

SPECIM

TOWARD SOLVING MATERIAL ISSUES WITH HYPERSPECTRAL IMAGING



Jere Hartikainen, CTO



SPECIM IMPACT TO THE WORLD

We make our existence more sustainable in the world by increasing the efficient use of our common scarce global resources through spectral imaging, a non-invasive material identification technology.

We improve the use of materials, enhance food quality, reduce waste, support health and life of humans and nature, and provide valuable information on our environment, from land to sea.

SPECIM TODAY

FOUNDED IN **1995**


> 9 000
SPECTROGRAPHS
+
SPECTRAL CAMERAS
DELIVERED



PERSONNEL CIRCA **90**

>20% CAGR IN INDUSTRIAL SEGMENT

PART OF
KONICA MINOLTA
SINCE 2020

 HEAD OFFICE
OULU, FINLAND



SPECIM LOCATIONS
BARCELONA, MUNICH, NEW JERSEY, SHANGHAI
+ WORLDWIDE DISTRIBUTOR NETWORK

OUR VISION : SPECTRAL IMAGING MADE EASY

MACRO TRENDS

- Environmental
- Automation
- Health and Life
- Circular Economy

OUR MISSION
Create new value for customers and society

HIGHER LEVELS OF AUTOMATION

GROWTH DRIVERS

IMPORTANCE OF ENSURING QUALITY AND SAFETY

GROWING DEMAND FOR DETAILED INFORMATION

Improving fulfillment in work and corporate dynamism



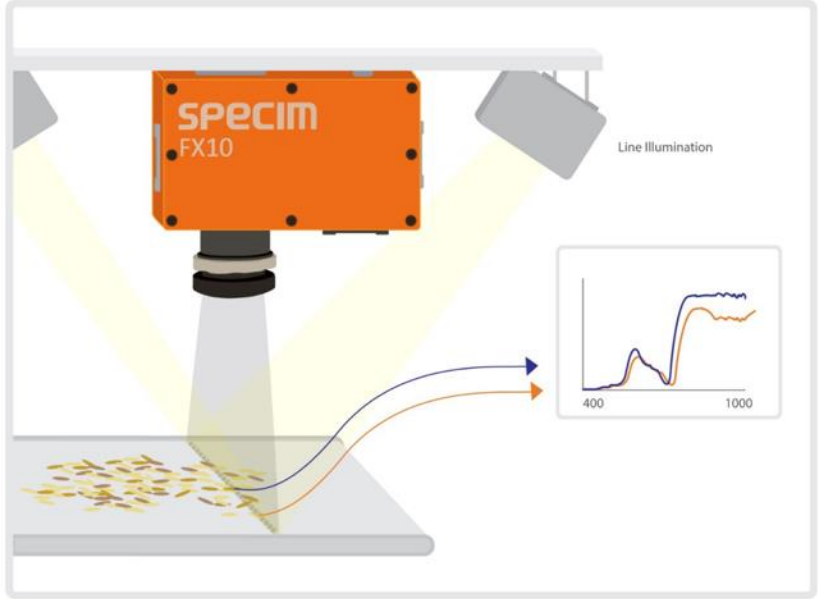
Using limited resources effectively



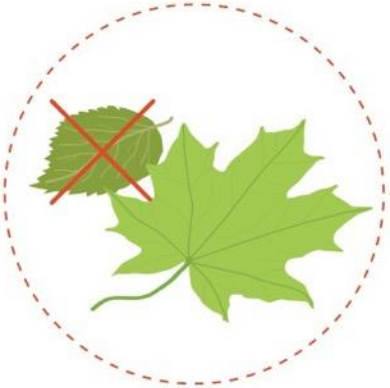
Addressing climate change



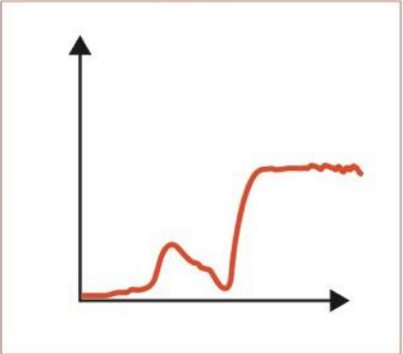
WHAT IS HYPERSPECTRAL IMAGING?



Classify different materials based on their unique *spectral signature*.



Spectrum



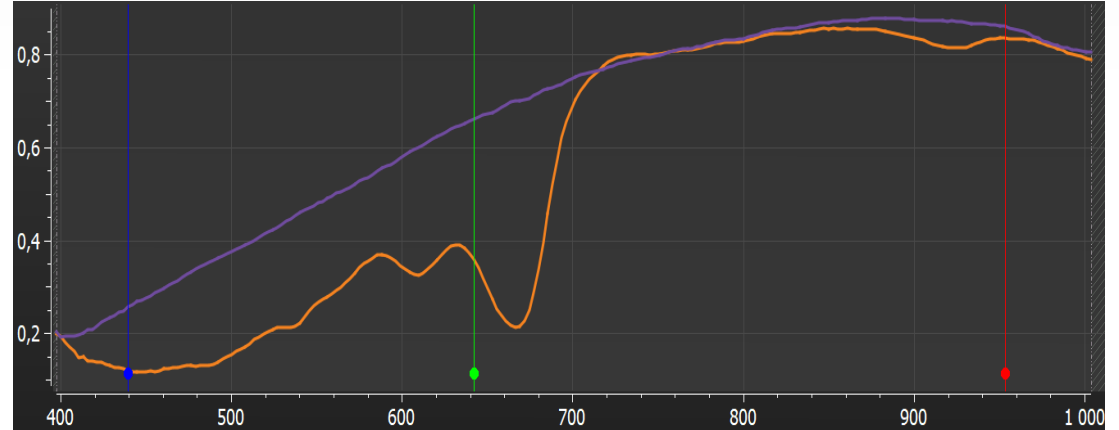
Fingerprint



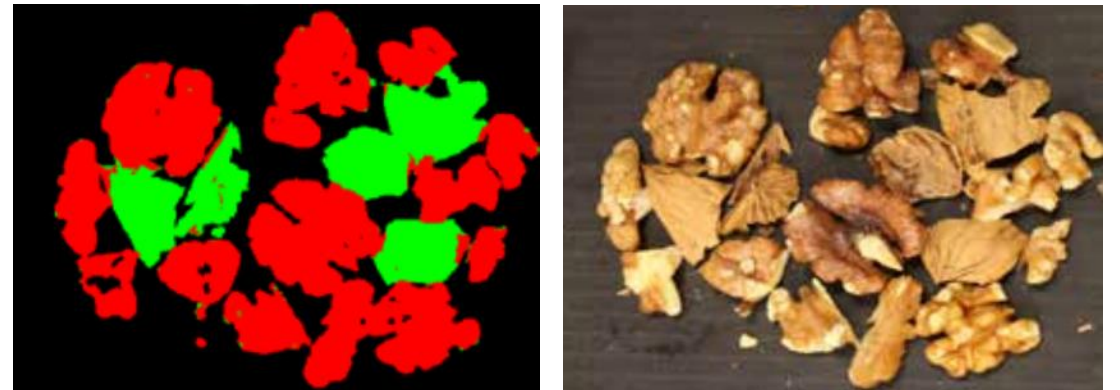
WHAT IS HYPERSPECTRAL IMAGING?



Specim HSI system obtains chemical information across the full product stream in real-time with a single scan.



The unique spectral signature of nuts vs. shells captured with the HSI camera.



Hyperspectral vs. RGB image of nuts and shells.

TIMELINE



Building on the early leadership on research, Specim is increasingly focusing on ready-to-deploy integrated solutions for the growing industrial market.



Industrial platform solutions



Application specific solutions



Spectral cameras



Spectrographs

1995

2023

COMPETITIVE LANDSCAPE IN RELATION TO THE MAIN COMPETITORS



TARGET MARKET

Specim has been outperforming the market growth.

Our industrial platform, SpecimONE, allows us to grasp new opportunities in the growing HSI system market.

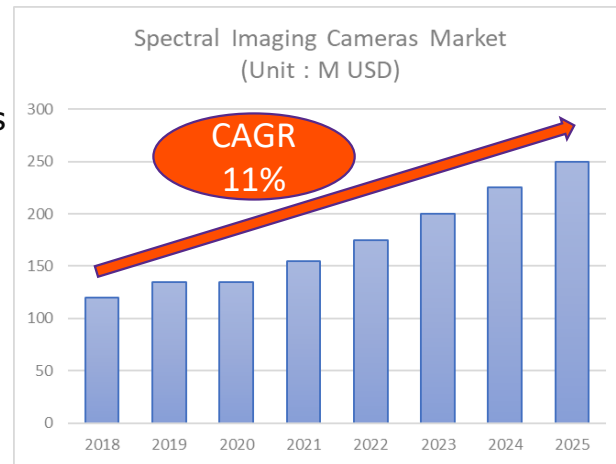


HSI System market

- Market size : 900M USD / 2025
- Players: Integrators, Machine builders, Brand owners, Service providers

HSI Camera market

- Market size: 250M USD /2025
- CAGR 11%
- Players: Camera manufacturers





WASTE SORTING



FOOD QUALITY CONTROL



FOOD SORTING



MATERIAL RECYCLING

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A Konica Minolta Company



ENVIRONMENT MONITORING



HEALTHCARE & PHARMA



MINERAL EXPLORATION



AGRICULTURE & VEGETATION



PLASTICS

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Global plastic waste generation more than doubled from 2000 to 2019.

Globally, only 9% of plastic waste is recycled while 22% is mismanaged and 50% ends up in landfill.

Source: OECD

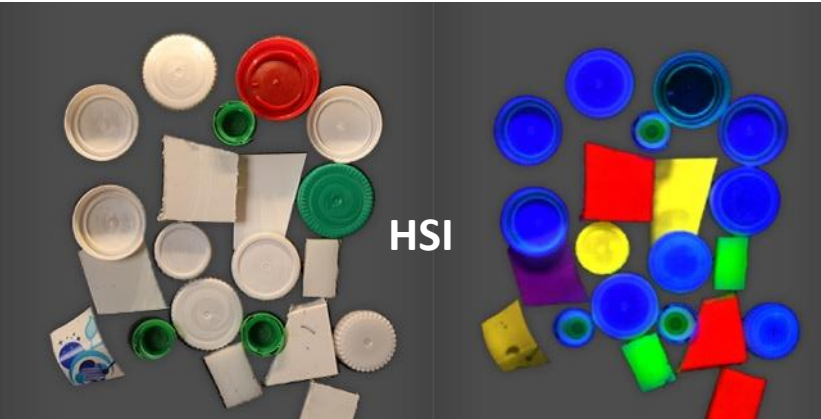
TEXTILES

The apparel and footwear industries account for 8% of the world's greenhouse gas emissions.

Globally, less than 1% textile waste is recycled while roughly 73% is landfilled.

Source: OECD

RECYCLING & WASTE MANAGEMENT



✓ Near 100% purity and higher value of recycled fragments



Solutions

- ✓ Plastics sorting
- ✓ Textile recycling
- ✓ Construction waste
- ✓ Household waste
- ✓ Etc.



Needs

- ✓ Automate waste sorting
- ✓ Improve quality and efficiency
- ✓ Turn waste into reusable material
- ✓ Reduce health and safety risks

SPECIM FX50



The Specim FX50 is the only HSI camera on the market required in black plastics sorting.

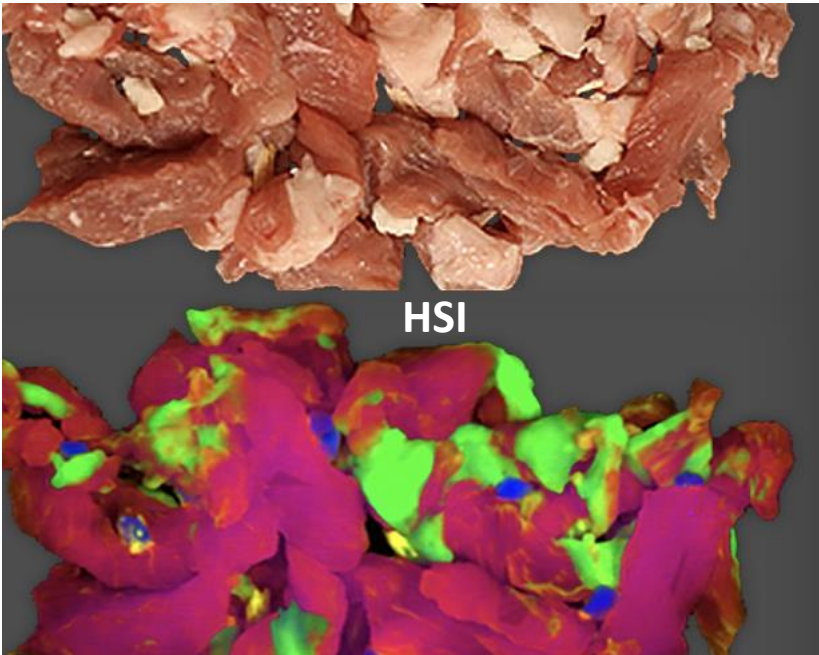


FOOD

Globally of food produced for human consumption, **1/3 is lost or wasted.** If wasted food were a country, it would be the **third-largest producer of carbon dioxide** in the world.

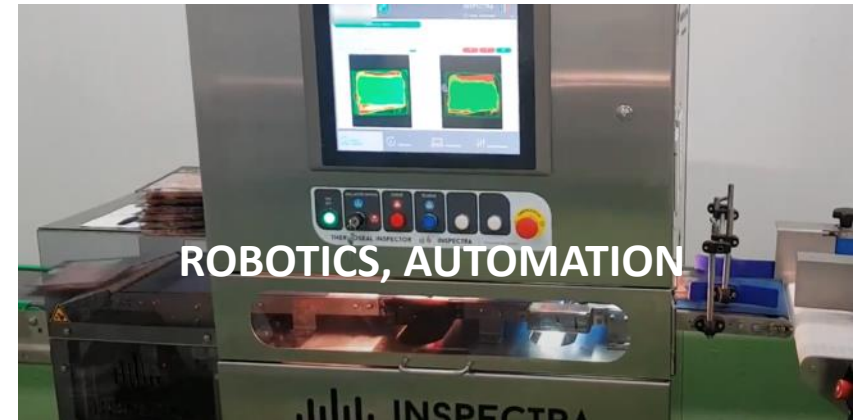
Source: WPF

FOOD SORTING AND QUALITY CONTROL

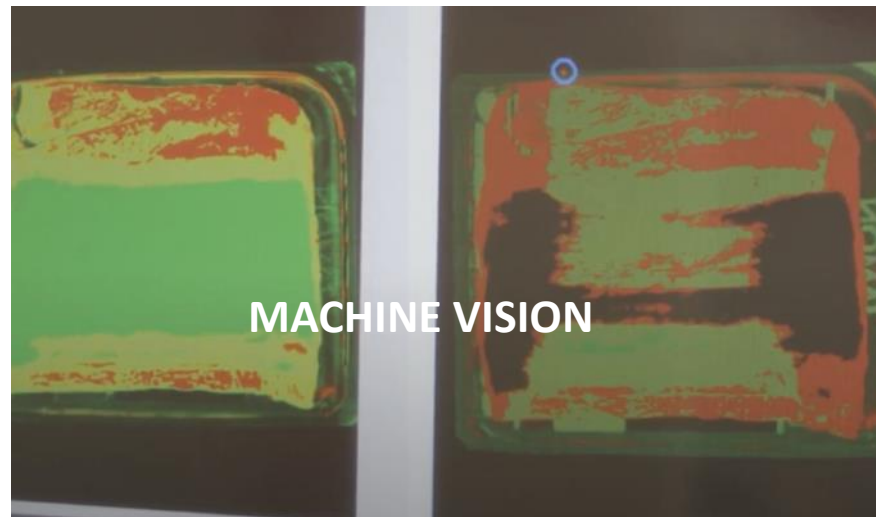


“Integrating hyperspectral solution to machine vision equipment, we automate the work of three people.”

Emilio J. de la Red,
Head of Innovation, INNDEO

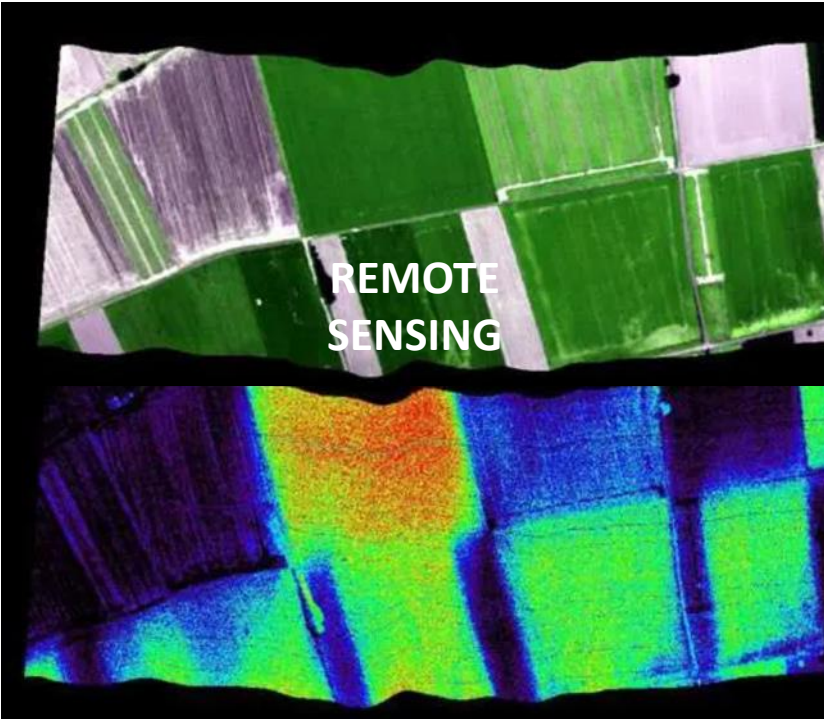


- ✓ Food sorting and quality control
- ✓ Foreign object detection
- ✓ Food grading
- ✓ Substance analysis
- ✓ Packaging inspection



- ✓ Automate workflows
- ✓ Increase food safety
- ✓ Reduce food waste
- ✓ Avoid recalls
- ✓ Improve production efficiency

ENVIRONMENT, GEOLOGY & MINERALS



- ✓ Improve yield quality
- ✓ Detect plant diseases
- ✓ Reduce waste, energy, and water consumption
- ✓ Estimate and quantify yield growth

- ✓ Predict, monitor, assess, and aftercare for ecological catastrophes



- ✓ Efficient exploration and use of minerals
- ✓ Rapid and reliable mineral analysis of geological samples

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