locations.

## Qualities That Make SENSPIDER The Logical Choice

- Captures all the data trends as a conventional data logger can.
- Applies essential anti-aliasing, low-pass filter, preprocessing data for accurate analysis.
- Allows for remote monitoring, facilitating capture of data on difficult to trace problems.
- Offers user-friendly computing terminal.
- Comes in a practical size, making incorporation within an automatic lathe feasible.



## LEARN MORE

[Citizen Machinery](#), a division of Citizen Group, is known in the industry for its Cincom CNC sliding headstock automatic lathes and Miyano CNC fixed headstock automatic lathes.

With [SENSPIDER](#), Manica’s edge computing solution, you can collect multiple types of sensor data simultaneously and build AI-powered Condition-based Maintenance which prevents sudden machine outage and downtime.

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