

Open sesame



Who is doing what?

One of the projects that Israel-based Hi-Tech Solutions worked on was the installation of the 68 gate OCR systems at the Trans Pacific Container service Corp Terminal and at the new APM Pier 400 facility within the Port of Los Angeles, US. Because the pier is accessed by a wide causeway supporting multiple lanes of traffic and a railway, a sensed fence was installed to provide an intruder detection system that is supported by cameras.



Gate control at the APM Pier 400 facility

New port and container security initiatives and regulations have generated huge interest in the need for accurate real-time accounting of incoming and outgoing traffics, as well as existing inventories. Manually intensive identification and tracking processes, typically employed today, are inherently inefficient, insufficient, and can be said in themselves to pose a potential threat to terminal or port security.

It is of little wonder, then, that the industry is witnessing a new enthusiasm to replace the current systems with a less archaic solution. In correlation with an accelerated growth in container traffic, the use of automated identification and tracking of containers as they enter and exit the port or terminal, via ship, truck or rail, is becoming increasingly popular. Automatic Gate Systems (AGS), which substitute visual controls with an intelligent camera system, combined with optical character recognition (OCR) on licence plates, IMO codes and container and chassis numbers, are becoming evermore attractive, offering the terminal or port operator fast and reliable drive through gates, and a secure and reliable access control.

Choosing the right equipment

These image-capturing units must include an optical and illumination solution to produce images of the container ID number with sufficient

quality (including focus, resolution, contrast and uniformity), under all operating and ambient conditions (sun glare, night time, sunlight and adverse weather conditions). The software recognition engine and application programs must be able to process these images and convert them into data for real-time processing. The hardware and software must operate in unison to accurately read the container and vehicle numbers while the container is passing through a gate lane, being lifted or lowered by a crane, sitting on a chassis slot or handled by other container handling equipment. The design and selection of the image-capturing and software systems has a great impact on the system infrastructure requirement, determining mounting position and constraints for the cameras and illuminators as well as triggering requirements and solutions. The support structure system and design also plays a critical role in the installation cost and the reliability and maintainability of the system.



The fully integrated gate system can read container numbers, chassis numbers and the truck license plate numbers for each truck as it passes through a lane. The system scans the ID numbers while the truck is in motion, triggered by a set of sensors. Each unit simultaneously controls multiple cameras for multi-view recognition of the container and chassis. The application program controls and sets the illumination levels, captures and processes images from a number of cameras, extracts the ID numbers, classifies the type of containers, verifies the results and finally outputs (and optionally displays) the final results.

Perceptics, USA, has systems operating at the Port of New York/New Jersey, and Busan, South Korea, and the manufacturer claims that the technology has dramatically improved productivity, with terminal throughput increasing significantly. Perceptics offers the Automatic Container Identification and Information System, an electronic security grid that images the container and chassis codes, and the tractor license plate number for permanent archiving and retrieval. Digital images are captured in real time and encrypted to automatically update the terminal operating system, allowing a high volume of accurate transactions to be performed in a paperless environment. The system provides a complete solution via four components, which can be taken in any combination or as individual units: the License Plate Reader (LPR), the Container Code Reader (CCR), the Chassis




Keeping an eye on what you are doing

Code Reader (CHR) and the Damage Inspection System (DIS).

Another USA-based company is Embarcadero Systems Corporation, which specialises in the development and implementation of advanced software and security solutions for the transportation industry through its four business units. Video Audio Security Terminal Automation and Control (VASTAC), is a suite of products and services provided by the company, which increases security and improves operational efficiencies in marine, rail and intermodal terminal environments. The foundation of the VASTAC suite is the gate system that provides remote – including offsite – truck processing.

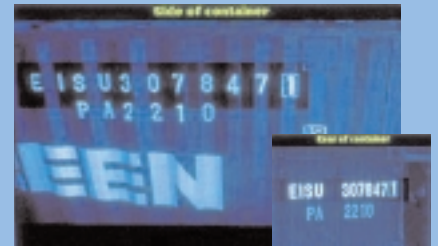
Camco Technologies, Belgium, has called their system Supergate – the first compact and cost effective ACR. The system offers a high drive-through speed (from 3 up to 30km/h. In less than 5 seconds all OCR images are digitalised, saved, and checked against a customer-booking database.) The concept is based on line scan technology and only requires a 6m long and 9m large surface, which the company claims about 2/3 less than static systems.

Enough benefits

The benefits of using an OCR system for port security are plentiful and important, offering direct real-time identification of the object without a secondary device, and ‘fast-lane’ treatment with a high level of efficiency and operational integrity. The system eliminates the risk of false-identification resulting from manipulation of other tracking devices, such as RF tags, and by archiving digital images, security verification and post-processing is easy to access. Other benefits of the system are that it eliminates manual intervention of traffic at gates, cranes and rail yards, and when implemented at gate and crane loading points, can be utilised to ensure that containers do not bypass security check points, thus offering a high level of efficiency and improved security. 

Can I see?

While driving through an Automated Gate System trucks are automatically visualised on screen and images are saved on disc – but how does it look? Perceptics offers a complete system via four components, which can be taken in any combination or as individual units including a Damage Inspection System and License Plate Reader:



The Container Code Reader



The Chassis Code Reader



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