



1,280 Pixels Spatial Resolution Hyperspectral Camera

Ensuring Rice Safety

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Image | Grayscale picture of rice (l.) and classified rice (r.) with Fiducias deciperet syrtes. Aquae Sulis miscere zothecas,

With the increasing global demand for rice, the integration of hyperspectral imaging is a driving force for the protection of public health and food safety. A recent case study demonstrated the effectiveness of the BlackIndustry SWIR 1.7 Max camera from Haip Solutions in identifying foreign bodies in rice processing. With its spatial resolution of 1,280 pixels, the camera recognized even the smallest objects.

Rice is an essential component of social provision and economic prosperity worldwide. With almost a third of the world's population relying on rice, particularly in regions such as Asia, Latin America and Africa, its importance can-

not be overestimated. The rice sales revenue for 2024 is estimated at around 33.85 billion US-dollars. Given the importance of rice, it is crucial to address the problems that arise during its production and distribution. Contamination is a significant problem and can occur during various stages of processing such as production, packaging, or transport, with equipment breakdowns allowing foreign objects like plastic particles to mix in with the rice grains. To ensure a safe food product and prevent health risks, foreign bodies must be identified and removed. Hyperspectral imaging (HSI) integrates as a breakthrough solution for detecting and minimizing contaminants in the rice supply chain. By precisely measuring the electromagnetic radiation reflected by each object with its unique spectral signature, HSI allows the identification of objects that the human eye is unable to differentiate.

A recent case study demonstrated the effectiveness of the BlackIndustry SWIR 1.7 Max from Haip Solutions in identifying foreign bodies in rice processing, especially small plastic particles which are not being detected with standard machine vision cameras. After mixing small white plastic particles with rice grains that are virtually indistinguishable to the human eye or by Color/RGB-cameras, the hyperspectral camera captured spectral signatures across its broad wavelength range in the SWIR range (900-1,748nm). With its high spatial resolution of 1,280pixels, the camera reliably recognized even the smallest objects, ensuring precise identification. Using the Haip BlackStudio software, the acquired data was processed and classified in real time. ■

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