

Smart Spectral Imaging Solutions for Industrial Applications



EVK Value Proposition

■ Sensor Fusion

Combining hyperspectral cameras with metal sensors, color cameras, or other sensors maximizes results in many industrial applications.

■ Real-Time Data Analytics

Artificial intelligence-enabled algorithms providing key data for value-driven business decisions.

■ Domain Experience

Sensor-based solutions for food industry, waste management and recycling, mining and many other industries.



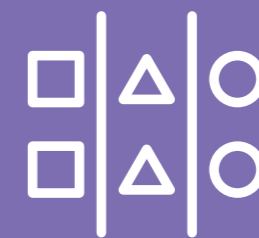
*EVK is **your expert for industrial image data analysis** using hyperspectral and inductive sensor technologies.*

EVK's **smart spectral imaging solutions** address today's challenges of industrial partners in the fields of:

Industrial Data Analytics



Smart Sorting



Flexible application development environment

Inspection & Monitoring



From data acquisition to smart sorting decisions.

Continuous material flow monitoring for real-time process control.



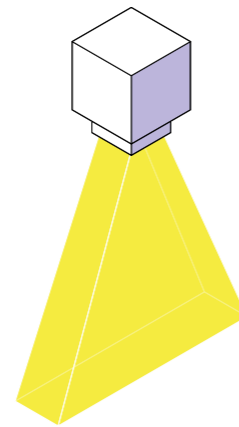
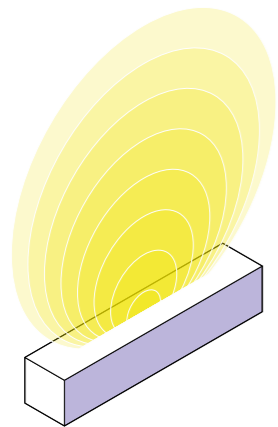
EVK Technology

What is Inductive Imaging?

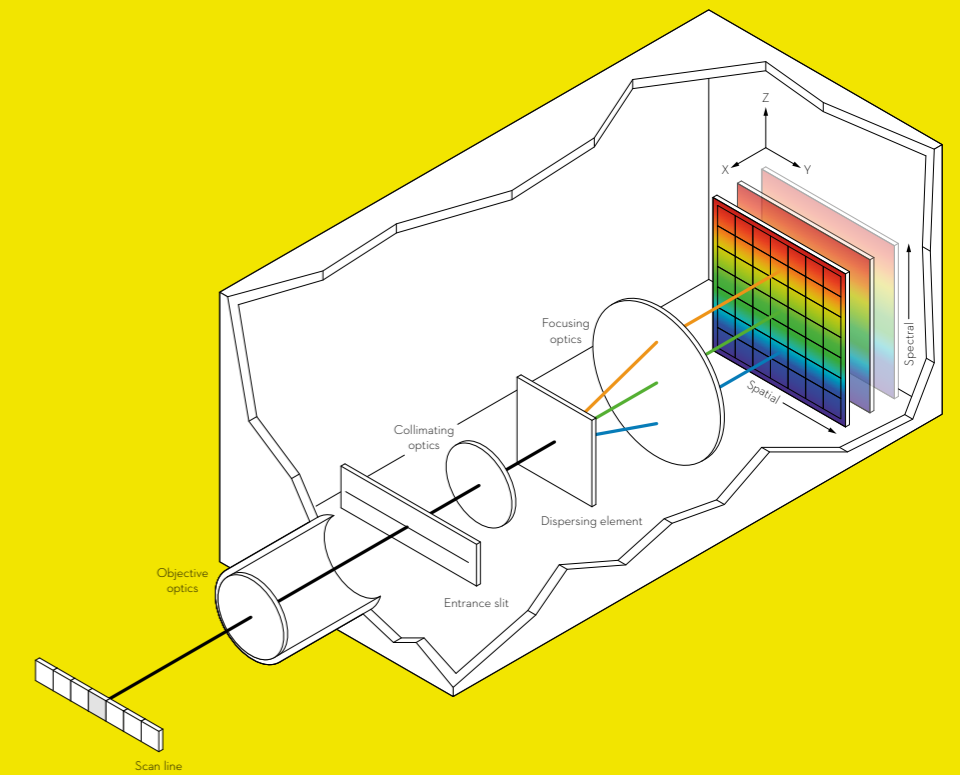
Inductive sensors determine the conductivity of materials by measuring the electrical and magnetic properties of materials. The technology is used to detect ferrous and non-ferrous metals and metal alloys.

What is hyperspectral imaging?

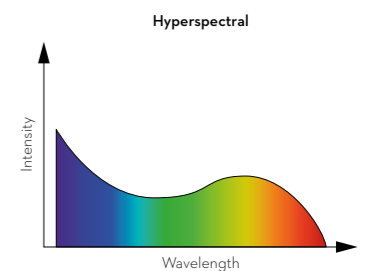
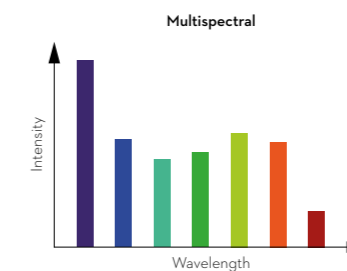
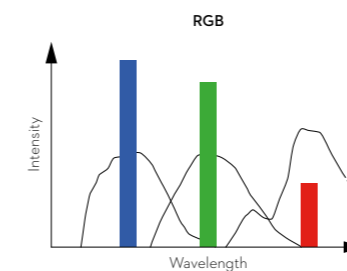
Hyperspectral imaging classifies objects and parts of objects based on their chemical composition. Hence, it is possible to detect foreign bodies or defects and to quantitatively measure properties such as pH-value, protein content, salt concentration, or moisture.



Hyperspectral line scan cameras capture the spectral signature of materials, resulting in a three-dimensional hyperspectral data cube. Based on a database of reference values, these cameras enable a non-invasive and non-destructive method for material classification.

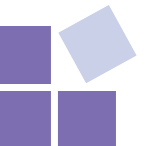


Push-broom hyperspectral camera



In contrast to conventional sensors, such as color cameras, which only capture visible light (RGB), hyperspectral cameras operate across a broad spectrum of wavelengths. Information about the chemical composition of materials are visualized in false colors.

Making the invisible visible.



EVK Products

EVK HELIOS Hyperspectral Cameras

- SWIR wavelength range 930 – 1700 nm
- Available as Core or Class camera
- GigE Vision / GenICam interface
- Robust design for harsh environments
- Ideal for material classification based on chemical properties



EVK Spectral Data Analysis

- AI-assisted analytics
- Fast development of chemometric models
- Real-time statistics about material distribution, belt occupancy, and material composition



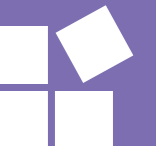
EVK ABAS Inductive Sensors

- Spatially resolved information
- Rugged, lightweight design
- Supports commonly used machine working dimensions
- GigE Vision / GenICam interface
- Ideal for precise metal sorting



EVK ALPHA Real-Time Image Processing

- Data classification in real-time
- Up to 100 material classes
- Supports EVK's advanced algorithms
- Data fusion
- Together with EVK HELIOS EC – powerful duo for industrial applications



Sensor-Based Sorting & Monitoring

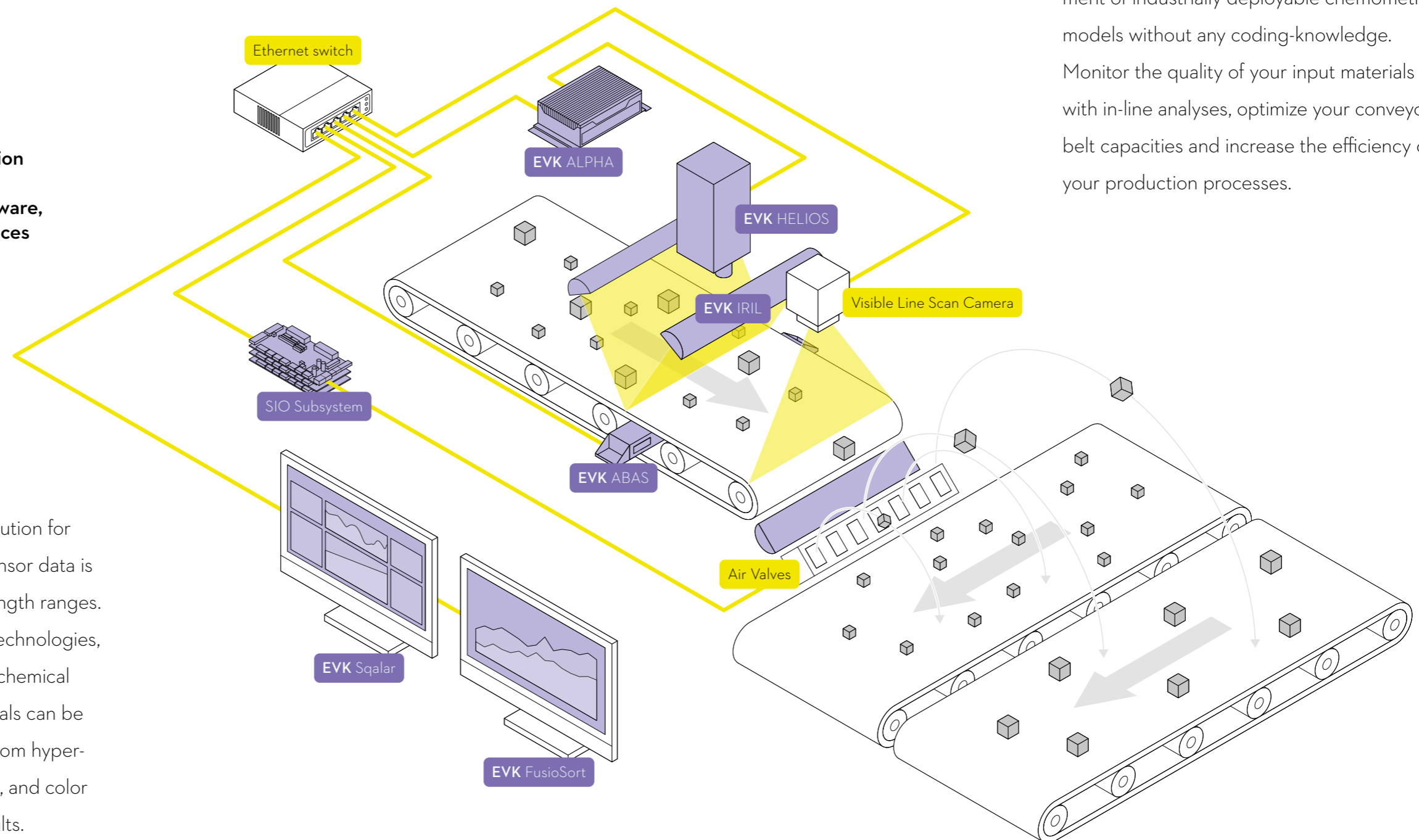
Bring the lab
into the line

Quantitative chemical imaging brings laboratory analyses directly to the production line. The methodology used in the lab is transferred to EVK products, making it possible to determine specific quality parameters more accurately by continuously monitoring the entire product flow. Powerful data analysis tools allow the development of industrially deployable chemometric models without any coding-knowledge. Monitor the quality of your input materials with in-line analyses, optimize your conveyor belt capacities and increase the efficiency of your production processes.

- **Material classifications & sorting commands in real-time**
- **Fully automated in-line operation**
- **All-in-one-solutions from hardware, software, and integration services**

Sensor fusion is an effective solution for complex sorting tasks where sensor data is fused to image different wavelength ranges. By combining different sensor technologies, accurate information about the chemical composition and color of materials can be obtained. EVK combines data from hyperspectral cameras, metal sensors, and color cameras to achieve optimal results.

We develop solutions that set new standards.



EVK Services

We provide **complete solutions** to machine and plant builders, as well as operators, from data acquisition to value-driven decisions. Get hardware, software and integration service from one single source for a flawless implementation of your application solution.

Our **EVK Professional Service** team supports our customers, from planning and application development to the complete integration of EVK HELIOS systems into the machine or facility. Allowing you to **fully exploit the potential of hyperspectral imaging**.



Feasibility Studies

We conduct feasibility studies for customers to evaluate benefits of EVK technologies for their applications and ensure cost control and process for the project.



Product Training

We offer product training at our premises or at the customer site.



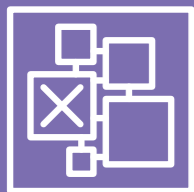
Industrial Data Analytics

We offer statistical analysis of sensor-based data to optimize industrial processes.



Technical Support & Maintenance

Even after implementation, our team provides ongoing support and maintenance for your system, either remotely or on-site.



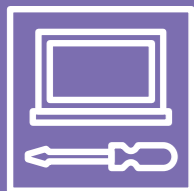
System Integration

We assist you with the integration of the sensors, illumination and mechanical parts.



Application Development

We develop market-relevant inspection and sorting applications for our customers.



Installation Support

Our team works closely with you to install and commission the application on site.



Sensor-based solutions for your industry



Pharma

- Monitoring of API concentration
- Monitoring of material homogeneity and coating

Analysis

Tablet blister defects

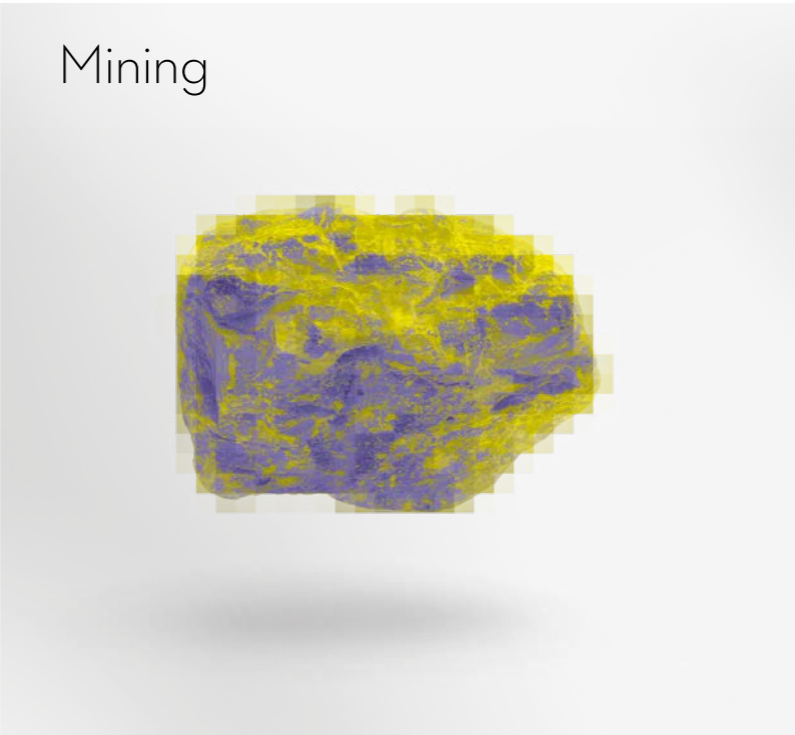
- Active pharmaceutical ingredients
- Out of specifications

- Classifying valuable minerals and rocks
- Determining coper ore
- Talc sorting

Analysis

Minerals

- Cu Content
- Gangue



Mining

EVK's hyperspectral cameras and inductive sensors have been used successfully in numerous industries for sorting and inspection for many years. Whether it's plastic, wood,

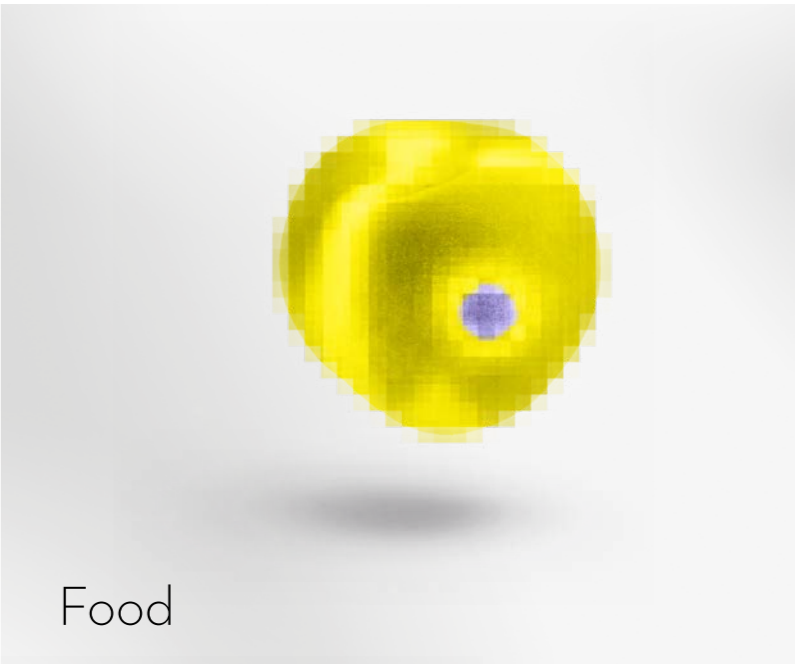
paper, general waste, textiles, or construction and demolition waste (C&D), EVK provides comprehensive expertise and premium problem-solving capabilities.

- Foreign body detection
- Determination of ripeness, pH-value, protein, fat, sugar content
- Detection of hazardous chemical compounds
- Quality control

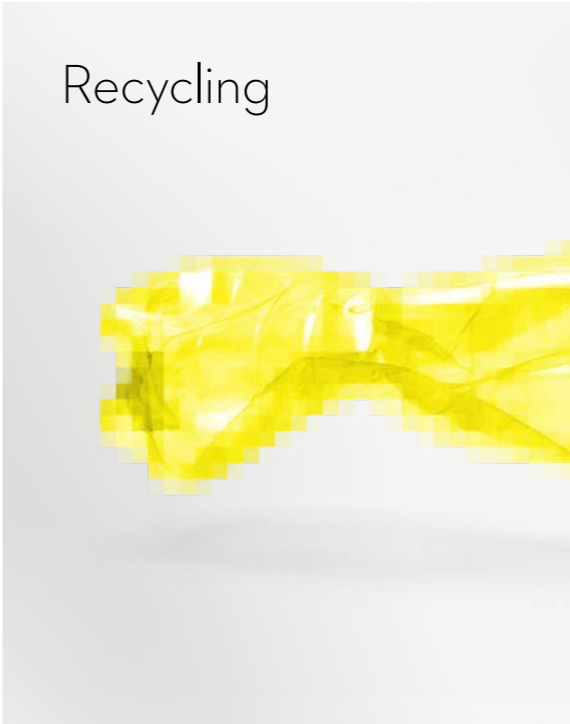
Analysis

Fresh fruit

- Concentration measurements
- Defects



Food



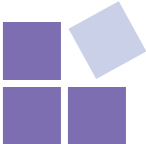
Recycling

- Classification of different plastics, textile/ paper fibers or wood types
- Determination of calorific value of refused derived fuel

Analysis

Plastics

- Cap (PE-HD)
- Body (PET)



Key data for your application

Having more than 35 years of experience in machine vision, EVK has perfected innovative sensor technologies and state-of-the-art data analysis. Customers benefit from industry-proven applications that provide real-time

data about their manufacturing. Optimization of resource utilization, product quality, and safety contributes to increased productivity and profitability.



Source: © Insort GmbH, Stadler Anlagenbau GmbH, Saubermacher Dienstleistungs AG

Machine Builder

- Scalable sensor-based platforms, adaptable to end-user requirements
- Short time-to-market with EVK's integrated solutions
- Use of EVK-proprietary development environment for end-user application developments

Plant Developers

- Plant optimization and automation by exploiting key data from the manufacturing process
- Differentiation by providing flexible solutions fulfilling end-user requirements

Plant Operators

- Increased output quality and yield through transfer of laboratory metrology to the production line and continuous in-line monitoring
- Receive valuable key data to improve manufacturing productivity
- High level of safety for end-users



Experts in Industrial Imaging

EVK Headquarters

Josef-Krainer-Strasse 35
8074 Raaba / Grambach
Austria

T +43 316 461 664-10
office@evk.biz

EVK Office Asia

4th Floor, GREITS Pangyo
Gundangnaegok-ro 117
Bundang-gu, Seongnam-si
Gyeonggi-do, 13529
Korea

T +82 10 5046 8141
youngsoo.lee@evk.biz

www.evk.biz

