

# HYPERSPECTRAL CAMERA

INO has developed a hyperspectral sensor for the visible and near infrared wavelengths. Hyperspectral cameras combine the power of spectroscopic analysis with vision analysis by collecting and imaging reflectance spectra. This technology has emerged in recent years as a superior alternative to color and black and white vision systems, both of which fail to discriminate different materials or defects with the same visual appearance.

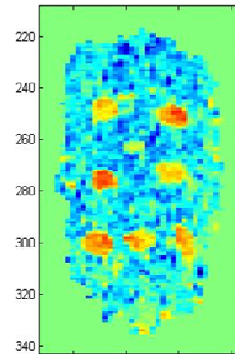


The INO camera with its illumination system

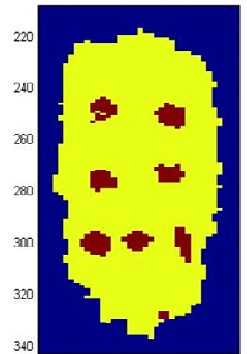
COCOA BEAN  
ANALYSIS



HYPERSPECTRAL  
IMAGE



DEFECT  
DETECTION



Example of contaminant detection in the food industry

## ADVANTAGES

- High speed processing
- Dedicated illumination system included
- Easy to configure, versatile
- Embedded functions for real-time detection
- High acquisition speed and data rates
- High sensitivity
- Real-time signal calibration
- Spectral and radiometric calibration data
- Built-in preprocessing functions (FPGA)
- Ruggedized construction (NEMA4)

## KEY APPLICATIONS

- Precise color analysis
- Raw materials sorting
- Foreign body detection
- Mineral characterization
- Contaminant detection
- Food quality assessment

INO IS VERY FLEXIBLE IN ITS OFFER

> PROTOTYPING

> SHORT RUN PRODUCTION

> TECHNOLOGICAL TRANSFER

# HYPERSPECTRAL CAMERA

## TYPICAL SPECIFICATIONS

PARAMETERS	UNIT	HYPERSPECTRAL CAMERA
Spectral range	nm	450-800
Detector		CMOS
Pixels		1280 x 1024
FOV	mm	305
Number of points/line		128
Spectral sampling	nm	1
Number of bands		16
Digitization	bits	10
Max frame rate	fps	1 200
Weight (sensor)	kg	6
Dimensions	cm	16 x 35 x 18.5
Sensor head power	W	12
Spectral resolution	nm	6
Spatial resolution	mm	2.5
Pixel size	µm	12
Camera output		Ethernet (UDP)
Power consumption (lighting)	W	3000 (240V, 12A)
Enclosure rating		NEMA4
Input voltage	V	18 to 36 DC, 24 DC nominal
Operating temperature	°C	0 to 55

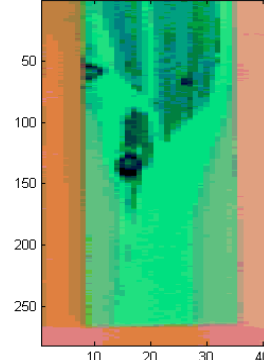
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- Parallel processing for multiple analysis operations (up to 16)
- High speed processing: 2000 profiles per second (128 points per profile)
- Real-time decisions for the presence or absence of a specific feature

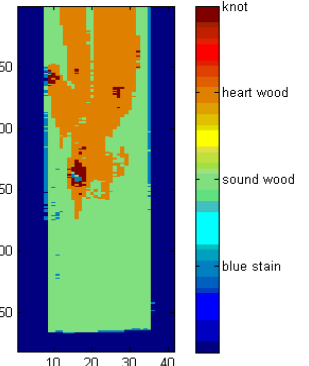
OBSERVED WOOD BOARD



HYPERSPECTRAL IMAGE



CLASSIFICATION



Example of wood grading with hyperspectral camera

## CUSTOMIZABLE FOR YOUR NEEDS

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