

## Regulatory Approval Obtained for the “hinotori™ Surgical Robot System,” Japan's First Robotic Assisted Surgery System



Medicaroid Corporation, a joint venture between Kawasaki and Sysmex Corporation, obtained regulatory approval for the hinotori™ Surgical Robot System from the Ministry of Health, Labour and Welfare on August 7. This is the first regulatory approval of a Japanese manufacturer for a robotic assisted surgery system in Japan, and insurance coverage began on September 1.

hinotori™ consists of three units: (1) Operation Unit, (2) Surgeon Cockpit, and (3) Vision Unit. The robotic arms of the Operation Unit are designed to be as compact as human arms, which contributes to smoother operation because it reduces interference between the arms themselves, and between the arms and human assistants. The Surgeon Cockpit adopts an ergonomic design to fit the posture of the surgeon during surgery. It reduces the physical burden on the surgeon to reduce stress. In addition, the Vision Unit provides high-definition 3D images on the stereoscopic viewer in the Surgeon Cockpit, and supports smooth communication between the surgeon and the assistants.

The origin of this system's name, hinotori™, is the title of the classic manga (graphic novel)

*Hinotori (Phoenix)* written by Osamu Tezuka as his greatest work. He is one of the most famous Japanese manga artists and had a medical license. Tezuka Productions approved the adoption of the name Hinotori for the surgery system, agreeing with the concept of Medicaroid's system: a robot to serve and support humans rather than to replace humans. Just as Osamu Tezuka illustrated the preciousness of life through his work *Hinotori*, Medicaroid will produce the hinotori™ Surgical Robot System to aid healthcare workers who are saving lives.

hinotori™ will first be used for urology surgery, such as prostatectomies and partial nephrectomies. Usage will be expanded in the future, and a training center will be established. The system will be launched in FY 2020, and sales are scheduled to start in earnest from FY 2021. In recent years, along with the progress of minimally invasive surgery that reduces the burden on the patient, there is a growing

need for robotic assisted surgery. Japan is one of the world's leading powers in robotics, and although it has more than half the share of the world market for industrial robots, domestically produced surgical support robots have not appeared before. In response to this situation, Kawasaki and Sysmex established Medicaroid in 2013 for the development of medical robots.

In addition, Medicaroid is developing a robotic testing system to protect healthcare workers from infection during PCR tests for the coronavirus, and streamline the testing procedure.



## Kawasaki Launches New Gas Engine with World-leading Electrical Efficiency

After completing endurance testing, Kawasaki has started sales of their KG-18-T gas engine, a newly developed product with a two-stage turbo-charging system and world-leading electrical efficiency in its class. It joins the Kawasaki Green Gas Engine lineup as a high-efficiency model.

The original model that the KG-18-T is based on has sold over 180 units, since it was introduced in 2011, and the latest model was developed to further boost performance. The new model has an output of 7,800 kW at 50 Hz and 7,500 kW at 60 Hz, and utilizes a newly developed two-stage turbo-charging system to achieve a 1.5% increase in power generating efficiency when compared with existing Kawasaki models, giving it a world-leading efficiency in its output class of 51.0%.\* NOx emissions are kept to 200 ppm<sup>\*2</sup> or less, and it is designed to meet the environmental performance requirements demanded by many cities. Furthermore, it offers excellent fast startup, enabling maximum output within five minutes, contributing to optimal adjustments in response to grid fluctuations.

\*1 Calculated using city gas in Japan (40.6 MJ/Nm<sup>3</sup>, methane number = 69)  
\*2 Converted at 0% O<sub>2</sub>



## Visit Our Website to see the New Movies

Kawasaki has posted short movies on its website with the corporate message “カワる、サキへ。\* Changing Forward.”



### Motorcycle Version

The movie focuses on Kawasaki's Ninja H2 motorcycle. During Bonneville Speed Week, the motor sports event that draws riders from all around the world, Kawasaki exploited the overwhelming power of the Ninja H2 to achieve a new world speed record. The movie captures this with plenty of realism to depict the value provided by the Ninja H2.



Special Site Changing forward ▶ <https://global.kawasaki.com/en/stories/articles/vol47/#forward>  
Also Available on the YouTube Kawasaki Group Channel ▶ <https://www.youtube.com/watch?v=7SVSerP5VCc>



### Rolling Stock Version

This movie focuses on the annual Model Railway event held at Kawasaki Good Times World, the company museum. The movie not only focuses on the pursuit of speed and comfort in the manufacturing of rolling stock, but also shows how rolling stock is connected to the dreams and excitement of children.



Special Site Changing forward ▶ <https://global.kawasaki.com/en/stories/articles/vol47/#rail>  
Also Available on the YouTube Kawasaki Group Channel ▶ <https://www.youtube.com/watch?v=3JcmQb7zB1I>

\* Reads, “KAWA-ru, SAKI-e”

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