

The image shows a Siemens SIMATIC MV optical identification system in a factory setting. A grey industrial unit with a 'SIEMENS' logo is connected to a large, horizontal, metallic cylindrical component. Two blue cables are plugged into the top of the unit. In the foreground, there are various mechanical parts and a red safety barrier. Overlaid on the image are glowing blue and yellow arcs and a red and yellow circular pattern, suggesting a scanning or identification process. The background is filled with a digital rain effect of binary code (0s and 1s).

SIEMENS

Ingenuity for life

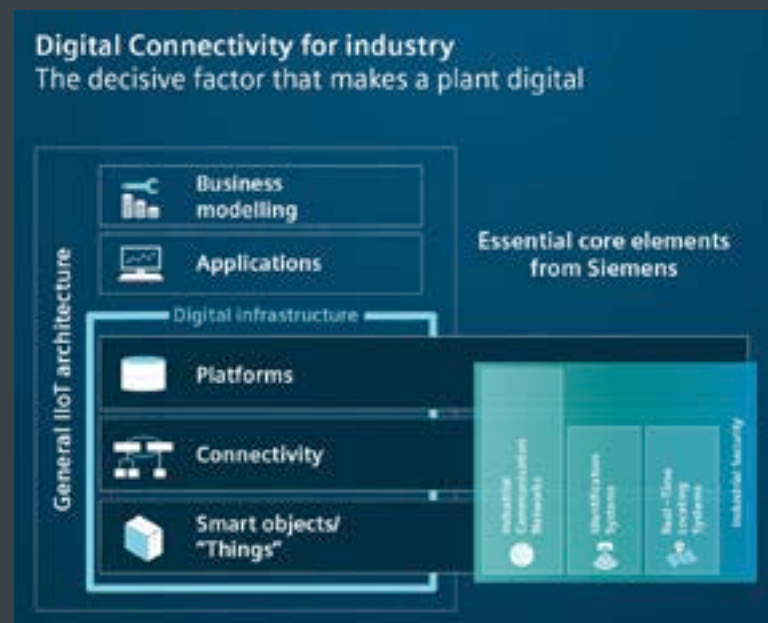
Optical Identification

SIMATIC MV – Keeping a watchful eye on
production and logistics

siemens.com/optical-identification

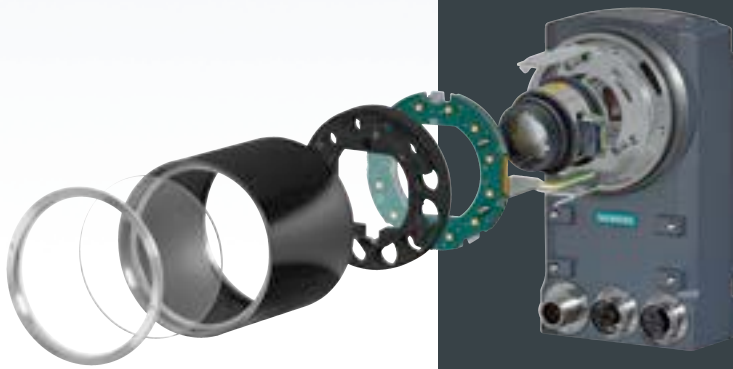
Optical Identification: a watchful eye on production and logistics

A digital infrastructure for industry is the key variable for anyone who wants to fully exploit the opportunities of digitalization. Almost invisibly, it provides the necessary connections between all objects, systems, and applications, transforming a plant into a smart plant, things into the Industrial Internet of Things, and ideas into reality. As an essential core element of the digital infrastructure, SIMATIC Ident offers an efficient and economical solution: a uniquely consistent, end-to-end, and scalable portfolio of RFID and optical identification systems in manufacturing and logistics. Along with locating systems, network solutions, industrial security, and future key technologies, you benefit from a powerful foundation for all present and future IoT applications.



„Always keeping an eye on the entire product life cycle”

Highlights



- Complete, scalable portfolio of high-performance stationary optical readers
 - 0.5 MP to 5.3 MP
 - 1 GB or 2 GB working memory
 - Industrial Ethernet (100 MB) and optional Gigabit Ethernet (1,000 MB)
- TIA system-tested integration into the SIMATIC automation environment (Totally Integrated Automation)
- Various communication and connection options
- Verification of 1D/2D codes according to open standards – even during ongoing production
- Text recognition (Optical Character Recognition)
- Object recognition
- Remote support concept: worldwide plant optimization / troubleshooting through the analysis of recorded image information from the production line (optimized parameters are made available remotely)
- E-focus lenses for flexible production as well as rapid commissioning

Optimal determination of distance and illumination

SIMATIC Ident has such a simple and user-friendly design that no special training is required for your staff. For you, this means less time and effort for training and maintenance. Even commissioning is significantly shortened. The fast installation times significantly reduce downtimes, and you benefit from greater productivity.

In focus: optical readers

Data Matrix Codes (DMC) feature an impressively high level of data security, have been proven in a variety of applications – including in harsh industrial environments – and meet the growing demand for seamless tracking and tracing of products and processes. At the same time, they require less time and effort than manual marking and reading systems. For the precise reading and verification of 1D/2D codes, text recognition (Optical Character Recognition, OCR), and object recognition, Siemens offers both stationary optical readers and optical handheld readers.



The future is digital – SIMATIC MV500 supplies production data in the cloud

Maintaining a constant overview of the entire production and supply chain means dealing with staggering volumes of data that flow together into virtual clouds to the Internet of Things (IoT). The analysis and utilization of this data opens up unimagined potential. Siemens has developed a solution that allows this potential to be fully exploited. MindSphere supports the digital transformation of enterprises of any size and in any sector, and in the shortest possible time.

Embrace the digital future with SIMATIC MV500 optical readers

The optical readers in the SIMATIC MV500 series can be securely connected to cloud platforms via a SIMATIC S7-1500 controller and CP1543-1 – already resulting in brand-new opportunities for using data acquired from 1D/2D codes.

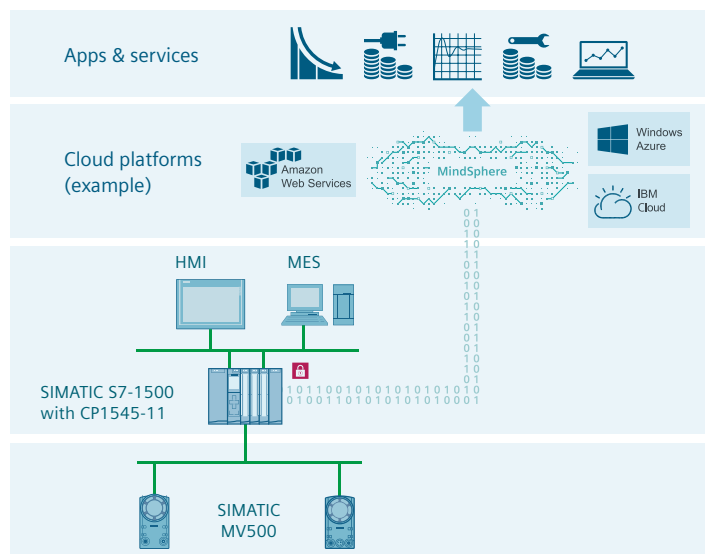
As a link between the real and digital world, optical readers read operating data such as product ID with position and time in production and ensure that the results of tracking are available worldwide. The connection is made possible by a function block integrated into the S7 controller.

The result: maximum transparency, optimal processes

The analysis of data, which is transferred from the production line to clouds with the help of SIMATIC MV500, renders the production process transparent across manufacturers. This transparency allows the optimization of production processes and supply chains with a view to improving efficiency and quality in production, logistics, asset management, and other areas in all industries.

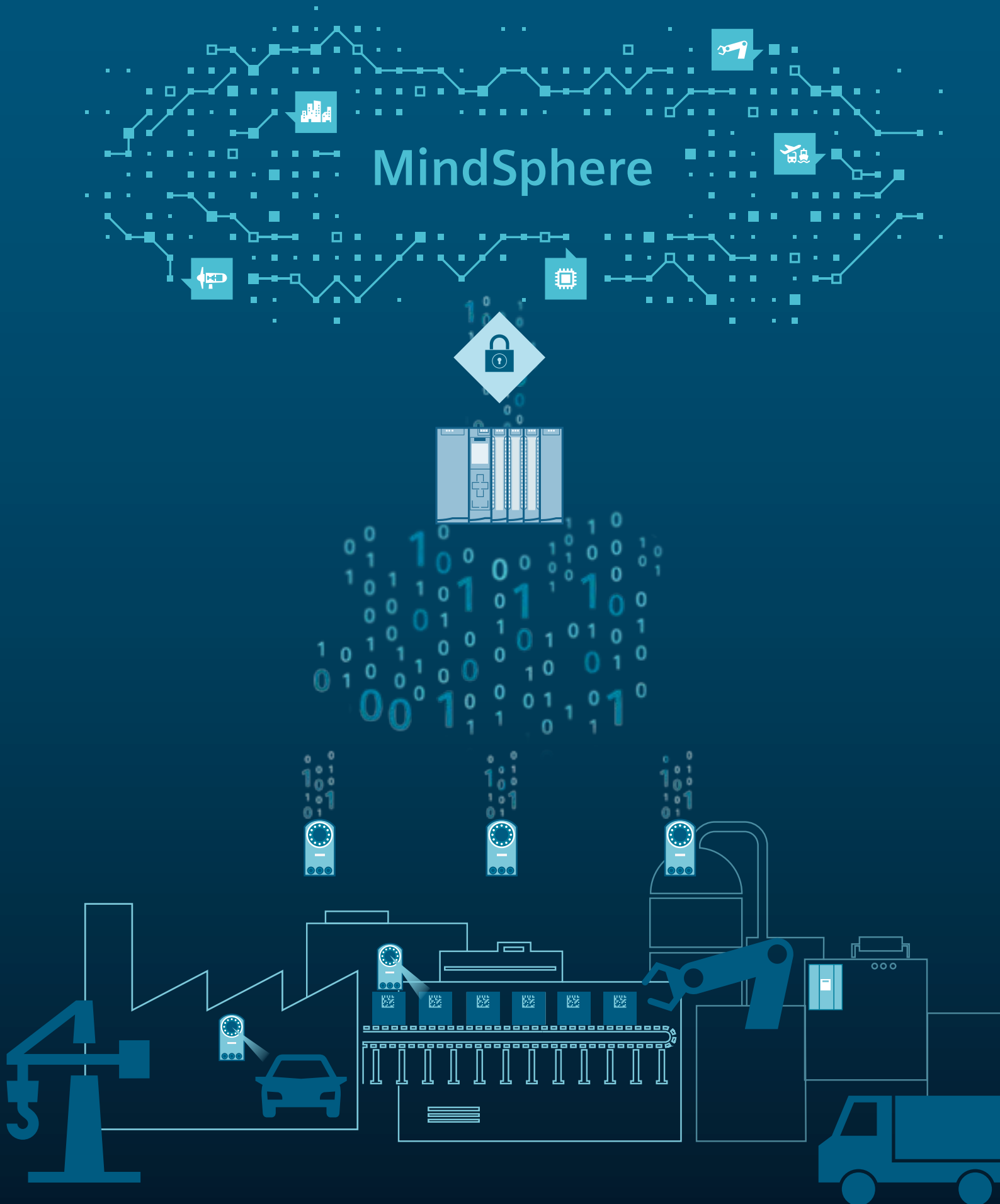
Highlights

- Simple and secure connection to cloud platforms via SIMATIC S7-1500 and CP1545-1
- Support from Siemens MindSphere, Amazon Web Services, Microsoft Azure, IBM Cloud
- Simple configuration of the connection using drag & drop in the TIA Portal
- MindSphere app: analysis and visualization of SIMATIC MV500 track & trace information
- Worldwide availability of the results of analysis
- Complete solution from the sensor, connection, and digital services to cloud-based applications



SIMATIC MV500 and a future-oriented cloud infrastructure are essential components of a successful digitalization strategy and the basis for company-wide data-based services from Siemens.

MindSphere

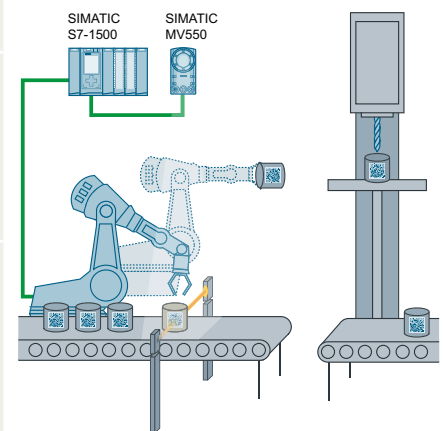


Optical Identification in practice

Pick & Place: random picking of product blanks by robots

Industry: any

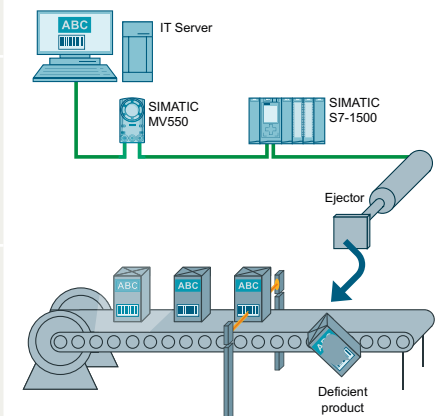
Task	Detecting the position of product blanks for pick & place by means of robots
Solution	<ul style="list-style-type: none"> • Reading of workpiece position based on the printed Data Matrix Codes (DMC) • Detection and ejection of incorrectly marked parts • Communication of position of correct workpieces to robots • Transportation of workpiece to processing position when this position is free
Benefits	<ul style="list-style-type: none"> • Large image field – one camera precisely covers the entire range • High processing speed thanks to the use of DMCs • SINUMERIK connection via existing application example • Simple configuration via web-based management (WBM)



Track & Trace: tracking of uniquely marked products on the production line – discarding if applicable

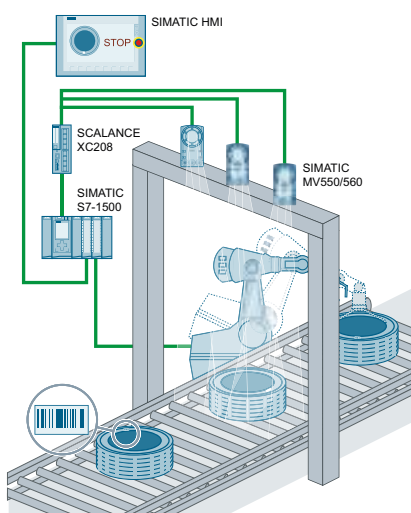
Industry: food & beverage

Task	Determining unreadable or incorrect barcodes / packaging types – to stop system or discard product
Solution	<ul style="list-style-type: none"> • Reading of products just before packaging • Processing of several jobs simultaneously, independently of conditions • Checking for legally required content ID (batch number) and readability of EAN code based on the barcode
Benefits	<ul style="list-style-type: none"> • Large image field – one camera precisely covers the entire range • High processing speed for multi-stage jobs • Integration of SIMATIC into S7 controller via Ident profile and SIMATIC HMI via HTML5 websites • Engineering, documentation, and service via TIA Portal • Simple configuration through WBM



Tires: identification by barcode

Industry: tire



Tracking and tracing production

- Identification of very small markings on the tire bead at high speeds

- Coverage of the reading area, even large production lines, with few cameras thanks to high resolution
- High image capture rate and high processor performance ensure extremely high belt speed
- Optimal illumination with IP67 built-in ring lights
- Integration of SIMATIC into S7 controller via Ident profile and SIMATIC HMI via HTML5 websites
- Simple configuration via WBM
- PoE-enabled switches reduce cabling effort

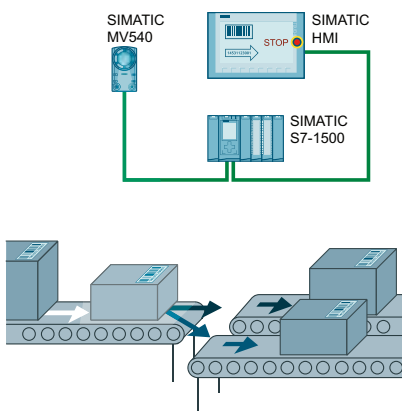
Task

Solution

Benefits

Routing: recording of product ID to control transport systems

Industry: food & beverage, pharma, tob



Controlling transport systems (routing) based on product ID

- Flexible reading of ID for different products
- Selective control of transport system for the specific product
- Control of highly flexible logistics processes, for example to perform specific product picking

- High image capture rate and high processor performance ensure extremely high belt speed
- Optimal illumination with the IP67 built-in ring lights
- Food-compatibility thanks to Plexiglas faceplate
- Integration of SIMATIC into S7 controller via Ident profile and SIMATIC HMI via HTML5 websites
- SIMOTION connection via standard library element
- Simple configuration via WBM

Task

Solution

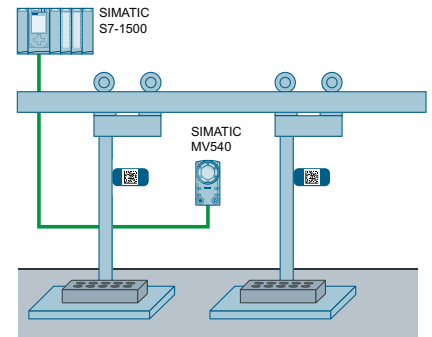
Benefits

More example applications

SKID: reading the IDs of product carrier systems to establish control within the production process

Industry: any

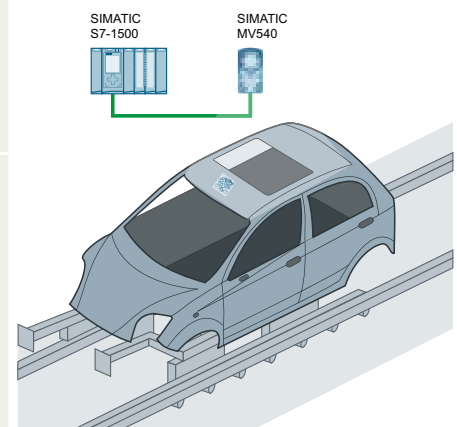
Task	Recognition of IDs on carrier systems
Solution	<ul style="list-style-type: none"> Detection of IDs on carrier systems despite changes caused by processing (such as painting or discoloration) Reliable reading over greater reading distances for large products, such as car bodies
Benefits	<ul style="list-style-type: none"> Large image field to detect codes in different positions (catch range) E-focus for simple commissioning and different reading distances for different products High image capture rate and high processor performance ensure extremely high belt speed Optimal illumination with IP67 built-in ring lights Food-compatibility thanks to Plexiglas faceplate Integration of SIMATIC into S7 controller via Ident profile and SIMATIC HMI via HTML5 websites SIMOTION connection via standard library element Simple configuration through WBM



Assembly: identification of correct installation parts

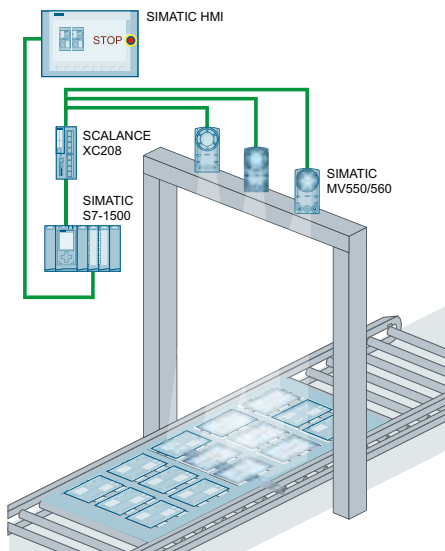
Industry: automotive

Task	Ensuring the installation of suitable components
Solution	<ul style="list-style-type: none"> Checking a product property before an assembly stage using DMC – as prerequisite for the next step Protecting products and production plants against damage through compatibility check based on product ID
Benefits	<ul style="list-style-type: none"> Large image field for large objects E-focus for simple commissioning and different reading distances for different products High image capture rate for adaptive lighting adjustment on the production line Optimal illumination with the IP67 built-in ring lights Exchangeable faceplate on protective barrel for use in welding SIMOTION connection via standard library element Integration of SIMATIC into S7 controller via Ident profile and SIMATIC HMI via HTML5 websites Simple configuration via WBM



Montage: reading of all markings on a multi-purpose PCB

Industry: electronics



Prevention product mix-ups during assembly

- Seamless code reading with different track widths on production line
- Reading of all markings on a PCB (e.g. PCB ID, MAC address of each individual application)
- Read portal for reading in motion

- Multiple cameras permit portal operation for varying board widths
- E-focus for simple commissioning
- High image capture rate for high belt speed
- Optimal illumination with the IP67 built-in ring lights
- SIMOTION connection via standard library element
- Integration of SIMATIC into S7 controller via Ident profile and SIMATIC HMI via HTML5 websites
- Simple configuration through WBM

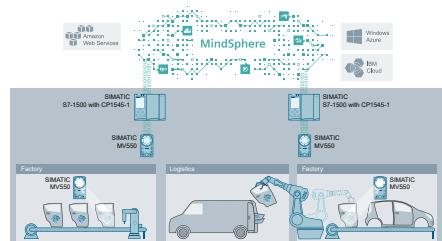
Task

Solution

Benefits

Digitalization: Delivery of data to cloud applications

Industry: automotive supplier



Delivery of product labeling and precise position data to cloud platforms – cross-location process communication

- Operating data (product labeling and production location), which is generated at distributed locations, can be made available worldwide through the connection of SIMATIC MV500 optical readers to cloud platforms such as MindSphere
- The data made available via the optical reader to SIMATIC S7-1500 and CP1545-1 can be easily transmitted to cloud applications
- This data can be retrieved and used worldwide within a very short time

- Optimization of cross-location production processes and supply chains
- Increased efficiency along the entire supply chain
- Production process becomes transparent across manufacturers
- Global availability of KPIs thanks to web-based concept of user applications

Task

Solution

Benefits



Everything necessary for Marking, Verifying, Reading, and Communication

Four key elements are required for Direct Part Marking (DPM) traceability applications that we combined under MVRC: Marking, Verification, Reading, and Communication. Marking is placing the code directly on the object, verification is checking the quality of the mark located on the object, reading is reading the mark in the production domain or when servicing, and communication is reliably transmitting the read result. Siemens covers all four key elements with a variety of products and systems and provides support for the creation of applications.



Marking

Marking a product is normally done very early on in the production process so that all subsequent steps can be controlled using the product identity. Wherever possible, marks are applied to parts using a method called Direct Part Marking (DPM). DPM is the application of a mark directly onto the surface of a product without the use of a separate carrier material, such as an adhesive label. This makes it possible to identify products in production and trace them after delivery. A coding method that meets these user requirements has been available for years using 2D codes.

Marking quality, and thus the correct reading of the product ID, is now as important as the dimensional accuracy of a component. Both prevent production downtimes and additional handling effort.

Reading

Reading in the production domain or when servicing requires extremely reliable optical reading systems. With the aid of convenient algorithms, the SIMATIC MV optical readers ensure a maximum of reliable reading and easy handling for parameter assignment and configuration.

Communication

The communication between a reading device and process control is performed via standard interfaces such as PROFINET, Ethernet, and RS232, and via digital inputs and outputs. SIMATIC MV readers can also use communication modules (CMs). This permits fast and secure communication via additional fieldbus protocols such as PROFIBUS and EtherNet/IP for connecting to process control.



Verification

Verification systems guarantee the readability of marks throughout the entire production process, regardless of any contamination or the use of different reading devices. In addition, the mark is guaranteed to remain readable company-wide after the production process and throughout the life span of the product.

SIMATIC MV, for example, offers verification according to ISO TR 29158 for the monitoring of marking. The measurement of marking quality is already standard in many industries and prescribed in supplier agreements.

Marking

Applying the code directly to the object (DPM)



Verifying

Checking the quality of the mark located on the object



Reading

Reading the mark in the production domain or when servicing



Communication

Transmitting the read results





Optical readers

The SIMATIC MV optical readers are high-performance, intelligent readers both for easy, high-contrast 1D/2D codes and for difficult-to-read DPM codes on different surfaces on the product itself. The optical readers also permit text recognition, object recognition, and the checking of marking quality. Readers in the SIMATIC MV family also feature high-performance image capture. Different resolutions and integrated lighting thus make the optical readers the obvious choice for flexible use in production and logistics. Device configuration via Web-Based Management (WBM) and system integration via the TIA Portal ensure easy handling.

SIMATIC MV500

- Highest reading performance of 1D/2D codes with up to 80 reads per second or up to 300 codes per image (bulk reading)
- Simple connection to cloud applications via SIMATIC S7-1500 and CP1545-1
- Powerful, flexible accessories (e-focus lenses, controllable built-in ring lights, polarization filter)
- E-focus lenses in different focal lengths
- Easy handling thanks to one-button configuration (for auto setup and network configuration)
- Separate diagnostic interface: Gigabit Ethernet interface for diagnostics and service with network disconnection
- Convenient configuration thanks to WBM and integration in TIA Portal



SIMATIC MV400

- Simultaneous code reading, text reading, and object recognition in one image
- High processing speed of up to 70 reads per second
- Numerous accessories (lighting, lenses)
- Configuration via WBM



SIMATIC MV300

- High-performance 1D/2D code reading, even of low-contrast codes
- Flexible interface connection (RS232, USB, Bluetooth, communication modules)
- Sturdy, ergonomic design for manual workstations



AutoTrigger

With AutoTrigger, codes that enter the reader's image field are automatically read. The reader itself searches a sequence of images over any preferred time span for code visibility. It does not require any external trigger signals, such as from a light barrier.

Multi-code reading

With multi-code reading, up to 300 codes can be coded for each image capture, for example when several objects are bulk-read in one stack.

Verification

Only high-quality marking can ensure maximum readability in the case of contamination in the production process. Verification also reduces production costs because the demands on material quality and marking quality are not as stringent. With the "Veri-Genius" verification license, SIMATIC MV440 can also be employed for checking marking quality. The license can be copied to the reader with the SIMATIC Automation License Manager.

Object recognition

With the "Pat-Genius" object recognition license, SIMATIC MV440 can also perform object recognition (object classification, position detection, presence check, completeness check) in addition to reading 1D and 2D codes. This function is also possible in combination with text recognition, for example. It is thus possible to check the position of a label and the inscription (reading and comparing) of plain text in an image field.

Object recognition is used to search for and detect trained patterns in an image. Areas of application include pick & place, quality control in production, position detection in infeed systems, and quantity monitoring in infeed systems and production. The license can be copied to the reader with the SIMATIC Automation License Manager.

Code quality evaluation

Depending on the model, either uncalibrated or calibrated quality evaluation is integrated. The uncalibrated method helps to reliably configure the reader and continuously monitors the code quality. The calibrated method also permits the comparison of quality values over a large number of readers (for example, company-wide, world-wide, or over the entire supplier chain).

Installation and startup

For most applications, the parameters are set automatically. If changes become necessary, however, parameters can be set using the integrated Web server and a Web browser without separate software installation. In the standard case, products in the SIMATIC MV500 series can be installed and started up without the aid of an additional Web browser using one button configuration available on the reader itself.

Web-based user interface

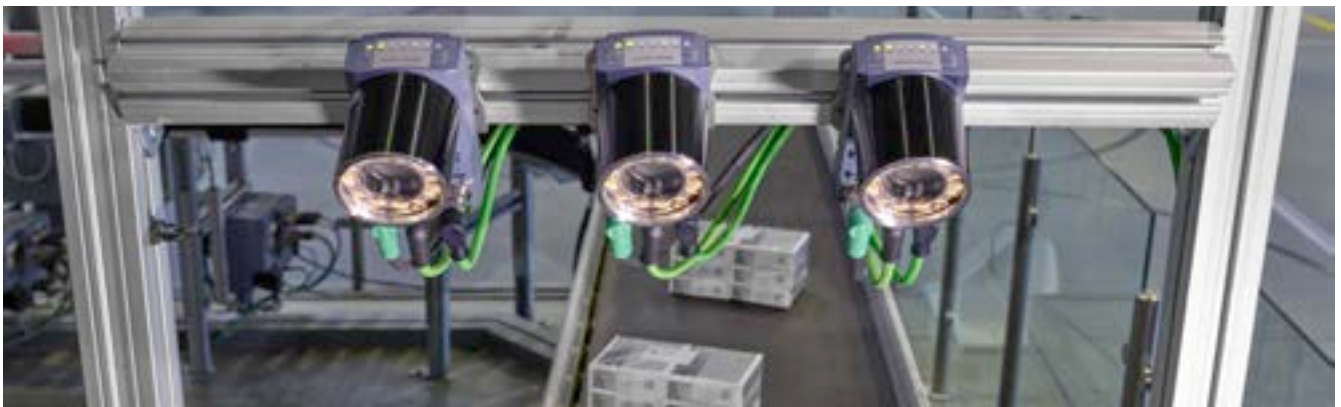
The reader's user interface uses HTML5-enabled browsers (preferably Chrome) on the PC. It is downloaded at startup and executed in the browser. The user interface is also stored on the reader. It is downloaded during startup and executed in Internet Explorer. There is no need to install software on the PC. The user interface can be started from any PC or other Windows-based device and is available in German, English, and Chinese.

Visualization

In addition to the web-based user interface, pre-existing HMI units in the plant can also be used to display the image information. In the case of a decoding error, it is extremely helpful when the user can read the image information directly on the HMI unit. The programmer can create the user interface as an integral component of a machine's user interface using professional software such as SIMATIC WinCC and WinCC flexible as a customized user interface.

Diagnostics and logging

The diagnostics and logging functions support, among other things, the transfer of time stamps, fault patterns, and results to database systems or a file system for the purpose of generating trend analyses or statistics. The diagnostic data (such as fault patterns or configuration data) can also be used for remote maintenance purposes.





SIMATIC MV500: high-end reader with extremely powerful image capture



SIMATIC MV540, MV550, and MV560 are the three devices of the new high-end generation. They are characterized by higher computing power and thus a fast reading process as well as increased reading reliability, even under difficult conditions. A comprehensive portfolio of accessories is available for all optical readers in the SIMATIC MV500 series, such as ring lights in different light colors and designs and e-focus lenses with different focal lengths. This makes it possible to significantly increase the range of application possibilities. The device configuration via web-based management and integration in the TIA Portal ensure convenient project planning. The one-button configuration for network and read parameters makes the commissioning of SIMATIC MV500 devices particularly easy. In addition, the large working memory (up to 2 GB) allows extended use of the AutoTrigger function, which makes it possible to save money when installing high-precision mechanical components in the system.

The SIMATIC MV550 and MV560 optical readers additionally feature a Gigabit Ethernet interface, which is used for diagnostic and service purposes. This interface also enables network disconnection for smooth communication. Despite numerous innovations, the devices of the SIMATIC MV500 family are compatible with the SIMATIC MV440 predecessor model both mechanically and with regard to programming and interfaces. All devices of the new generation can be easily and securely connected to cloud platforms. This enables users to optimize production processes and supply chains and boost efficiency and quality, for example in production, logistics, and asset management.



SIMATIC MV400: high reading reliability and speed



The stationary optical readers in the SIMATIC MV400 series feature high reading reliability and speed. The readers identify both easy, high-contrast 1D/2D codes and difficult-to-read DPM codes on the product itself. In addition to code reading, SIMATIC MV440 provides other functions such as measurement of marking quality (verification) for process control, text recognition (OCR/OVC), and object recognition. All readers in the SIMATIC MV400 series can be easily and flexibly integrated into automation systems thanks to standardized, industry-compatible interfaces and function blocks. Flexible lighting options and a compact design with IP67 degree of protection mean that the optical reader can be used in many industrial applications.

Different device versions and accessories

- Optical readers with different sensor resolutions up to 3 MP
- Flexible, high-performance accessories
- Flexibly controllable, built-in ring lights with separately configurable ring light segments
- C-mount lenses with electronic focus and industry-compatible plug connection enable a fast focus change (200 ms), wear free (> 1 million cycles) and temperature corrected

Very high reading speed and reading performance

- Up to 80 reads per second
- Reading of 1D/2D codes, such as Data Matrix Codes
- Multi-code reading

Easy operation

- One-button network configuration enables the automatic assignment of IP addresses for a connected PC without administrator rights
- One-button reading configuration makes it possible to automatically set read parameters, lens sharpness, and lighting without opening the user interface (WBM) thanks to the expert knowledge in the device
- E-focus for easy commissioning and flexible production (different read distances for changing between different products on the production line); thanks to the use of the liquid lens, focusing is very fast, wear free, and temperature corrected
- Engineering, documentation, and service with the aid of the industry-compatible TIA Portal software platform ([Application examples in our Industry Online Support Portal](#))

Different device versions and accessories

- Models in different performance classes (such as reading speed)
- Resolutions from 0.3 to 2.0 MP
- Flexible, high-performance, integrated lighting
- Flexible lenses

Interfaces

- Standardized, industry-compatible interfaces and function blocks for easy and flexible connection to automation
- Mixed mode possible with RFID and MV420/MV440 on the same communication module

Functionality of the user interface

- Installation and startup via configuration support on the PG/PC with Internet Explorer installed
- Web-based user interface

- Segment switchable ring lights with integrated polarization filter allow the reader to automatically set the optimal lighting. This makes it possible to prevent reflections on the product surface. It is not necessary to change the mounting angle or external illumination.

Versatile connection to automation technology and cloud platforms

- TIA system-tested components of the Siemens automation platform TIA Portal
- PROFINET and PoE "on board"
- Communication modules for direct connection to PROFIBUS or EtherNet/IP
- Connection to cloud platforms via SIMATIC S7-1500 and CP1545-1
- Separate diagnostic interface: Gigabit Ethernet interface for diagnostics and service with network disconnection (in-house network connection for automation technology and IT systems for smooth communication)

High reliability

- High protection class (IP67) for use in harsh industrial environments
- Maximum system security and reliability thanks to Industrial Security
- High reliability thanks to PLM and HALT (Highly Accelerated Life Test) process

Worldwide use

- Support of relevant standards
- Language switching
- International support

Expanded functionality for SIMATIC MV440 and MV420 SR-P

- Multi-code reading
- AutoTrigger: image recording without the need for external triggers
- ID-Genius algorithm: reading of low-contrast DPM codes (such as dot-peening)

Additional licenses for SIMATIC MV440

- Pat-Genius for object recognition
- Veri-Genius for checking marking quality
- Text-Genius and Text-Genius Plus for text recognition (OCR)

Object recognition with Pat-Genius

With the “Pat-Genius” object recognition license, SIMATIC MV440 can also be used for finding structures in an image in addition to reading 1D barcodes and 2D matrix codes. This function can be used separately in order, for example, to check the presence of a trained structure. The object recognition function can also be used in combination with the code reading and text recognition functions in the same image field.

The “Pat-Genius” object recognition license enables the flexible recognition (finding) of trained objects based on their contours in the image, and without complex learning procedures. Only a few user inputs are required to achieve stable read results. The edge points assigned to a pattern are taken from a selected image region and parameterized with respect to the fineness of the resolution and possible changes in size and rotational position. An object thus specified is stored in the pattern library and assigned an index. The result of a test using object recognition is then the x/y position and rotational position found in the image and the assigned index letter.

The licenses for “Pat-Genius” are supplied as a “Single License” on a USB flash drive and can be installed to the reader and to replacement devices with the SIMATIC Automation License Manager (ALM) using a plug-in. The “Pat-Genius” license is executable on a SIMATIC MV440 with firmware version 6.0 and higher.

Highlights

- Fast and reliable object recognition regardless of rotational position in the image region (up to 2,500 checks/minute) for high-speed applications
- Simultaneous reading and comparison of plain text and machine-readable codes in the same image field plus object recognition
- Several different test patterns can be used simultaneously
- Object recognition is a cascable function – the result of object recognition can shift the image region of the subsequent check (object recognition, text recognition, code reading)
- Test patterns can be scaled – recognition is independent of changes in size (e.g. shrinkage of the object)
- Filter and comparison functions (target/actual comparison in the camera) are available for programming
- Flexible retrofitting of the object recognition function via the SIMATIC Automation License Manager
- Simple integration into the automation environment, for example via the function block of the SIMATIC MV440 devices

Checking marking quality using Veri-Genius

With the “Veri-Genius” license, SIMATIC MV440 can be used for checking marking quality (e.g. of Data Matrix Codes) in addition to reading 1D barcodes and 2D matrix codes. Several test methods are available for 1D and 2D codes. The most important in the automation environment is the test according to ISO TR 29158. It allows checking the quality of the particular code type by means of specific algorithms. At this point, it is important to note that the design standards of the test specifications must also be adhered to in addition to the software. Verification can be combined with all the other functions, including text recognition and object recognition.

The “verification” function is basically available for any image with readable 1D/2D codes. The lighting and image condition must be uniform to achieve an objective evaluation of marking quality. Normally, a position in the production process that meets these requirements is selected for verification purposes. The most important position is immediately after the product is marked by labeling, dotpeening, or lasering. Checking the marking for minimum quality ensures readability even if marking quality is compromised due to scratches or contamination. If the marking has been applied by the supplier, it is recommended that this check be performed at the start of the production line.

Even if the design standards of the test specifications of the individual standard do not have to be adhered to, it is useful to employ the test algorithms. Although the test results are not objective, they can still be used as a meaningful trend indicator for marking quality.

The “Veri-Genius” license is supplied as a “Single License” on a USB flash drive and can be installed to the reader as well as to replacement devices with the SIMATIC Automation License Manager (ALM) using a plug-in. The license is executable on a SIMATIC MV440 with firmware version 4.0 and higher. The scope of delivery includes a standardized calibration card for calibrating the lighting system for objective test results.

Highlights

- Checking of marking quality according to a number of internationally recognized test specifications, especially ISO TR 29158
- Complete test report accessible as an HTML page that can also be archived or sent
- Standardized calibration card included in scope of delivery
- Trend forecast using verification on SIMATIC MV440 devices without calibration and /or without adhering to design test specifications
- Simple integration into the automation environment, for example using the function block of the TIA Portal standard library for SIMATIC MV440 devices

Text recognition with Text-Genius and Text-Genius Plus

With the "Text-Genius" and "Text-Genius Plus" licenses, SIMATIC MV440 can also be used for text recognition in addition to reading 1D barcodes and 2D matrix codes. Text recognition is also referred to as Optical Character Recognition (OCR). With "Text-Genius Plus," text recognition is always possible regardless of the font used for marking (Polyfont) or the marking method. Text recognition can be combined with all the other functions, including object recognition and verification.

The "Text-Genius" license permits the flexible reading of many fonts without complex learning. Only a few simple parameters need to be set to achieve stable read results in text recognition. The following fonts are especially suitable:

- OCR-A and OCR-B
- Semifont M13
- Arial and similar fonts
- All characters in the ASCII character set



Highlights

- Fast and reliable reading (up to 2,500 reads / minute) for high-speed applications
- Simultaneous reading and comparison of plain text and machine-readable codes in the same image field
- Automatic text localization without the use of predefined areas, meaning that text can be read even when its position varies
- Automatic line detection for max. five freely definable image regions of max. 15 lines each
- Automatic character height recognition between 15 and 55 pixels
- Individual parameter assignment for max. five freely definable image regions
- Reading of mirrored, rotated, and inverted text
- Filter and comparison functions available for programming
- Flexible retrofitting of the text recognition function via the SIMATIC Automation License Manager
- Simple integration into the automation environment, for example via the function block of the SIMATIC MV440 devices

The "Text-Genius Plus" license includes all the functions of the "Text-Genius" license and additionally enables the training of further fonts and characters, including special characters and graphic symbols. Particularly worth mentioning is the simple and self-explanatory character training using thumbnails. The convenient algorithm provided by "Text-Genius" minimizes training effort. Only characters with a poor recognition rate or print images that can change greatly require training. The result: extremely flexible usage and an especially high recognition rate.

The licenses are supplied as a "Single License" on a USB flash drive and can be installed to the reader as well as to replacement devices with the SIMATIC Automation License Manager (ALM) using a plug-in. The "Text-Genius" license is executable on a SIMATIC MV440 with firmware version 3.0 and higher and the "Text-Genius Plus" license with firmware version 5.0 and higher.

Highlights

- Freely trainable text recognition
- Computer-aided training: the user is offered untrained characters during production for subsequent assignment (training)
- Use of Text-Genius algorithms to support the training process



Optical Identification at a glance

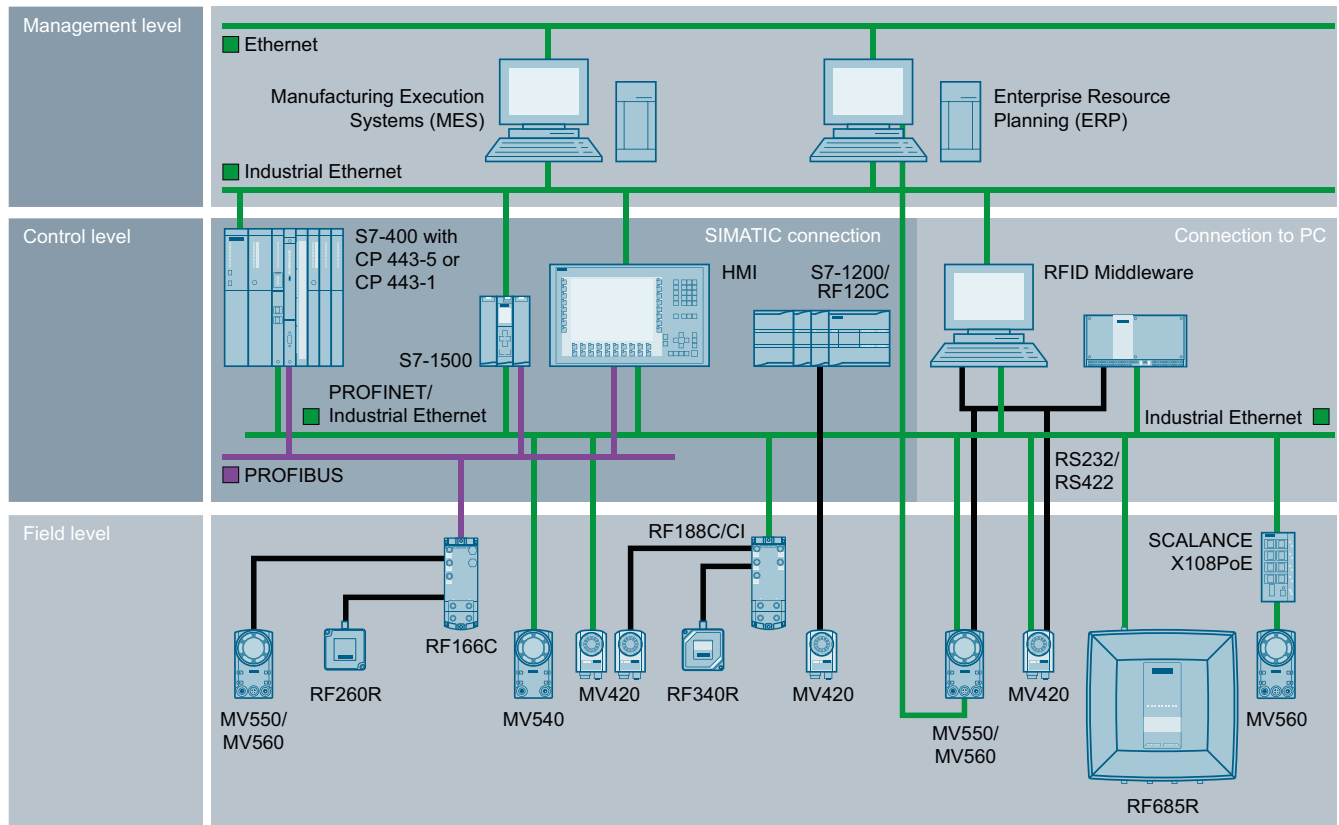
SIMATIC MV

Compact optical readers in different designs and performance classes with flexibly selectable, high-performance accessories

- Integrated and external ring lights in different performance classes
- Large selection of lenses, from small and simple to the electronically controlled lens
- On-board, industry-compatible communication (PROFINET, PoE)
- Devices with additional Gigabit Ethernet interface for diagnostic and service purposes
- Optional communication modules for connecting to automation in the case of special requirements: for direct connection to PROFIBUS or EtherNet/IP



Simple integration into the automation or IT level



The following communication options are available for connecting SIMATIC MV optical readers to the automation or IT level:

- TIA system-tested components of the Siemens automation platform TIA Portal – as well as end-to-end integration in STEP 7 via convenient function blocks
- Direct connection to PROFINET (via FB79)
- Direct connection to Ethernet (TCP/IP native)
- Direct serial connection via RS232 or to RS422 with an interface converter
- Connection to PROFIBUS, PROFINET, and TCP/IP-XML via communication modules. It is also possible to combine an optical reader and an RFID reader on the same communication module.

Convenient function blocks are available for end-to-end integration into STEP 7.

- The web-based user interface permits simple parameter assignment and monitoring without additional installation effort.

The TIA Selection Tool is available to provide support in the selection of SIMATIC Ident components:

www.siemens.com/tst



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