



Optical Character Recognition: New product, design or technology information

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The modern gate operating system (GOS) captures data on everything that enters or exits a terminal whether it is by road, rail or quay. This includes everything from container IDs to rail wagon numbers and truck driver information. That data is often shared with 3rd party systems such as the terminal operating system (TOS) or an appointment system to optimise traffic flow and verify access and area control decisions. Furthermore, the modern GOS may collect data in the yard and share that information with the TOS or a position detection system (PDS) to verify that the right assets are in the right place at the right time.

The GOS combines a variety of technologies to collect data and enhance operations. Driver kiosks with biometrics and RFID applications are common, while camera-based optical character recognition (OCR) systems are found at terminals around the globe. Indeed, the GOS is now considered a “must-have” system for most operations. Recent developments in OCR technology play a major role in why the GOS is a mission-critical system. Until a few years ago, OCR was normally limited to license plate recognition (LPR), container code reading and trailer identification.

However, recent advancements in artificial intelligence (AI) and more specifically, deep learning, have increased the capabilities of vision technology solutions. Now, the amount of data that can be extracted from images includes a great deal of indispensable information such as:

- Count the number of axles
- Locate container corners
- Twin-twenty detection
- Container seal presence
- Detect and classify IMO labels
- Dangerous goods identification
- Tare weight and other markings
- Door orientation
- Rail/wagon car identification
- Automated damage detection
- Use of CCTV systems, tablets & smart devices

Recent developments in the ruggedness of cameras also plays a part in how vision technology is deployed. Typically, cameras are fixed to portals and serve as checkpoints. This is often the case in a standard OCR lane at truck gates. However, ruggedised cameras are now attached to container handling equipment (CHE) and spreaders to add mobile automation in the yard and on the quay. For example, Visy’s spreader OCR solution called TopView, attaches cameras to spreaders thus turning every spreader into a smart device. The logic is simple: The spreader is the common denominator on the terminal that touches

every box. By giving the spreader a set of eyes, TopView automatically verifies the box ID and associates it to the CHE, therefore saving time on every move. Depending on operational requirements, TopView is a standalone solution applicable on all makes and models of spreaders, including single, twin/tandem and quad, and CHE including STS cranes, mobile harbour cranes, RTGs, reachstackers, and top picks. However, if more imaging and data capture is required in quayside operations, Visy also offers a camera system that moves on tracks, called SideView. The system is mounted to the legs of STS cranes and follows the location of the spreader as it moves on its flight path. SideView captures images of 4 sides of the cargo units (both long sides, both ends) during loading and discharge operations. When combined, TopView and SideView capture all 5 sides of a box and offer a full suite of AI advancements.

The benefits of vision technology systems are clear. From an operational standpoint, a terminal will increase throughput capacity, reduce operating expenses and improve health, safety and security. Compared to other technologies that might be able to automate the same processes, camera systems are highly cost efficient. The infrastructure is light, the scope of data collection is wide and highly accurate, the systems include built in redundancy, and the technology is easily scalable to add more layers of data collection from a single set of images. Indeed, vision technology is a fundamental tool in the GOS. Camera systems identify everything that goes in or out of a terminal by road, rail or quay and even add eyes to yard CHE. When vision technology systems share data with 3rd party systems such as a TOS, terminals reach new levels of productivity and can expect significant operational improvements. 