The Maxell Group's CSV Business Management

CSV Example 2

Supporting the industrial use of drones with our safe, high-power *"Intelligent Battery"*

Related SDGs

Social Issue

Growing Need for Reliable Drones in Industries Worldwide

Marked advances in drone technology have led to the use of drones in many different industrial areas, including infrastructure inspection, security, and the surveying of hazardous locations. One such area is smart agriculture. The use of drones to automatically spray agricultural chemicals and gather information on soil conditions and the weather as well as biological information on crops is expected to enable low-cost optimal production management. Meanwhile, safety, reliability, and many other factors are still ongoing issues because industrial operation of drones is in its infancy.

Our Solution

Enabling Agricultural Drone Operations with Dedicated Batteries

Specifically for agricultural drones, the Maxell Group and Nileworks Inc. jointly developed *Intelligent Battery* and began large-scale trial demonstrations in the fields of farmers in cooperating regions across Japan in July 2018. By using our proprietary technologies to develop an integrated system that comprises batteries with high power and safety protection, a battery pack, a charger, a drone, and a controller, we have reduced the risk of drones descending as a result of batteries dying during flights. Manufacturing the large-capacity batteries required for agricultural drones calls for advanced battery control and quality control technologies. To realize batteries that farmers can use with confidence, we incorporated an alert function, which constantly monitors the status of batteries and notifies the operator of abnormalities, and a leading-edge intelligent function, which safely controls the temperature, voltage, and current during charging and storage. The Maxell Group will continue developing drone batteries with high levels of safety and reliable use. We will reduce not only the risk of fires due to thermal runaway (overheating) during charging and storage but also the risk of descent due to battery degradation, which results from repeated use. In this way, we will increase the potential industrial uses of drones.

Overview of our approach to drone battery safety

Battery pack charger	Drone usage methods	Batteries (cells)
Safe battery pack & intelligent specialized charger	Correct usage methods Abnormality response methods Battery status monitoring	High-performance lithium ion battery (KSP model) Safety design and quality control Compliance with international specifications (IEC, UL, etc.)

Considering the creation of battery systems that integrate battery packs (cells), chargers, and drones to realize even greater reliability and safety

For more information, please see the following page. http://biz.maxell.com/ja/drone_batteries/ (in Japanese only)

CSV Example 3

Enhancing the quality and efficiency of agriculture with our crop growth support system, "*Rice Scan*" service

Related SDGs

Social Issue

Emergence of Various Problems in Japan's Agricultural Sector

Globally, there is growing concern over possible food shortages due to population growth, less acreage under cultivation, and water shortages. Japan, meanwhile, is seeing the emergence of such issues as the aging of farmers, a decrease in the farming population, and a rise in abandoned farmland. As of fiscal 2017, the country's food self-sufficiency rate was 38%—one of the lowest levels among developed countries. Other multifaceted issues surrounding agriculture in Japan include catering to diversified consumer demand for delicious, high-value-added rice, formalizing and making accessible the accumulated knowledge of experienced farmers, and optimizing cultivation techniques in response to global warming.

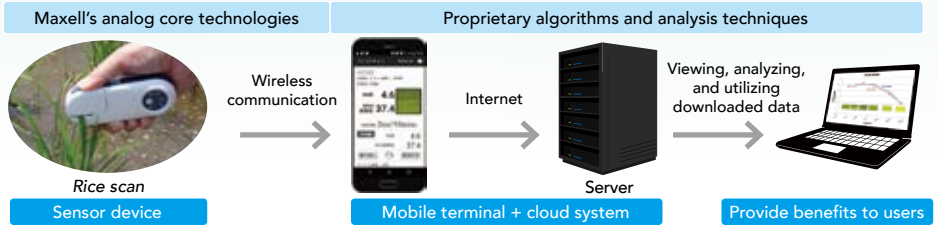
Our Solution

Increasing Production Efficiency and Stability through Our Crop Growth Support System

Having developed the *Rice scan* system, in June 2018 the Maxell Group launched the *Rice scan* service, which supports crop growth by facilitating convenient measurement of the leaf color of paddy rice and other crops. To coincide with the launch of the service, we began shipping a dedicated *Close-up Camera Device with built-in light source* newly developed based on our existing optical technologies.

Growth diagnosis based on leaf color management is important in agriculture, particularly in the cultivation of brand-name rice and high-value-added rice. Moreover, this process has become indispensable for the realization of stable production due to the increasing frequency of abnormal weather caused by global warming.

Through the use of the *Close-up Camera Device with built-in light source*, *Rice scan* realizes convenient and consistent measurement of leaf color. Automatic storage of measurement results reduces manual input operations and improves work efficiency. Further, the service contributes to the production of quality crops by supporting appropriate fertilizer management and growth diagnosis through the visualization of measurement data. The Maxell Group will use *Rice scan* to help address labor shortages and various other issues facing the agricultural industry.



For more information, please see the following page. http://biz.maxell.com/ja/iot_services/ricescan/ricescan.html (in Japanese only)