

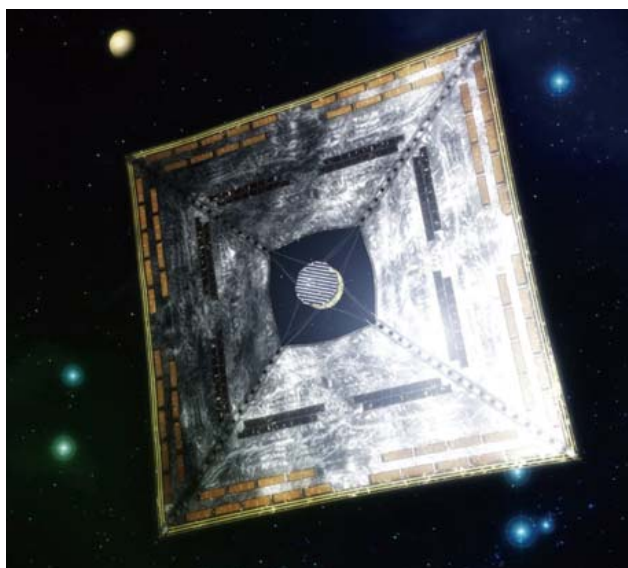
## “MONO-ZUKURI” CAPABILITIES OF THE OKI GROUP

The OKI Group’s “Mono-zukuri” capabilities enable us to develop products with our proprietary technologies and realize production efficiency through daily improvement activities and originality and ingenuity.

### OKI Electric Cable’s Production Line Capable of Manufacturing Super-long FPCs

Powered by the sun’s rays, a giant solar sail unfolds and begins navigating space. OKI Electric Cable (OEC)’s FPC was selected by the JAXA for use on the solar-powered sail of its Small Solar Power Sail Demonstrator “IKAROS” launched in May 2010. While FPCs are usually around 500mm long, OEC’s industry-leading production line is capable of manufacturing super-long FPCs up to 100m in length. A 14-meter FPC attached to the sail serves as the wiring, connecting the solar cells and various sensors on the thin-film face of the IKAROS, which unfolded to form a giant square sail when it reached outer space.

The IKAROS was the world’s first demonstration of interplanetary space travel powered solely by the sun’s radiation, and it continues to navigate space after having completed all of its scheduled and additional missions. This shows that OEC’s FPCs are used not only in everyday electronic devices such as mobile phones and digital cameras, but they can also play a part in aerospace equipment by being able to withstand the harsh environment of space.



Small Solar Power Sail Demonstrator “IKAROS”  
Image Provided by Japan Aerospace Exploration Agency (JAXA)

### Development of New Production System Driven by Robots and Reinforcement Learning AI

OKI Data developed a new production system for LED modules by harnessing artificial intelligence (AI) to operate general purpose robots.

In employing AI, it developed a proprietary system to simulate on-site operation at the plant and incorporated the “reinforcement learning” method made famous by the AI program AlphaGo, which was developed to play the board game Go. As a result, we were able to dramatically shorten the learning period down to about five minutes with AI, instead of more than two years, which is how long it would take if learning was to be acquired from actual robot operation. We achieved this by having the AI itself learn from narrowing down optimal choices by analyzing large swathes of data. As a result of having the AI-driven robot repeatedly perform tasks on a daily basis with the aim of shortening the time required to complete such tasks, we recorded some significant results, including a roughly 15% reduction in total working time compared to a human worker. In addition to

applying this achievement throughout the company, we intend to continue this line of development with the aim of further improving productivity.



AI-operated robot