To optimize the material flow in the field of parcel, warehouse and distribution logistics, you need solutions that can largely automate the processes of reading and processing customer-related and object-related information on goods and packages.

Camera-based machine vision solutions from VITRONIC help you design more efficient, and more cost-effective processes. Our reading systems enable automatic reading and processing of all information on letters and parcels, transport packaging, loading units or pallets at various points along the process chain.

VITRONIC offers semi-automatic and fully automated solutions to meet the requirements of your specific applications. All VITRONIC reading systems are designed according to your individual requirements to optimize automation in your company. They contribute effectively towards accelerating processes, reducing costs and increasing your competitiveness in a sustainable way.

**Key Benefits at a Glance**

» Shorter throughput times due to faster acquisition processes

» Minimized error rates (NoReads) thanks to maximum data capture rates (100 percent with video coding)

» Increased productivity and efficiency in conjunction with reduced costs

» Archived images and transparent, documented processes as a basis for optimization

» Direct connection to ERP and warehouse management systems, for example, for further object- and customer-related processes

**EFFICIENCY WITH AUTOMATED CAMERA-BASED READING SYSTEMS**

**Fields of Application**

» Inbound inspection

» Storage/deformation detection

» Handling of returns

» Order picking

» Loading unit inspection

» Outbound inspection

» Loading optimization

» Sorting
VITRONIC Auto-ID systems comprise high-performance cameras, a decoding unit and machine vision software. The cameras capture an image of a package and of the codes or text on the package. The software uses this image to detect, analyze and read barcodes, 2D codes and characters (OCR).

In the same process step, important supplemental information, such as the volume and weight of the package can be recorded. Carton deformations are recognized and information about the position of the goods is derived – all at the highest throughput and read rates. An archiving system enables storage of all camera images.

The information collected is sent directly to connected systems, such as the sorter control system, and warehouse management and ERP solutions. There, the information may trigger additional customer-related or object-related processes. Thanks to archived images, inefficient processes can be identified at an early stage and errors eliminated as quickly as possible.

**VITRONIC Reading Systems Capture**

- Codes on up to six sides of a package
- Codes behind foil
- Poorly printed or damaged codes
- Color codes, even on a colored background
- Several codes simultaneously
- Even the smallest codes
- All standard 2D codes, including ECC-200, PDF417, MaxiCode, QR code
- Handwritten and typewritten characters

**Automatic Capture of all Relevant Codes**
VITRONIC AUTO-ID SYSTEMS – MODULAR, PRECISE, RELIABLE

Auto-ID systems are modular and can be adapted to suit your requirements. Our systems read codes and characters, determine the volume and recognize carton deformations. Their range of applications is virtually unlimited. Almost anything is possible – from top-side reading systems with one camera that reads data on shipments from above to the high-end solution, which captures information on all six sides of a parcel and determines its volume and weight.

VICAM SSI2 – A Reliable Solution for High-end Applications

The VICAM SSI2 line scan camera is fast, compact and energy efficient, and forms the centerpiece of our Auto-ID solutions. The camera is now in its 8th generation and has been successfully installed more than 7,000 times in locations across the globe. This proven technology is a reliable solution for high-end applications such as character reading (OCR) or video coding.

VICAM 3S – The Line Scan Camera of the Next Generation

VICAM 3S is setting new standards in data capture. This all-in-one line scan camera has an extremely high line frequency and the highest focus range on the market. Its key feature, however, is its integrated decoding unit.

VICAM SNAP! – The Multi-code Reading System

For manual handling or sorting at distribution and logistics centers or mail and parcel companies, the compact VICAM SNAP! Auto-ID system captures and processes barcodes and 2D codes quickly and reliably. Thanks to its unusually high reading capability, operators can move the goods (for example, small items, loading units or large envelopes) beneath the matrix camera with both hands at high speeds. The large reading area enables fast, intuitive handling of the goods.
**VOLUMEC HD – Volume Measurement and Deformation Detection**

In addition to reading codes and text, the systems can also be used to measure the volume of objects. Developed by VITRONIC, the VOLUMEC HD 3D volume measurement system combines innovative camera and laser technology to create a highly precise and reliable end-to-end solution.

VOLUMEC HD measures the volume of both rectangular and non-rectangular objects as they are transported by conveyor belts and sorters. Thanks to its unique camera-based laser measurement technique, VOLUMEC HD can reliably measure even very small, very flat and dark-colored packages.

In addition to volume measurement, shape inspection also detects deformations in boxes, such as bulges and dents. This ensures that boxes are only placed in storage if they are free of defects, and prevents malfunctioning of the automated warehouse technology and reductions in throughput when storing boxes in automated high-rack warehouses.

**Legal for Trade Applications and Optimized Processes**

Our certified products support legal for trade applications. The tamper-proof data that is captured and stored provides a basis for automatic invoicing, and enables an automatic comparison of the customer’s package information with the actual captured data.

The volume data can also be used as a basis for calculating transport capacities and optimizing vehicle loads and route planning. Furthermore, the data can be fed into statistics and used for automated shipping inspection and outbound inspection, to improve internal goods flows, as well as to check company pricing structures and logistics processes.
6 APPLICATIONS

COUNTLESS APPLICATIONS
INDIVIDUAL SOLUTIONS

Inbound Inspection – Automatic Capture of Barcodes
Huge volumes of goods in boxes arrive every day at distribution centers belonging to retailers, mail order companies, logistics and industrial companies. The data for all of these must be captured automatically. During the goods inward process, VITRONIC Auto-ID systems enable in-motion reading of barcodes on supplier labels (article number, size, assortment number, color, etc.) and the corresponding box ID. They are connected to existing warehouse and resource management systems, so that downstream processes can be triggered automatically.

Inbound Inspection – Reliable Deformation Detection
Automatic storage systems can only reliably process intact boxes. Otherwise, malfunctions may occur in the automatic storage technology. Damaged boxes must be separated from the others at the goods inbound inspection. The systems have an additional software function for capturing the contours of the boxes and detecting deformations such as bulges or dents on up to six sides of the object.
Inbound Inspection – Barcode Reading at Manual Workstations
The VICAM SNAP! multi-code reading system from VITRONIC is used to read barcodes during the goods inward process. The camera-based multi-code reader is mounted above a manual workstation. The operator manually places the objects below the reading field, and all barcodes, including damaged codes, are then captured with a maximum read rate.

Inbound Inspection – Automatic Handling of Returns with OCR
Returned goods in various types of packaging are captured automatically during the goods inward process in mail order companies. The goods are usually transported on a conveyor belt below a top-side reading device. VITRONIC Auto-ID systems determine the position and orientation of the label attached to the item, and read the barcode as well as the handwritten reason explaining why it was returned. This simplifies and accelerates returns processes and makes them more cost efficient.
Outbound Inspection – Precise Measuring of Volume and Weight
For e-commerce and retail, precise measurements of the volume and weight of goods shipments are indispensable. This data can then be used, for example, for loading optimization and route planning for the transport fleet, for registering the goods with the forwarding agent, for automatic invoice creation, and for accurate calculation of postage or shipping costs.

Outbound Inspection – Reliable Pallet Measurement
Airfreight companies in particular are required to measure large units of freight (such as pallets) in order to optimize the utilization of their aircraft fleet. The systems can, for example, be mounted on a ceiling to measure large objects and pallets that are transported on conveyor belts below the measuring unit. In addition to volume data, a 3D overview of the freight unit is generated and archived to ensure traceability of the data acquisition process.
Fast, Reliable Order Picking
During order picking, various items from various loading units or tote bins have to be packed into a shipping carton using a packing list or order form. With VICAM SNAP!, barcodes or 2D codes on items can be recorded automatically. Acoustic or optical signals provide the operator with clear feedback indicating correct or incorrect order picking.

This makes VICAM SNAP! ideal for Pick-to-Light/Put-to-Light and Sort-by-Voice applications. The images of the picked items are stored, and enable full traceability of the order picking process (track & trace).

Reliable Inspection of Loading Units
In addition to code reading, machine vision systems are also ideal solutions for reliable loading unit inspection in automated storage systems. For example, they can be used to optimize the storage and retrieval of pallets, wire mesh crates and loading units for small parts through fully automated occupancy checks. Powerful cameras record images of the loading units, which are analyzed by the inspection software for occupancy checks, and transferred directly to the connected warehouse management system.
Powerful Parcel Sorting with a Central DWS System
In the field of parcel logistics, VITRONIC Auto-ID solutions enable the capture of all parcel data in a single step. DWS (dimensioning, weighing, scanning) systems identify a package, capture codes and characters (OCR), accurately measure the volume and weight of the objects, and reliably detect contours and defects – all in one central system. Our DWS systems can be combined with X-ray systems.

Efficient Flat, Smalls and Flyer Sortation
In mail distribution centers, large letters (flats, flyers, smalls) are sorted by routing region and ZIP code at manual workstations. The VICAM SNAP! semi-automatic camera-based identification system automatically captures barcodes or 2D codes on large letters, communicates with the customer database, and gives the operator instructions for correct sorting via optical and acoustic signals. In this way, VICAM SNAP! enhances employee productivity, while also minimizing sorting errors.
LIFETIME-SERVICE FOR SATISFIED CUSTOMERS

All VITRONIC systems are developed and produced using the highest quality standards, and combine reliable functions with maximum durability and cost-efficient operation.

If you have any questions about the maintenance or operation of our systems, need help with troubleshooting, or if you would like to request a service technician, we can be contacted 24 hours a day, 365 days a year. Our maintenance specialists ensure that your Auto-ID solutions work reliably at all times, even under demanding conditions.

We offer extensive consultation for the planning of your specific application and services to upgrade your system, as well as training to suit your needs.

Our services and their descriptions are based on European standard EN 13306:2010 as well as the Information Technology Infrastructure Library (ITIL) for IT services of the British Office of Government Commerce (OGC).
VITRONIC WORLDWIDE

VITRONIC is a global leader in the field of industrial machine vision headquartered in Wiesbaden, Germany. Since its foundation in 1984, the privately owned company has been offering highly innovative solutions in industrial automation, logistics automation and traffic technology. Today, VITRONIC supports customers in over 60 countries via a global network of subsidiaries, service centers and partner companies.

All of the companies’ products are developed, designed and manufactured by VITRONIC in Germany. They range from standardized to fully customized solutions.

Feel free to contact us – we look forward to hearing about your projects.

Full contact details and further information are available at www.vitronic.com