

# PURITY SCANNER ADVANCED

Inspection and sorting system for plastic pellets



# PURITY SCANNER ADVANCED

Pure Material. Highest Quality.

The purity of advanced materials, as they are used in medical technology, semiconductor manufacturing, film extrusion, aerospace and automotive industries as well as the production of medium, high and extra-high voltage cables is a decisive characteristic for the quality of the final product. Therefore, in the chain from production, compounding to the processing of injection molded parts, profiles or films, the purity of the plastic material is of the utmost priority for the polymer industry.

With the PURITY SCANNER ADVANCED, SIKORA provides an unrivaled, user oriented system for 100 % online inspection with automatic sorting of plastic pellets at all process levels.

## Unique combination of X-ray and optical technology

The PURITY SCANNER ADVANCED intelligently combines X-ray technology with a flexible optical system. In this combination, the X-ray camera assures the detection of metallic impurities inside the pellet as well as on its surface. Thus, all (e.g. black) pellets are reliably inspected. Discolorations in transparent or on translucent and colored raw materials are reliably identified by black and white cameras as optical faults. Contaminated pellets are automatically sorted out.

## More flexibility for all requirements

Interesting is the flexible adaptive camera concept of the PURITY SCANNER ADVANCED. Depending on the type of the expected contamination and application, the system can be equipped with X-ray and optical technologies or exclusively with optical technology. The user can adjust the system to his requirements with one X-ray camera and up to three black and white cameras.

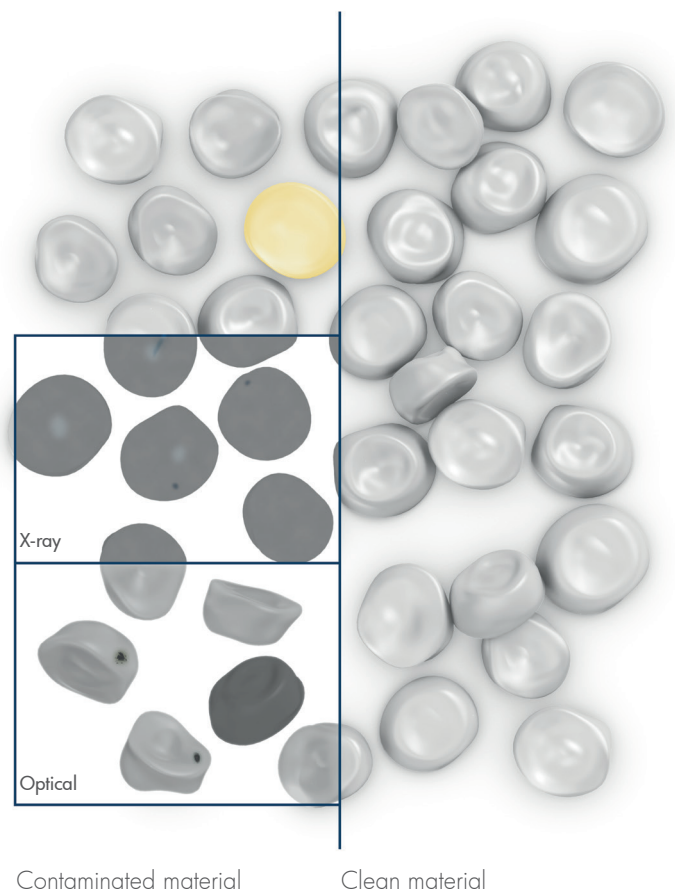
## A strong competitive advantage

The PURITY SCANNER ADVANCED is specifically tailored to the requirements of the plastics industry. It ensures a constant material quality, minimizes the risk of possible claims and eliminates returns due to contaminated material, resulting in a strong competitive advantage and a quick amortization.

### Your benefits

- Ensures a constant material quality
- Recovers off-spec batches
- Minimizes the risk of claims
- Specifically tailored to the plastics market
- Secures a strong competitive advantage

### X-ray and optical inspection

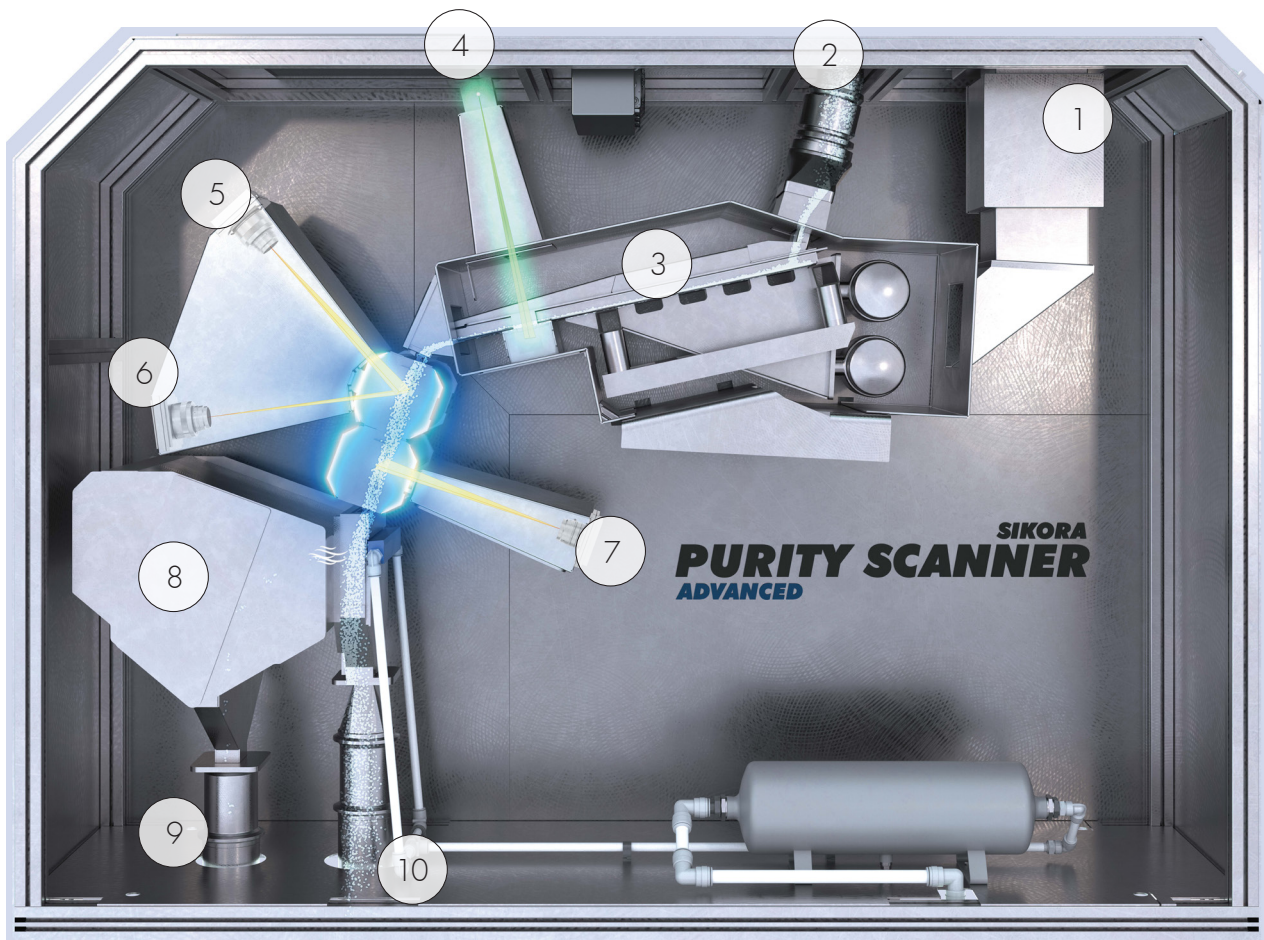


Contaminated material

Clean material

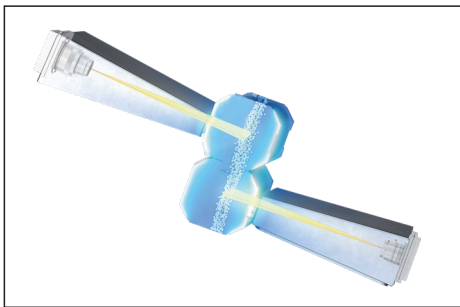
# PURITY SCANNER ADVANCED

## Flexible camera options for all requirements.

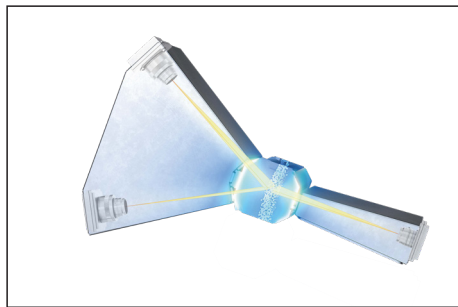


- |   |  |                     |
|---|--|---------------------|
| 1 Fine filter/overpressure system for integrated clean room | 3 Stainless steel vibration chute              | 8 Sorting unit      |
| 2 Material feed   | 4 X-ray inspection                             | 9 Rejected material |
|   | 5-7 Optical inspection: black and white camera | 10 Clean material   |

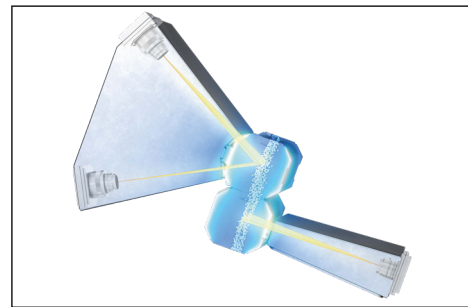
Possible combinations of the optical cameras:



Two-camera solution for amorphous and crystalline material



Three-camera solution for crystalline material



Three-camera solution for amorphous and crystalline material

## Visualization and analysis

The PURITY SCANNER ADVANCED is combined with a powerful processor system. In the production line, the Professional Data Analysis Management is comfortably operated via the processor system. An additional user interface is not required.

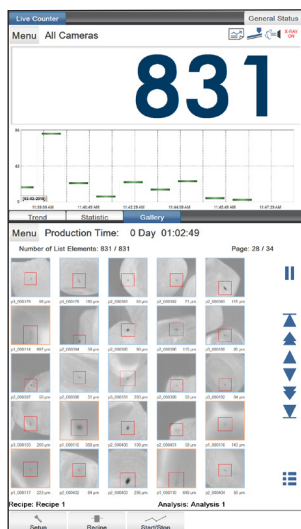
## Professional Data Analysis

The Professional Data Analysis Management (PDAM) provides a statistical evaluation of detected contamination during ongoing production, sorted by size and frequency, as well as an image gallery of the pellets that have been detected by the optical cameras as well as the X-ray camera.

All data is automatically saved and available in MS Excel format as well as an image file together with information such as time and batch number.

### All features at a glance:

- Image gallery of detected pellets with contamination
- Provision of statistics about size and frequency of detected contamination
- Trend overview for visualizing the chronological sequence
- Selection of size classes
- Automatic data storage



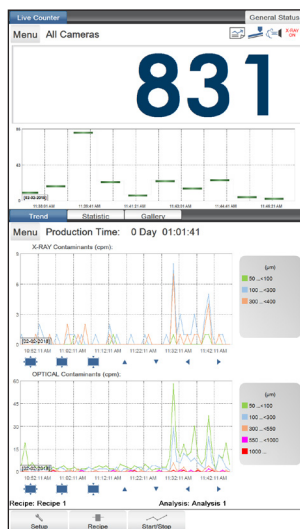
Monitor image of detected faults by the PURITY SCANNER ADVANCED:



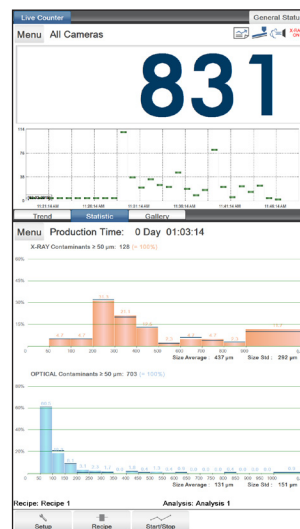
Metallic contamination detected by X-ray camera



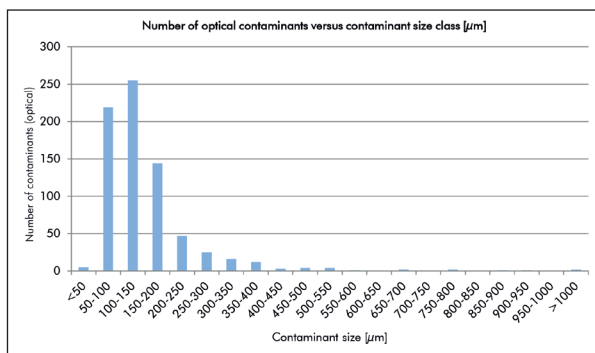
Black specks, discolorations, cross contamination detected by optical cameras



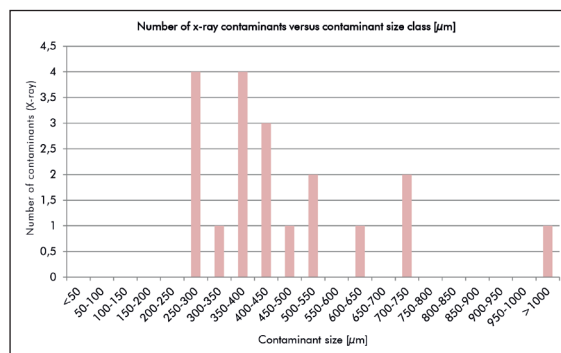
Display of the current trend over the course of time



Display of the statistical frequency of optical and metallic impurities



Size class trend of contaminants detected by optical cameras



Size class trend of contaminants detected by X-ray camera

### Innovative transport system

The pellets are fed into the system through a sealed vibration channel. In order to ensure the highest purity, all machine components coming into contact with the product are made of stainless steel or PE, perfectly encapsulated and designed to operate with overpressure.

### Integration of the system in the production line

Due to its compact dimensions and low construction height, the PURITY SCANNER ADVANCED is easy to integrate into any new or existing production line. The device is designed for throughputs from a few kilograms up to one ton per hour.\*

### Cleaning Concept

When designing the PURITY SCANNER ADVANCED, it was of the utmost priority that dust cannot penetrate the device from the outside. However, the device can be opened and cleaned easily.

\* see technical specification

### Perfectly combined: Online inspection and sorting as well as offline inspection and analysis of pellets

For comprehensive inspection and analysis of pellets, SIKORA recommends the combination of the PURITY SCANNER ADVANCED and PURITY CONCEPT Systems. After the PURITY SCANNER ADVANCED has detected and automatically sorted out contamination online, the contaminated pellets as well as the sorted good fraction are analyzed offline by a model

### Typical features PURITY SCANNER ADVANCED

- 100 % inspection and automatic sorting of plastic pellets
- Inspection by X-ray and optical cameras
- Detection of loose or included metallic impurities from 50  $\mu\text{m}$  contamination size
- Detection of dicolorations and black specks from 25  $\mu\text{m}$  on colored plastic pellets or in transparent plastic pellets
- Sealed system, optimal protection against dust
- Professionalism for new and existing production lines

of the PURITY CONCEPT Systems (sample testing in laboratory). This perfect interplay of online and offline inspection, sorting and analysis allows for a comprehensive control of the material purity and provides information for avoiding future contamination.

Example:

Online inspection and sorting

Offline inspection and analysis



Production process



Ejected pellets



First analysis and identification of contaminated pellets



Laboratory

Sample analysis for removing the failure

5 minutes



# Technical Data

## PURITY SCANNER ADVANCED

### Application Fields

- Raw material production
- Compounding/Masterbatch
- Plastics processing
- Extrusion
- Outsourced sorting

### Inspection Methods/Sensor Technologies

X-ray and optical cameras

### Smallest Detectable Contamination Size

X-ray: 50  $\mu\text{m}$  (cube 3D), 50 x 50 x 50  $\mu\text{m}$   
Optical: 25  $\mu\text{m}$  (square 2D), 25 x 25  $\mu\text{m}$

### Throughput

Depending on geometry and specific weight of the material to be inspected, there are throughputs possible from a few kilograms up to one ton/hour\* per device. A combination of devices allows for the inspection and sorting of higher throughput capacities.

### Permissible Ambient Temperature

+ 5 to + 45 °C

### Air Humidity

max. 95 % (without condensation)

### Interfaces

RS232, USB  
Optional: industrial fieldbus (e.g. Profinet IO, EtherNet/IP, Profibus-DP, CANopen, DeviceNet), LAN, OPC DA/UA

### Power Supply

3 ph 400 V AC ( $\pm 10\%$ ), 50/60 Hz ( $\pm 3\%$ ); 2,700 VA  
Compressed air supply: min. 6 bar / max. 8 bar / Air quality class 3 (ISO 8573.1)

### Dimensions

2,068 x 1,499 x 641 mm  
(width x height x depth)

\* This refers to a system with optical inspection. Systems that combine optical and X-ray technology provide a throughput up to 600 kg/hour per device.

Technical data is subject to change

## Company Profile SIKORA AG

SIKORA is a manufacturer and global supplier of innovative measuring, control, inspection, analysis and sorting technology for the wire and cable, hose and tube, sheets as well as optical fiber and plastics industries.

The products are exclusively manufactured at the headquarters in Bremen, Germany. With around 400 employees worldwide, 13 operating international subsidiaries and more than 30 regional representatives, SIKORA provides customers with innovative product solutions and individual service. Innovation, product quality and customer satisfaction define the daily activities at SIKORA.



Certified according to  
DIN EN ISO 9001

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