



Top: Robots conduct every step of the PCR testing process, protecting healthcare workers from the risk of infection.
Right: The technical capabilities cultivated in the development of industrial robots enable such actions as opening a lid with a mechanical arm.



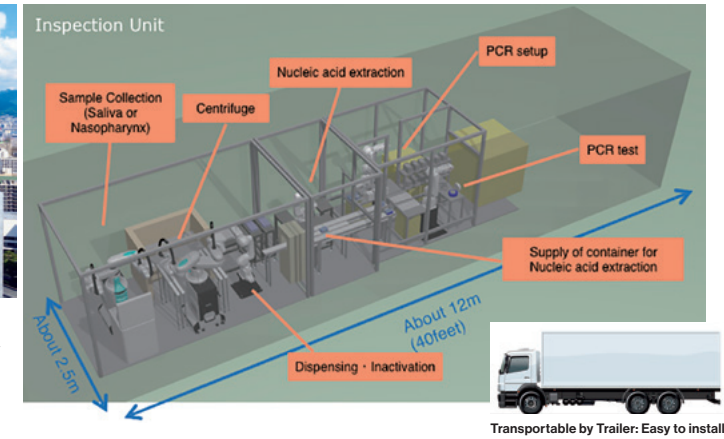
COVID-19 TESTING ROBOTS

PROTECT HEALTHCARE WORKERS

An automated PCR testing system, based on Japanese robotic technologies, will contribute towards resolving problems hindering healthcare.



Top: Mediaroid is part of the Kobe Biomedical Innovation Cluster, where innovative medical technologies are developed to serve the global community.
<https://www.fbri-kobe.org/kbic/english/movies/#movie02>
Right: The robotic PCR testing system can be loaded into a truck container and taken where needed.



As the COVID-19 pandemic rages on, all eyes are on an automated polymerase chain reaction (PCR) testing system developed by Mediaroid Corporation, a Kobe-based company that produces robots for medical use. Kobe city is home to Japan's largest cluster of biomedical technology, with more than 360 research facilities, hospitals, manufacturers, and universities concentrated in one area, where government, industry, and academia work together to develop state-of-the-art medical technologies. The PCR testing system is the fruit of public-private cooperation between the city of Kobe and Mediaroid.

Mediaroid is a joint venture company established by Sysmex Corporation, which deals in clinical testing equipment and reagents, and Kawasaki Heavy Industries, Ltd., a leader in

industrial robot technology. PCR testing faces the difficulty of procuring enough personnel to perform complex procedures, while also needing to protect those workers from infection. Combining the know-how of the two companies has made it possible to create an innovative system that uses robots to provide a stable testing regime, while shielding healthcare workers from the risk of infection at the same time.

The system automates all the procedures required for PCR testing, such as inactivating samples, extracting their nucleic acid, and subjecting them to PCR inspection. The industrial robot technology developed by Kawasaki Heavy Industries enables robots to accomplish those precise motions.

"Robots are useful for solving medical problems, but making them work is not as easy as it sounds. Using a robotic arm to open a specimen container

involves a complex series of precise motions, and that requires a high level of technology," says ASANO Kaoru, president of Mediaroid.

The robotic system also contributes to greater efficiency. In existing methods, tests are normally conducted in batches of 96 samples, but the new system is capable of handling eight-sample batches, one after the other. The time it takes from accepting a sample to reporting the result is reduced to 80 minutes, one-third the time it takes now. One system can perform 2,000 tests per day (16 hours), making it particularly suitable for venues where speed is important, such as international airports. The goal is to introduce the new system in 2021. It is also a space-saving unit that can be loaded into a 40-foot container and transported to large events, where it can be set up for testing.

If robotic testing systems become ubiquitous and test results are made rapidly available, air travel and public events can be enjoyed again without anxiety. "We will continue to contribute to social solutions with our robotic technology," declares President Asano.



Hinotori, Japan's first surgical robot system, was also developed by Mediaroid. "We believe that such excellent robot technology can contribute to the betterment of medical care," says President Asano.