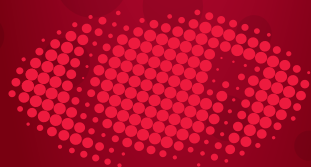# ENHANCING AND STREAMLINING THE SAFE FLOW OF CARGO

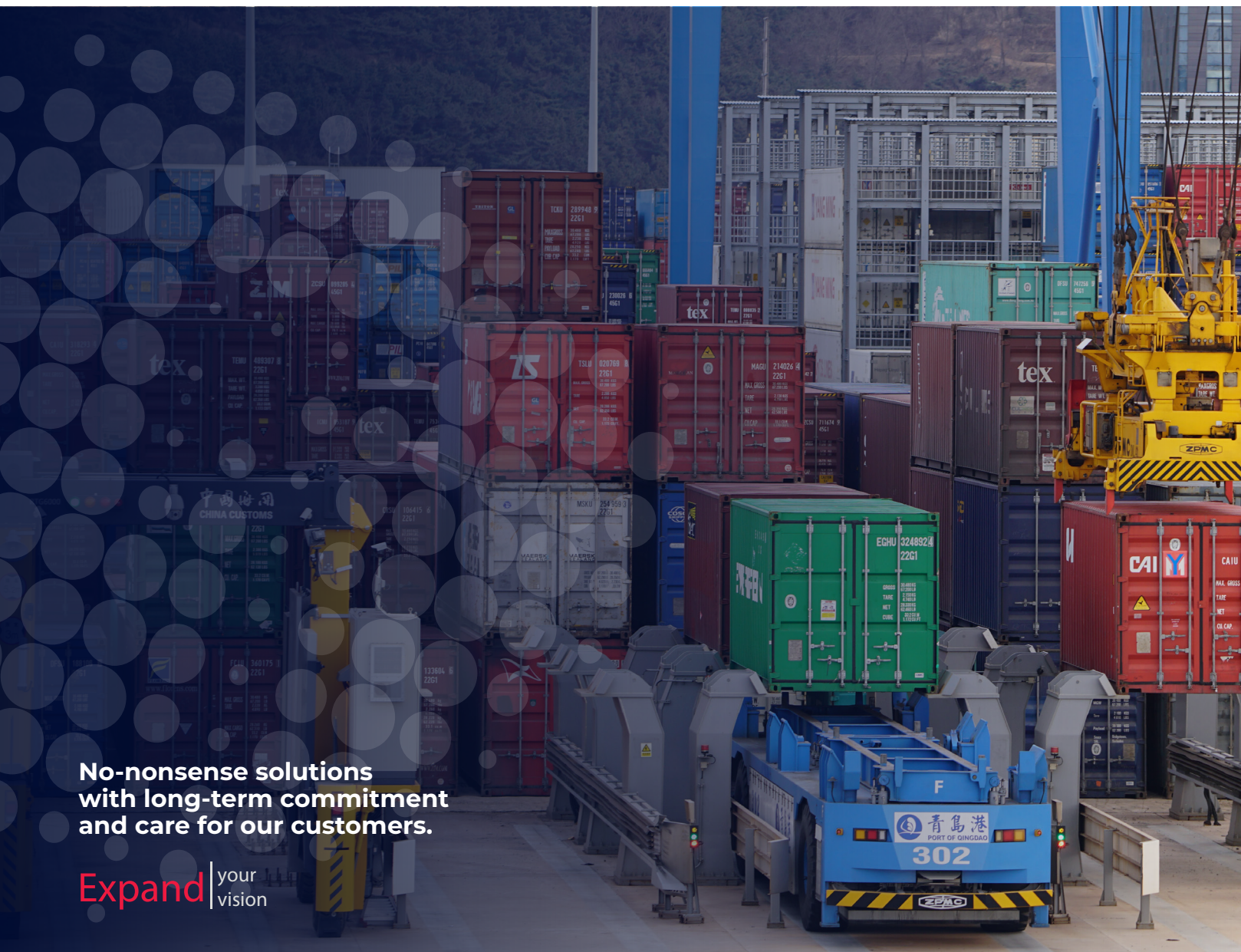## OCR SYSTEMS FOR THE YARD

VISY

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ENHANCE PRODUCTIVITY AND VISIBILITY IN CONTAINER HANDLING

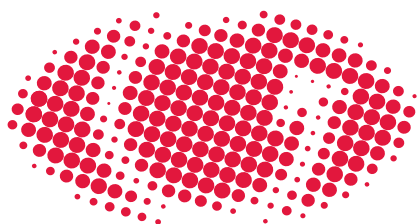## AI-Based OCR Solutions for Terminal Automation

The future-proof partner for all smart gate, access control, and terminal automation needs. With Visy systems, our customers identify and manage all traffic of cargo, vehicles, and people in demanding environments of container terminals all over the world.

We are dedicated to build ever better, more efficient, and easier-to-integrate system solutions with our world-leading AI-based OCR technologies.

No-nonsense solutions with long-term commitment and care for our customers.

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VISY

One Platform for All Terminal Automation

CONTENTS

The Role of OCR Systems in Terminal Automation

Implementing an Optical Character Recognition (OCR) system for yard operations is not just a mere enhancement but a pivotal step towards achieving full transparency of container movements. Integration of OCR technology revolutionizes the operational landscape by significantly reducing manual tasks, streamlining processes, minimizing errors, and ultimately maximizing productivity. The approach sets a new standard for modern operations, ensuring that businesses stay ahead in the dynamic realm of shipping industry.

By seamlessly integrating with existing automation systems, OCR technology enables terminals to achieve unprecedented levels of operational precision and speed. Tasks such as container identification, tracking, and inventory management are no longer dependent on manual processes but rather automated with remarkable accuracy. This not only optimizes resource allocation but also enhances safety protocols within the terminal environment.

Benefits of a Container OCR System

✓ Automatically record every container move

✓ Ensure container yard inventory is always up to date and correct

✓ Increase operating capacity

✓ Reduce operating costs

✓ Enhance the transparency of operations

✓ Smooth and immediate data exchange with TOS

✓ No more lost or ghost containers

✓ Improve safety and security

Unlock the value of knowing exactly what you're moving at every moment, in all areas.

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Image-Based Recognition

Visy OCR systems rely on sophisticated imaging technology and machine vision algorithms to accomplish the recognition of various attributes. The systems utilize high-resolution cameras to capture high-quality detailed images of containers which are processed using Visy's in-house DNN engine. Through machine learning and feature recognition, the systems accurately identify and extract the desired characters and objects from containers.

All Visy OCR systems are AI-based, utilizing state-of-the-art deep learning which enables market leading accuracies of 97-99% for all attributes.

Recognition Features

- ✅ **Container IDs**
- ✅ **ISO Codes**
- ✅ **ADR/IMO Labels**
- ✅ **Weight / Tare / Payload**
- ✅ **Bottom Twistlocks**
- ✅ **Door Direction**
- ✅ **Seal Presence**
- ✅ **Door Handle**

Simple System Infrastructure Brings Reliability

Visy solutions consist of high-quality equipment, recognition software, and user interface applications. The infrastructure ensures that captured data is available in the appropriate system at the necessary moment, and excellent operating performance is maintained 24/7, even in challenging environmental conditions.

Robust High-Quality Equipment
ensures long life-cycle and
high recognition accuracy

**In-House
Recognition Software**
carries out various
identification tasks

User-Friendly Applications
provide a good
customer experience

Visy Utilizes Different System Setups to Support All Yard CHE and Operation Types

Visy OCR Camera System for Spreaders

Visy TopView Cameras are installed on the Spreader

Visy OCR System – Fixed Cameras

Fixed Cameras are used to image Short Sides of Containers

Visy OCR System – PTZ Cameras

PTZ Cameras are used in cases that require the imaging of Long Container Sides
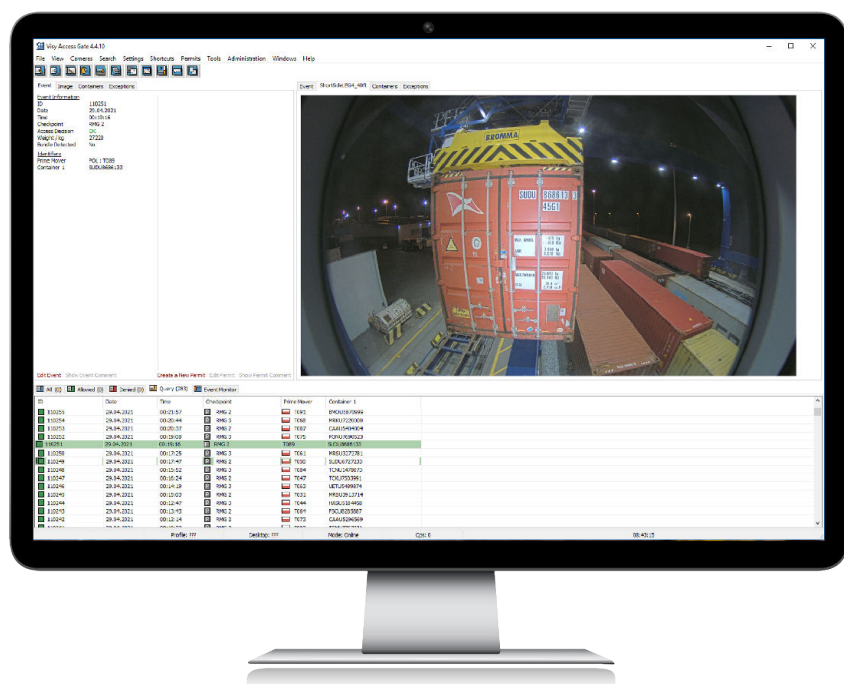
Visy OCR Solutions Offer Standalone and Integrated Options

Visy's product portfolio is extensive to match the diversity of different container handling equipment and possible operational moves. It covers every part of the terminal in which automatic identification, imaging, and tracking of cargo and vehicles brings new opportunities to streamline operations.

Complete, Standalone Solution

For comprehensive data management and operational oversight, Visy offers solutions that consolidate all OCR data and images from all cranes. These solutions provide comprehensive exception handling capabilities within a robust database environment. All of the above can be accessed through the intuitive Visy Crane Gate user interface.

This centralized platform provides convenient access to a wealth of information, enabling operators to make informed decisions and respond promptly to operational challenges. With Visy's database solutions, operators benefit from the reliability and performance of Oracle databases, which are renowned for their ability to handle large quantities of data while maintaining stringent security measures.

Visy Crane Gate user application for reviewing events and exception handling

Light Option

The Visy Crane OCR system can be implemented as a lightweight, flexible solution per crane, where only the results are seamlessly transmitted to third-party platforms such as Terminal Operating Systems (TOS) or Position Detection Systems (PDS). The lightweight option is a cost-effective solution for existing systems with minimal tailoring work but significant benefits of OCR.

In all cases, the captured data is exchanged through integration with the Terminal Operating System (TOS) and other third-party systems.

Visy TopView transforms any spreader into a smart device with OCR technology.

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VISY TOPVIEW – SPREADER OCR

Enhance Visibility in Container Handling

Visy TopView transforms any spreader into a smart device. The compact camera system automatically identifies container IDs from the roofs of containers and is compatible with any CHE type and brand. Equipment is installed on the spreaders, including cameras, illuminators, cabling, and device cabinets. The recognition PC is located either inside or outside the cabin.

TopView accelerates container handling processes, records every container move and prevents time-consuming false lifts, which instantly helps to increase any terminal's operating capacity and stack accuracy.

TopView on Reach Stackers

✓ Automatically save and record every container handling event with container ID and images

✓ Visy's in-house recognition software with high accuracy rate

✓ Smooth data exhange with the TOS

✓ Camera setup includes three cameras – two to capture codes on the roof and one for the long side

✓ All equipment is directly installed on the spreader and CHE

CONTAINER ID: TRLU 699049 0

TRLU 699049 0

Learn more about Visy TopView

With Visy TopView, no containers are stacked or loaded to a wrong location. By confirming each container move with TopView, container handling procedures become more visible and accurate. This brings reliability to box moves if exception handling cases occur.
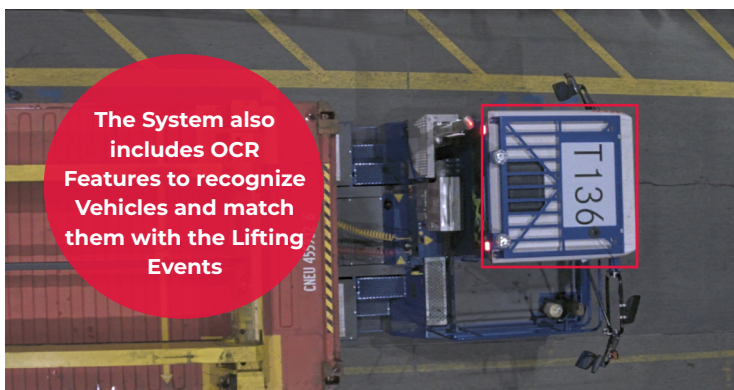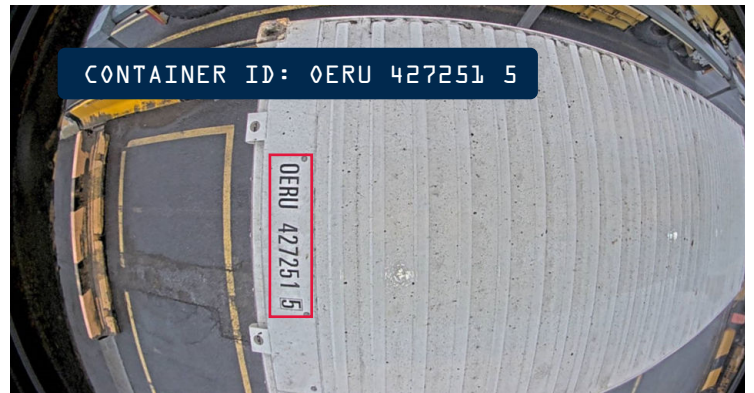
VISY RTG/ASC OCR

Enhance Operational Efficiency and Improve Safety

Automating RTG/ASC crane operations with vision technology increases efficiency, safety, and control in container handling. Visy imaging applications automatically recognize container IDs and verify that each move is being recorded and the lift event information is exchanged with TOS.

The system setup is chosen according to the type of equipment, operation type, and environmental conditions. The most convenient way to implement OCR technology on an RTG crane is Visy TopView. However, if the location experiences seasonal weather changes, the system can be equipped with additional PTZ cameras to capture long-side images of containers as well. This ensures that the recognition rate remains high despite changes in the operating environment.

Every Visy OCR solution is built with the customer's needs in mind, using OCR features and a system setup that complement their operations the best.

Visy TopView is the Optimal Choice for RTG/ASC Operations

CONTAINER ID: OERU 427251 5

OERU 427251 5

PTZ Cameras are used on RTGs to image the Long Container Sides in Snowy Environments

OOLU 039068 9
22G1

CONTAINER ID: OOLU 039068 9

ISO CODE: 22G1

The System also includes OCR Features to recognize Vehicles and match them with the Lifting Events

T136

Learn more about
Visy RTG OCR

VISY RMG OCR

Automate Container Management

Visy RMG OCR images and identifies containers while they are being handled by RMG cranes. The system captures images of both short container sides to acquire identification data such as container IDs, ISO codes, and door direction.

The fixed camera system is mounted on the legs of the crane at a favorable height for the spreader's flying paths and is connected with PLC/CCS to trigger imaging events. The camera system captures high-quality images, and the Visy container OCR software recognizes attributes with high recognition rates of 98-99%. The digitized container data and images are exchanged with the TOS in real-time to leverage the advantages of more accurate and efficient operations.

The OCR system and integrations cover and record the entire container handling process, while the box is lifted from the stack, train, or terminal tractor.

Recognition Features

- ✅ **Container IDs**
- ✅ **ISO Codes**
- ✅ **ADR/IMO Labels**
- ✅ **Door Direction**
- ✅ **Seal Presence**
- ✅ **Door Handle**
- ✅ **Terminal Tractors / Trucks**

Learn more about Visy RMG OCR

Professional services complement the solution offering with proactive care and continuous improvement.

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Services

PROFESSIONAL SERVICES

Visy's global high-quality partner network minimizes response times, and our experienced project management team ensures top-class solutions, delivery, and support worldwide.

- ✓ **Project Management**
- ✓ **Software Customization**
- ✓ **System Tailoring**
- ✓ **Simulations**
- ✓ **Integrations**
- ✓ **Consulting**

OPERATING WITH VISY

Visy's customers are united by their drive toward continuous development of operations and their desire to gain the benefits of advanced pioneering technologies.

APM TERMINALS — Lifting Global Trade

DP WORLD

HHLA

Baltic Hub

HUTCHISON PORTS YANTIAN

SANTOS BRASIL

MGT — SOCIÉTÉ TERMINAUX MONTRÉAL GATEWAY TERMINALS PARTNERSHIP

TERMONT

P&O FERRIES

Stena Line

TPS — Terminal Petikemas Surabaya

Kalmar

BANE NOR

DB NETZE

KONECRANES

See more at www.visy.fi

GLOBALLY LOCAL

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

www.visy.fi
sales@visy.fi

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