VISY

EVOLVING AUTOMATION ECOSYSTEMS

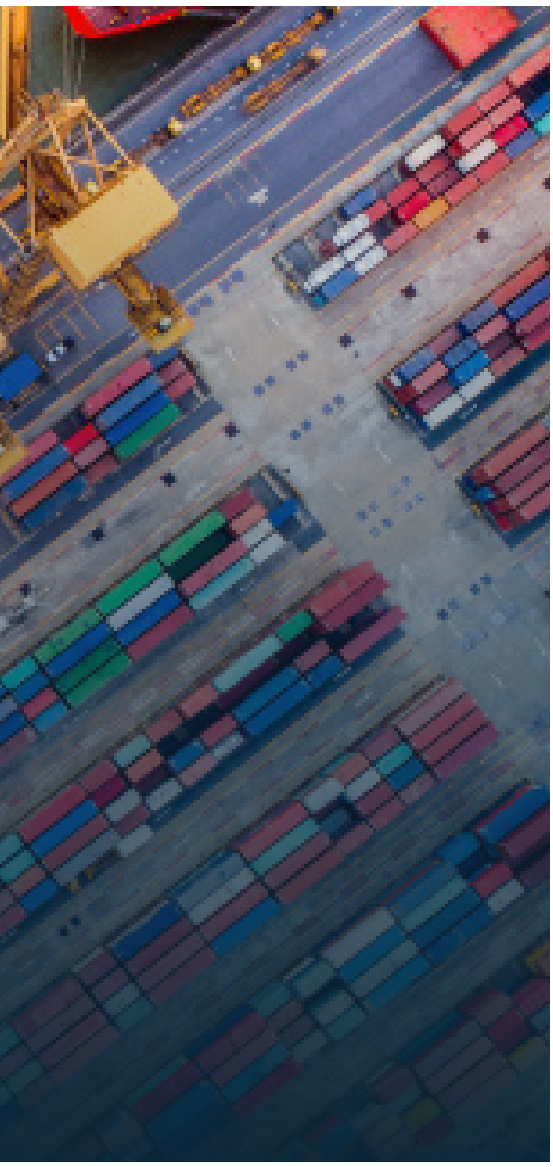
Enhancing and streamlining the safe flow of cargo

GATE AUTOMATION AND OCR SOLUTIONS

Expand your vision

With millions of recognition events and permission requests each day, our solutions ensure streamlined, safe, and secure movement of people, traffic, and cargo globally.

Petri Granroth, CEO, Visy Oy



Contents

Solutions for Ports & Terminals

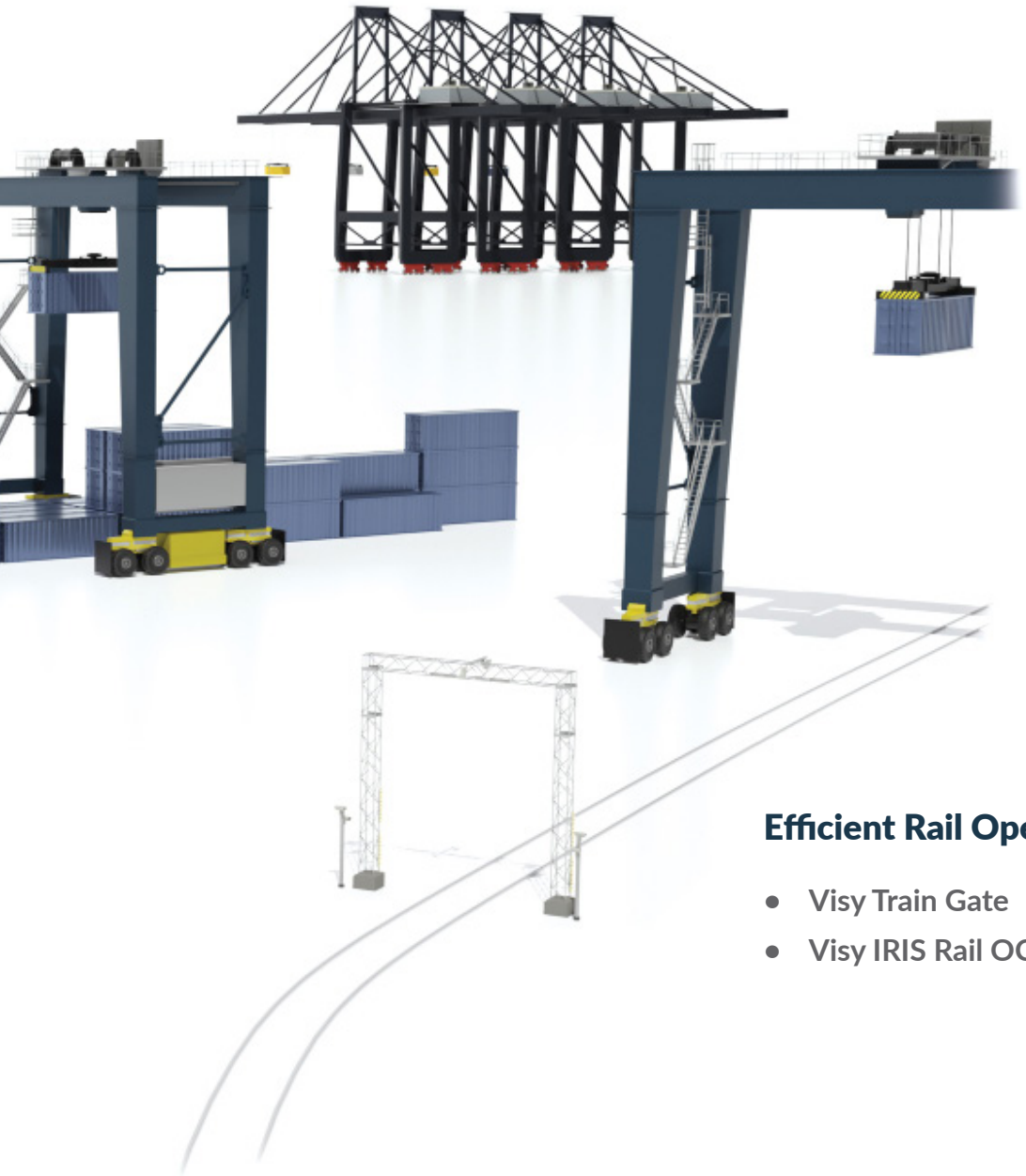
Visy's product selection for ports and terminals is wide to match the diversity of our customers' requirements and preferences. We aim to cover every part of each terminal where identification and tracking of vehicles and cargo brings new opportunities to streamline operations.

Intelligent Container Handling

- Visy Crane OCR
- Visy RMG OCR
- Visy TopView – Spreader OCR

Smart Gate Operations

- Visy Access Gate GOS
- Visy IRIS OCR Portal
- Vehicle Booking System
- Visy Service Kiosks & Apps
- Visy Automatic Damage Detection System
- Visy AREA



Efficient Rail Operations

- Visy Train Gate
- Visy IRIS Rail OCR

How process automation will improve your business?

The Port & Terminal industry is driven by outcome. The question is, what outcome will automation technologies like OCR and AI have on operations?

The operational benefits of OCR solutions and gate automation are clear:

- Reduced operating expenses
- Optimised safety and security
- Increased throughput capacity

These 3 overarching benefits are inevitably connected to essential KPIs such as truck turnaround times, moves per hour, cost per lift, and lost time for accidents. Automatic identification of vehicles and containers and instant forwarding of data to the terminal operating system significantly enhance operational efficiency.

Turning your equipment into smart devices and your facilities into automated environments helps you to achieve your desired operational and financial objectives.

Decrease Truck Turnaround Time by up to

60%

Automating gate operations saves costs up to

80%

Increase STS Gross Moves by up to

50%

Automated access control and container identification in every turn ensures a smooth traffic flow and increases profits through enhanced operational efficiency.

VISY ACCESS GATE GOS

Smart Gate Environment

Visy Access Gate is a highly versatile Gate Operating System (GOS) designed to streamline and automate terminals' gate processes. The flexible and modular access control ecosystem manages vehicle and cargo traffic with intelligent system features that optimize operations and allow you to effectively handle vast volumes of gate transactions.

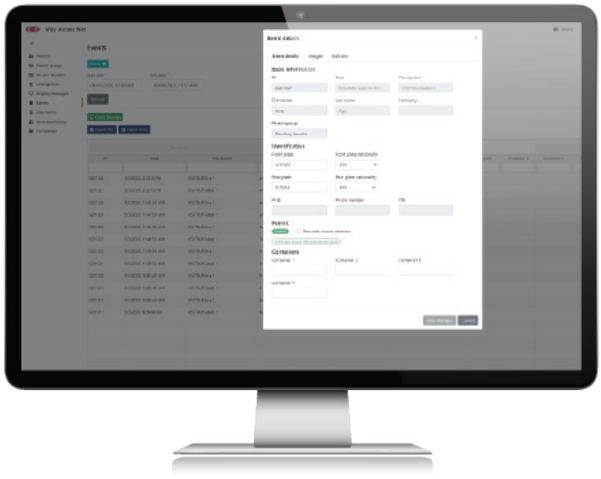
The system solution combines Visy's AI and OCR software with line scan and area scan cameras to capture high-quality images and to recognize vehicle and container identifiers in any environmental condition.

Practical tools for managing traffic events

Visy Access Gate GOS complements terminals' existing intelligent networks with unbeatable integration possibilities. The solution's desktop and web-based user applications provide tools and reporting functionalities for managing access permits, reviewing traffic events, and identifying operational bottlenecks.

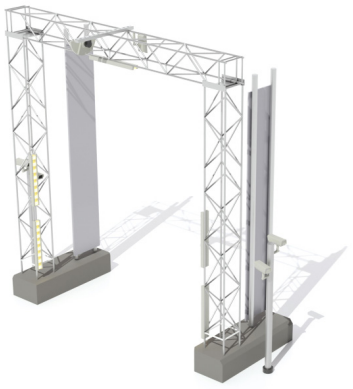
Features

- Visy IRIS OCR Portal recognizes and images vehicles and containers
- LPR with several nationality options
- Identification options for vehicles, and personnel (RFID, UHF, HID, Desfire, Biometrics, Passport scanners, etc.)
- Driver Kiosks for registration, visitor access, instructions, mandatory safety training, etc.
- Area guidance equipment: Information displays, Traffic lights
- Gate area equipment: Barriers, Gates, Turnstiles, Truck scales
- Intelligent Logics and Interfaces: VISY IO (logic connectable to all possible gate equipment), Profibus, XML



VISY IRIS OCR PORTAL

Advanced data collection solution



Visy IRIS OCR Portal automatically recognizes and images vehicles and containers that are entering or leaving a facility, without the need to interrupt traffic. The OCR portal gathers recognition data and validates the best results to maintain a high rate of recognition accuracy. The recognition software extracts front and rear license plates, as well as container IDs and other markings from all sides of containers.

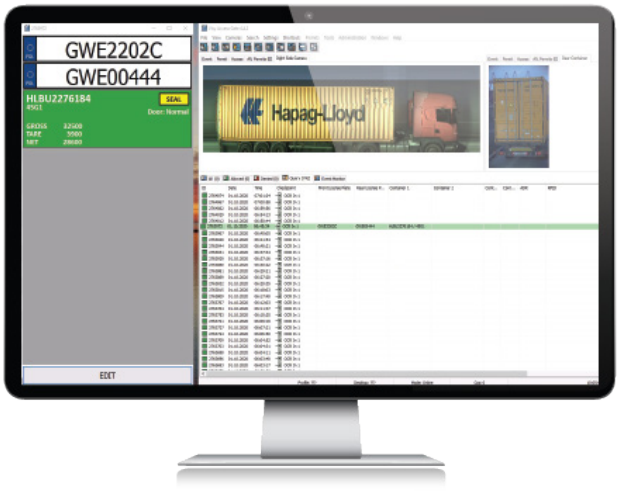
Add-on feature: Visy Measurement Portal

Visy Measurement Portal (VMP) measures and weighs vehicles and cargo while they are entering or leaving the terminal area. VMP provides terminal operators accurate measurement and volume information of arriving traffic and delivers opportunities for planning loading and unloading processes.

VMP is inserted to the Visy OCR Portal solution with a separate portal equipped with laser scanners and WIM scales to gather exact length measurements and to weigh arriving vehicle and cargo. The captured data is brought to Visy Access Gate and exchanged with TOS or other third-party systems.

Features

- Automatic recognition of license plates, container IDs, ISO codes, IMO labels, seals, etc.
- Exceptional real-life accuracy: 98-99.5% correct recognitions
- Non-stop traffic flow, supports speeds of up to 50 km/h
- Small footprint and two-directional operation with exceptional performance
- Works in harsh weather – Installations from -40°C to +50°C
- Robust portal frame with line scan and area cameras, laser scanners, illuminators, and electrical cabinets
- Integration to Visy Access Gate GOS or other gate operating systems
- Extensive data exchange and interfacing with third-party systems (TOS, POS, ERP)



The OCR portal is a unique solution with exceptional real-life accuracy of 98-99.5% correct recognitions even with driving speeds of up to 50 km/h.

VISY ADDS

World's first vision-based solution for automated damage alerts

Visy Automatic Damage Detection System is the first commercially available solution for automatic container damage inspection. The solution uses modern AI with vision technology to provide a real-time tool for detecting damaged containers. Non-stop operation, online monitoring, and automated alerts allow damage inspection without interrupting traffic.

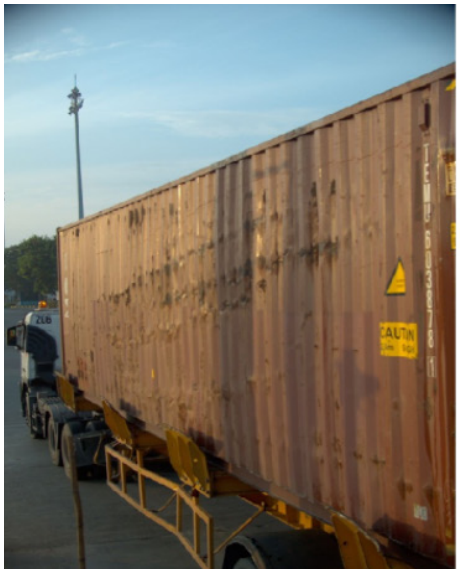
Operate without interruptions

Visy ADDS automatically recognizes structural and surface deformities in containers, such as dents and bulges, when trucks drive through detection portals. Trucks no longer need to stop for manual damage inspections, which cuts the time spent at gate transactions and significantly decreases turnaround times.

Features

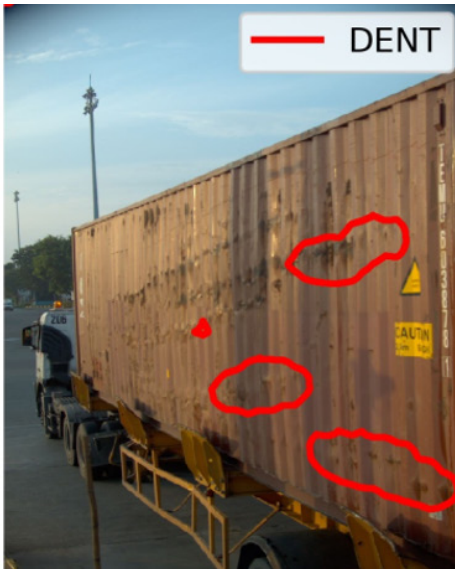
- Detects structural and surface deformities in containers (dents, bulges)
- Non-stop operation, no interruptions to traffic or workflow
- Simple integration into existing OCR portals
- Extensive data exchange and interfacing with TOS and other third-party systems

Input



Heatmap View (Damage score 99.4%)

Detections



Vehicle Booking System

Enhanced customer experience

Visy's Vehicle Booking System (VBS) is a solution for booking, preparing, and managing visitor traffic. VBS provides terminal operators identification data of vehicles and cargo in advance, therefore saving time at the terminal's gate area and making incoming and outgoing traffic flow easier to manage and analyze. In addition to complementing customer experience, VBS supports terminals' operational planning and improves the traceability of containers.

Features

- Web and mobile applications for booking and preparing terminal visits
- Customizable application to match customers' operational requirements and preferences
- Dynamic fields
- Up-to-date instructions for truck drivers via SMS messaging
- Kiosks validate gate entries with pre-issued PIN codes
- Smooth data exchange and interfacing with GOS and other third-party systems (TOS, POS, ERP)

Service Kiosks & Apps

For smoother gate transactions

Visy Service Kiosks & Apps are self-service transaction checkpoints for terminal visitors. With the kiosks, visitors can complete all formal tasks of terminal visits, including registration, identification, and safety & security training.

The modular solutions contain a large selection of advanced features and equipment, including a wide range of RFID options, biometric readers, intercom devices, and ticket printing. External design, user interface, and functionalities of the solution are customizable to match customers' requirements and preferences.

Features

- Self-service kiosks for visitor access, registration, instructions, mandatory safety training, etc.
- Customized applications (UI appearance, external design) and flexible configurations
- Identification tools: RFID, Biometric readers
- Interaction tools: Intercom devices, Ticket printing, etc.

All applications and solutions are user-friendly with easy steps and instructions to keep the whole transaction journey as simple and efficient as possible.

Visy Crane OCR

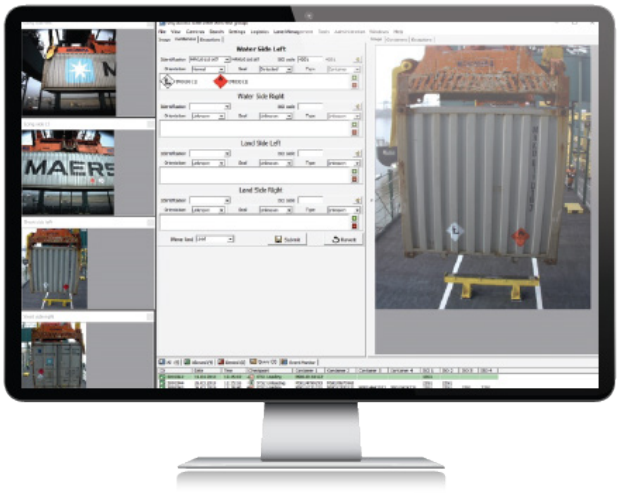
Versatile options for automatic container recognition

Visy Crane OCR automatically detects, images, and recognizes container IDs, IMO and ADR labels, door direction, seal presence, and other properties while containers are being lifted by cranes.

Visy SideView

Visy SideView recognizes container markings and seal presence, and images all sides for damage inspection purposes while containers are lifted by STS cranes. Two HD-resolution OCR camera lifts with efficient illuminators are mounted on sea-side crane legs to recognize every container regardless of flying path or lifting location. The solution is integrated with PLC to trigger the recognition process precisely when the lifting occurs.

Crane operations are a vital part of container terminal functions, therefore transforming cranes and other container handling equipment (CHE) into an intelligent ecosystem instantly increases a terminal's handling volume while also allowing safer operations.

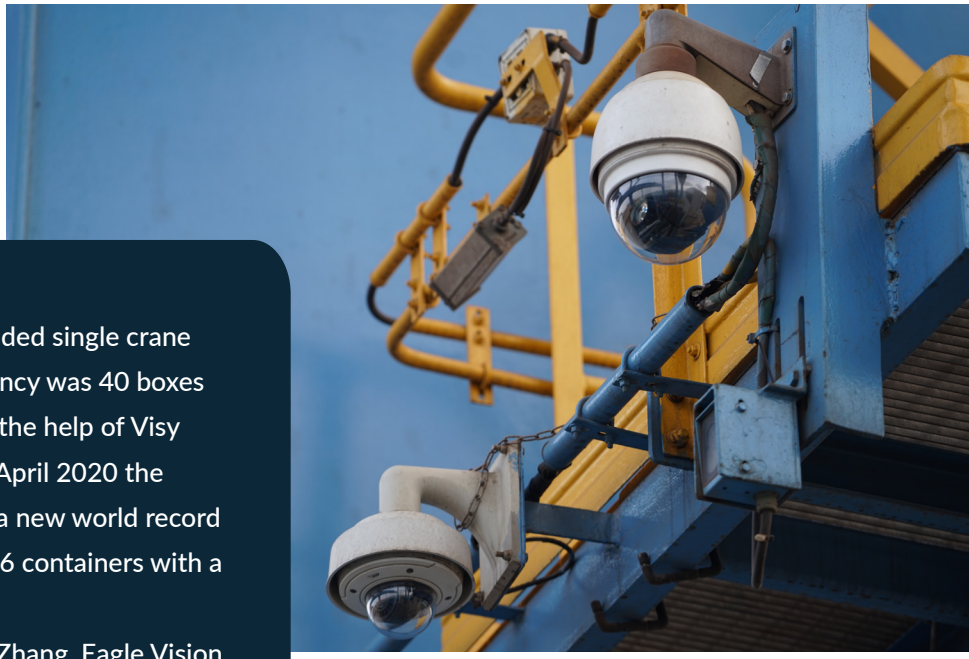


Features

- Automatic recognition of container IDs, ISO codes, IMO labels, door direction, seal presence, gross weight, number and position of containers in twin and tandem lifts, operation type (discharge/load)
- Terminal tractor identification features with both OCR and RFID
- Interface with PLC allows recognition and imaging regardless of lifting position or flying path
- Extensive data exchange and smooth interface with third-party systems (TOS, POS, ERP)
- Available for any crane type / CHE
- Customizable user applications

Visy LaneView

Visy LaneView images containers on lanes or platforms under STS cranes with high-resolution PTZ (pan-tilt-zoom) and fixed OCR cameras installed on the crane frame. The solution recognizes container markings and seal presence, and captures images for damage inspection purposes. The PTZ cameras are easily controlled to provide the best view for all lift cases, and Visy automation applications accurately calculate the container flight path to optimize the imaging moment.

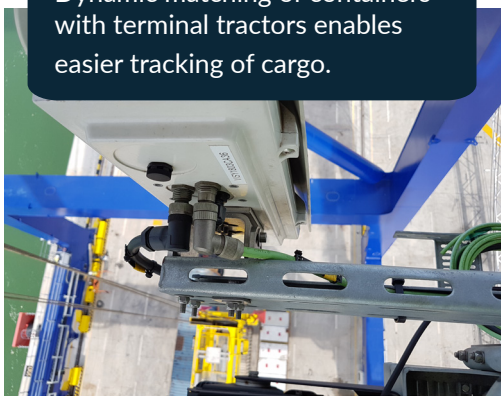


QQCTN's intended single crane handling efficiency was 40 boxes per hour. With the help of Visy Crane OCR, in April 2020 the terminal made a new world record by handling 44.6 containers with a single crane.

Victor Zhang, Eagle Vision

Visy TTView

Visy TTView recognizes ID numbers and other roof markings of terminal tractors to automatically link the container handling equipment to the lifting tasks. High-resolution cameras with strong infrared pulse are installed on the crane trolleys to capture images of the CHE roofs. Matching the terminal tractors instantly with the on-going lifting tasks enables effortless tracking of cargo. In addition to OCR cameras, RFID (radio-frequency identification) devices can be combined to the TTView solution.



Dynamic matching of containers with terminal tractors enables easier tracking of cargo.

Visy RMG OCR

Increased container handling efficiency and reliability

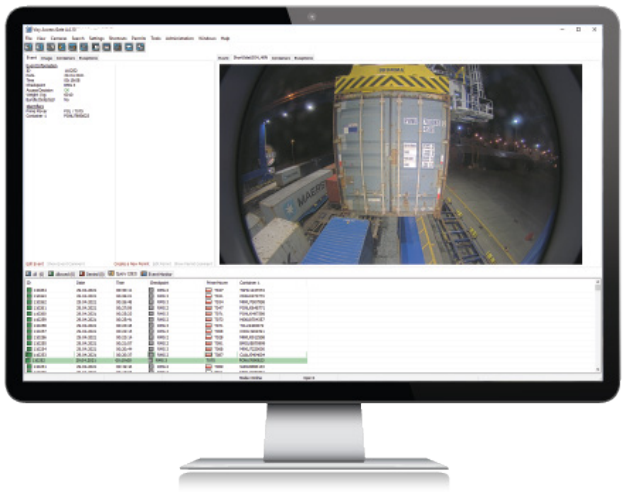
Visy RMG OCR images and identifies containers while they are being handled by RMG spreaders. The solution automatically acquires container IDs, damage inspection images, and location information as containers are moved at rail interchange areas. Visy RMG OCR provides a faster and more cost-efficient way to automate RMG operations.

System configurations

Visy RMG OCR has different configurations depending on how the system will be used:

1. Container ID recognition only – Visy TopView is designed specifically for this purpose. Cameras and lights are mounted directly on the spreader. Each time the spreader moves a container, TopView captures images of the roof and shares the container ID with third-party systems.

2. Container ID recognition and damage inspection – VisyTopView is implemented as above, but additional cameras are mounted on the legs or beams of the RMG to capture images of the sides of the container. These images enable inspection of possible damages, helping terminals shed liabilities for containers that arrive damaged.



3. Position and locations services – Once a container has been identified, the system informs operators where the unit has been placed.

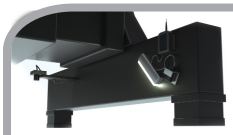
Visy TopView

Accuracy for container handling with spreader OCR

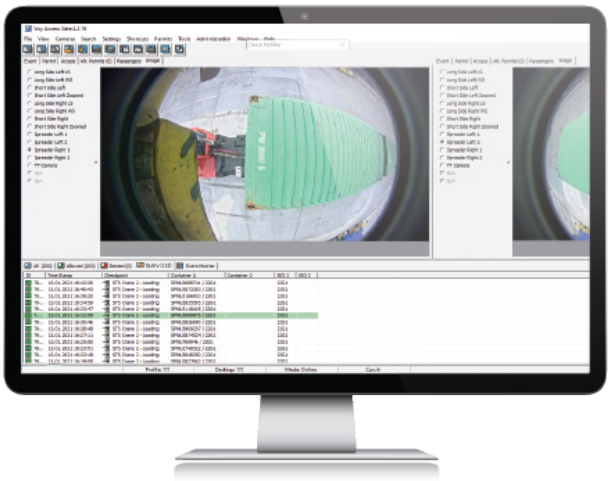
Visy TopView automatically identifies container IDs from the tops of containers, transforming spreaders into smart devices with OCR technology.

Smart implementation

Visy TopView is a compact system in which all equipment, including robust cameras, efficient illuminators, and the recognition PC, are installed directly on the spreaders. The intelligent OCR software validates the best results to achieve recognition rates of up to 99.5% and thus verifies that each movement of cargo goes as planned.



Installations to any type of crane equipment, including single, tandem, twin, and quad spreaders



With Visy TopView, no container is being shipped or stacked to a wrong location and the acceleration in (un)loading processes is remarkable.

Features

- Automatic recognition of container IDs from container roofs
- Customizable application and user interface
- High recognition accuracy of 98% – 99.5%
- Extensive data exchange and interfacing with third-party systems (TOS, POS, ERP)
- Installations to any type of crane equipment, including single, tandem, twin, and quad spreaders

Visy Train Gate

Versatile system to streamline rail operations

Visy Train Gate is a system environment in which cargo and train traffic is automatically imaged and identified while entering or leaving the terminal area. The portal solution utilizes Visy's industry-leading automated AI and OCR software and line scan camera technologies which make the imaging and identifying agile and secure. Visy Train Gate increases process efficiency and reduces operating expenses by transforming rail and intermodal terminals into automated ecosystems.

Customized application

Visy Train Gate's intelligent recognition and imaging technologies enable practical management of all train and cargo traffic. The solution is highly scalable and available in various configurations, enabling easy adjustments alongside changes and expansions in rail terminal operations. Visy Train Gate complements terminals' existing information networks, as the extracted recognition data is brought to the solution's user applications and shared with the terminal operating system (TOS) or other third-party systems.

Features

- Recognition of container IDs, wagon numbers, and ISO codes
- Recognition of dangerous goods: IMO labels and ADR labels
- Fully automatic solution, 24/7 nonstop operation
- Real-time tracking of rail cars, wagons, and containers over multiple rail tracks
- Damage inspection: High-quality imaging for reviewing the condition of containers
- Customized user application
- Extensive data exchange and interfacing with third-party systems (TOS, POS, ERP)

Expansion of services for MEG with Visy Train Gate – automated container and wagon recognition solution – helped to boost operational growth and save costs.

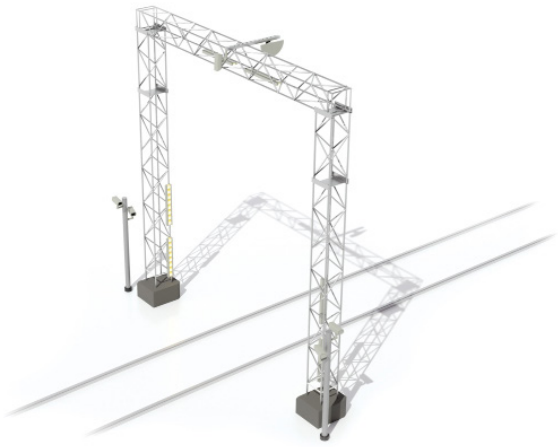
Mitteldeutsche Eisenbahn GmbH

Visy IRIS Rail OCR Portal

Efficient container ID recognition and condition imaging

Visy IRIS Rail OCR Portal automatically images and recognizes trains, wagons, and containers.

With Visy's OCR engine and AI recognition software, the portal identifies container IDs, wagon numbers, ISO codes, dangerous goods labels, and other interests. The portal solution provides rail and intermodal terminals the advantage of automatically captured images, accurate identification data, and accelerated processes.



High-quality images in any environmental condition

Visy IRIS Rail OCR Portal utilizes Visy's industry-leading OCR and AI software with line scan cameras, laser scanners, and efficient illuminators. The solution captures high–quality images in any environmental condition, regardless of possible dirt or damages, even with speeds of up to 70 km/h. The gathered data is validated by OCR software to hit high rates in recognition accuracy.

Visy is dedicated to evolve solutions and technologies further with continuous R&D work

Our history of innovation

We at Visy take pride in solving our customers' challenges and enabling them to save time and money by automating and streamlining operations. Our mission has been clear from the company's inception: to develop and provide the highest quality and most flexible software on the market and to integrate the latest equipment to perfect the solution.

Solution development has been an integral part of Visy since the beginning. We are constantly seeking to improve our product portfolio to match customer needs better; both by adding new features to existing products and by launching new innovative solutions in the market. Visy's software is industry-leading and future-proof: we are trailblazers in delivering disruptive technologies.

One of our core values is to be customer-oriented. This means that while we design new features and products, we put the customer's needs first. All our development pipelines are agile, designed to easily produce what is needed in a particular use case.

1997: First Visy OCR deliveries

2011: Deep learning research starts

2012 - 2013: First DNN tools emerge

2014: First Visy DNN installations

Deep learning as the source of progress

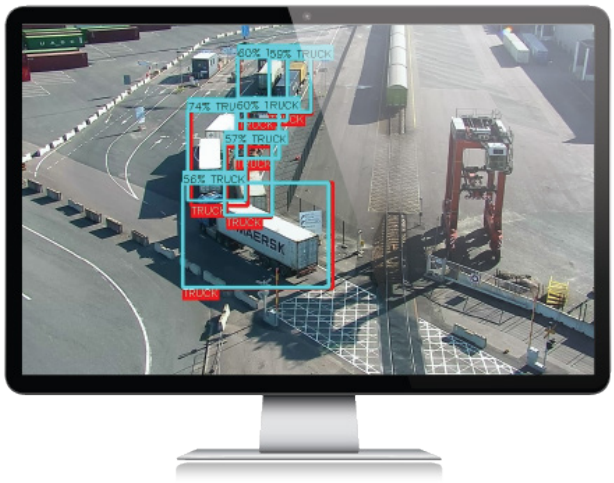
Visy has used neural networks with computer vision for over 25 years. Early models were successfully used in optical character recognition (OCR), while the use of modern deep neural networks has expanded to also include a large variety of other tasks, ranging from recognizing license plates, wagon numbers, and car brands to detecting whether a spreader is lifting one 40-foot container or two 20-foot ones.

On a mission to expand vision

Our product roadmap focuses on artificial intelligence: AI and vision technology are at the core of Visy's product portfolio. In the future, we will move towards more lightweight platforms and transfering the intelligence away from physical infrastructure and into software, which makes our solutions more flexible and cost-efficient, as well as easier to deploy.

The trend towards low-infrastructure and software-dominated solutions is already visible in the new products launched in 2021:

- Visy ADDS: World's first automatic damage detection system
- Visy AREA: Vehicle track-and-trace with overview cameras
- Visy EDGE: Container code recognition with a mobile app
- Visy Virtual TRIGGER: Camera based triggering for low-infra installations



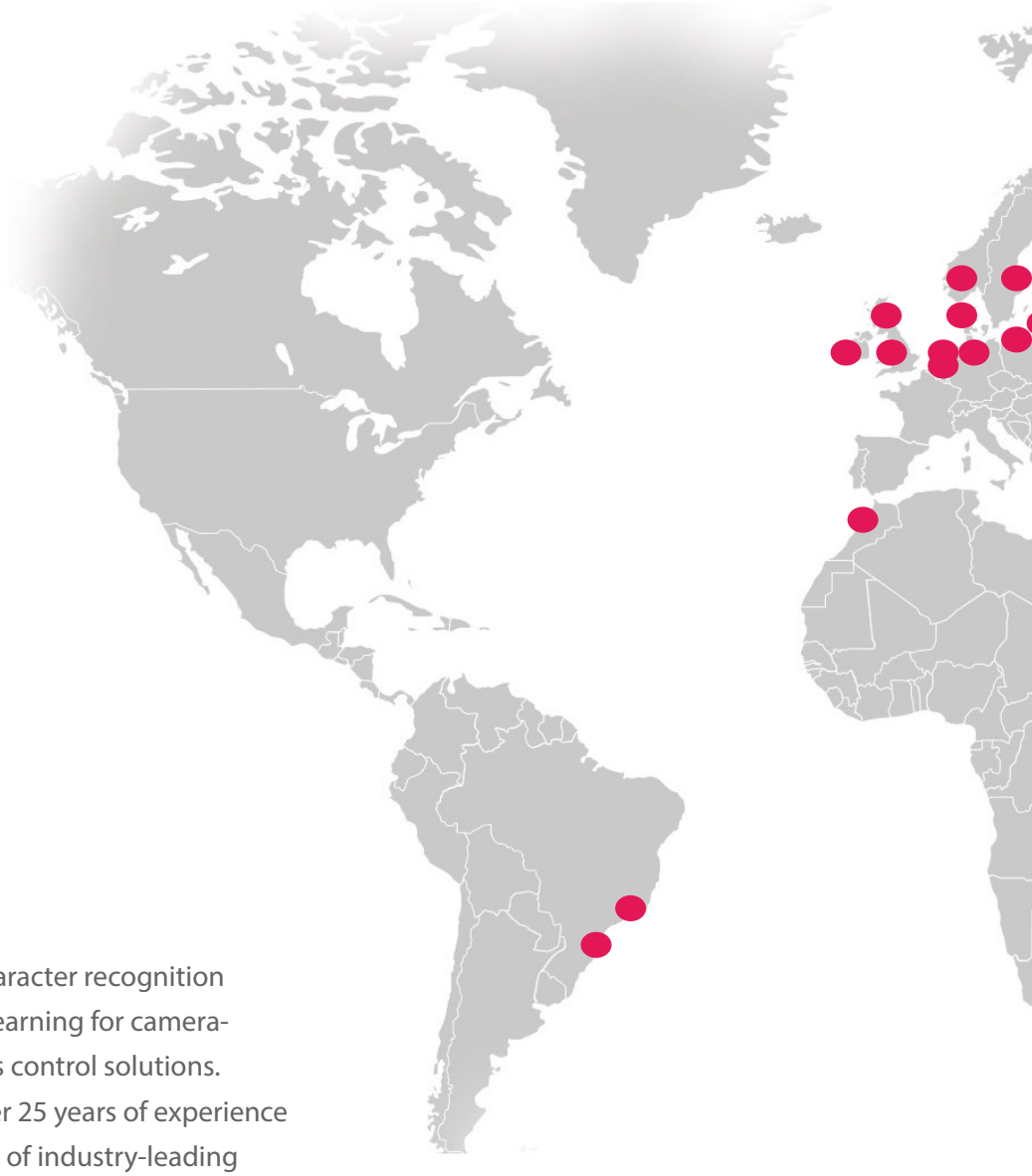
Visy AREA uses AI and vision technologies to identify and monitor vehicles and containers during their entire journey throughout an area.

2015: Visy's in-house DNN recognition engine

2016: First platforms

2017-2019: Dozens of new Visy DNN applications

2020: All new Visy DNN



About us

Visy is a pioneer in optical character recognition (OCR), applied AI, and deep learning for camera-based automation and access control solutions. Our expertise is based on over 25 years of experience in research and development of industry-leading technologies, and we have established a strong position as one of the top global vendors in gate automation and OCR solutions.

INNOVATING SINCE 1994

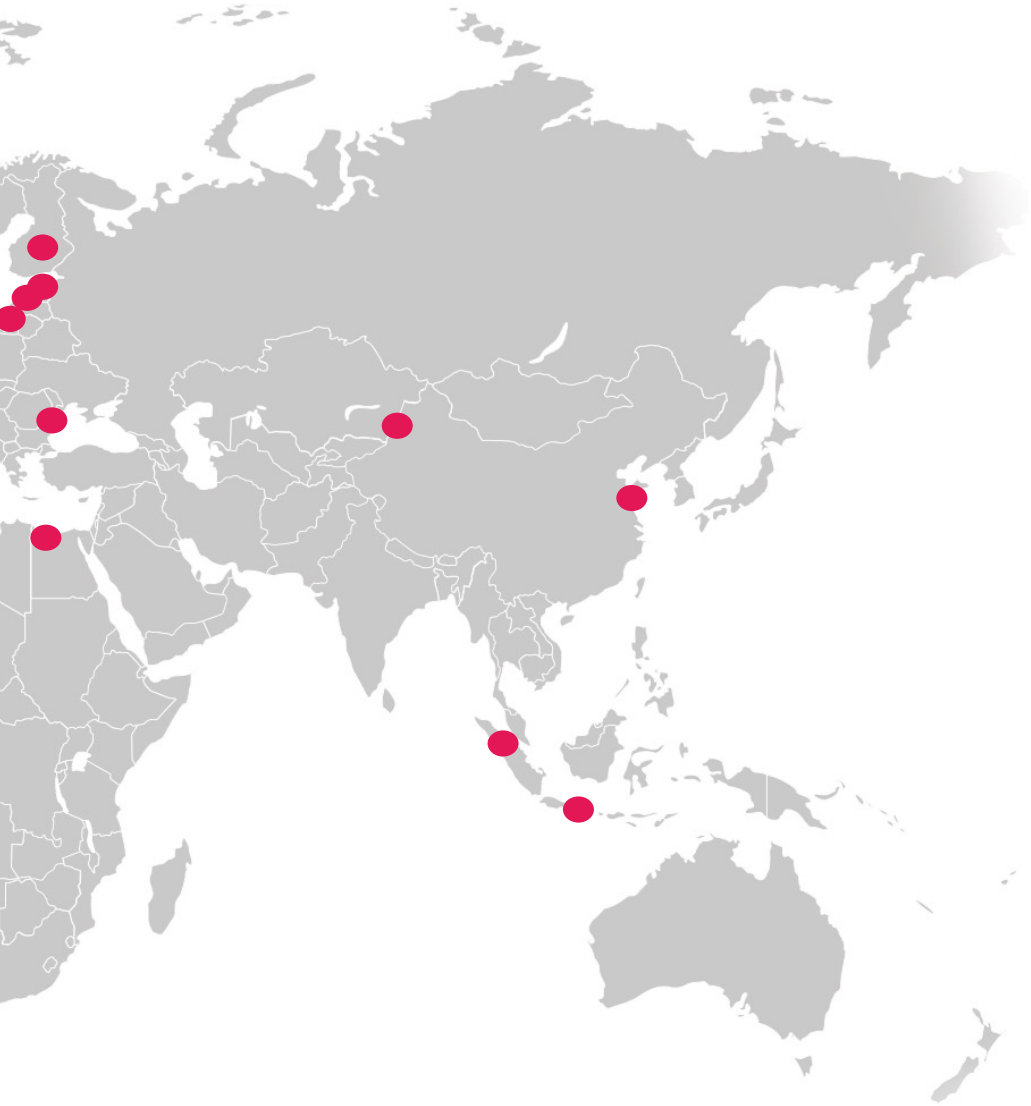
500+ FACILITIES AUTOMATED

5 000 000+ RECOGNITION EVENTS EACH DAY

25+ COUNTRIES

OVER 1,000,000,000 IDENTIFICATION EVENTS

25 YEARS OF DEVELOPING AI AND OCR TECHNOLOGIES



Operating with us

Visy Oy
Hatanpään valtatie 34 D 3rd Floor
33100 Tampere, Finland
Tel. +358 3 211 0403
VAT ID: FI09739717

www.visy.fi
sales@visy.fi