

Crane OCR Solutions

Identifying containers during crane operations

Camco's crane OCR solutions support further automation of crane operations by capturing crucial data during container handling. Key OCR data and images are accurately captured without disrupting crane operations: there is no impact on the container's flight path nor the crane's uptime.

Seamless TOS integration ensures that the data is instantly sent to the TOS, ultimately improving vessel turnaround time. OCR read rates are high, keeping operator exception jobs to a minimum.

Our crane OCR solutions are highly accurate and engineered for reliability, high availability and easy maintenance. The system's guaranteed longevity results in short ROI times.

Two solutions cater for different purposes: the SideCatcher supports basic OCR, while the BoxCatcher supports full OCR.

Camco is working with terminals worldwide to optimize the way they operate



CAMCO TECHNOLOGIES

Products

- Crane OCR
- BoxCatcher with SideViewer
- SideCatcher
- Crane Operator Application
- ImageSearch Application

Advantages

- Increased crane performance
- Reduced vessel turnaround time
- Improved TOS planning and data quality
- Cost effective with accurate results

Features

- Registering and identifying each container
- Seamless TOS integration
- Exception handling through Crane Operator Application

Application

- Container terminals
- Intermodal terminals

Contact us

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Basic versus Full Crane OCR

Based on the terminal's requirements, targets and objectives, Camco identifies two types of OCR solutions to fit on quay cranes:

Basic crane OCR: **SideCatcher**

Full crane OCR: **BoxCatcher**

Crane OCR features	Basic crane OCR SideCatcher	Full crane OCR BoxCatcher
Container ID	yes	yes
ISO code	yes	yes
Seal presence		yes
IMDG label presence		yes
IMDG label classification		yes
Container door direction	yes	yes
Condition recording: 360°		yes

SideCatcher: Basic Crane OCR

Container ID, ISO code and door direction

Camco's **SideCatcher** provides basic crane OCR. It's a compact intelligent camera system, installed on the crane's horizontal sill beams, used to take pictures of the container's long sides. The system detects and captures the container ID, ISO code and door direction.

A typical setup is based on six cameras fixed on the sill beams that caters for seven lanes. Each camera has multiple 4MP image sensors and fix focus lenses. Every sensor/lens combination covers two lanes and guarantees perfectly focused pictures. Each camera comes with an integrated CPU and dedicated image processor.

To support 24/7 operations in all weather conditions, the cameras are equipped with LED light projectors which produce optimal on-demand light conditions.

The solution is very scalable: intelligent cameras are used, a known and proven concept for all Camco OCR products, and OCR is performed on the crane.



SideCatcher mounted on horizontal sill beam



Images of container long sides

BoxCatcher: Full Crane OCR

Container ID, ISO code, seal, IMDG label, door direction, condition

Camco's patented **BoxCatcher** supports full crane OCR for day and night crane operations. This moving camera unit provides 360° container images during loading or discharge, without interrupting normal crane operations. It's installed on a dynamic rail and automatically follows the container's flight path in realtime, the path being determined by the crane driver or crane automation.

The position of the rail depends on the terminal's specific needs, the crane design and type of operations. Rails can be mounted vertically to the portal legs, or horizontally to the portal beams. Both setups provide full crane OCR and seamless TOS integration.

This one-fit-all solution supports all possible container configurations: single, twin, tandem, quad, 20/40/45ft. The BoxCatcher's 12MP global shutter cameras are designed to capture fast moving objects, traveling at 4,5 m/s over a distance of up to 36 meter. Adequate lighting conditions are provided by built-in LED light projectors. The BoxCatcher will autonomously compensate for the container swing during operations.

The BoxCatcher is complemented with a set of **SideViewers** to capture the container's long sides. These 4MP cameras are oriented in two directions: container moving towards and away from the BoxCatcher. Similar LED light projectors are aimed at the long side of the container.

A complete crane OCR system, including rails, can be installed by Camco in only one week.

Crane Operator Application

Operators can use the **Crane Operator Application** for further exception handling. As the number of exceptions is limited, a single operator can be assigned for handling 6 up to 8 cranes, depending on the complexity of the crane operations.

Processing OCR correction jobs is easy with the intuitive application, where operators can validate data based on detailed container images.



BoxCatcher mounted on vertical rail



Images of container door and long sides

Making maintenance safe and easy

Maintenance is safe and easy, as the BoxCatcher can be moved to its home position where it is easily accessible.

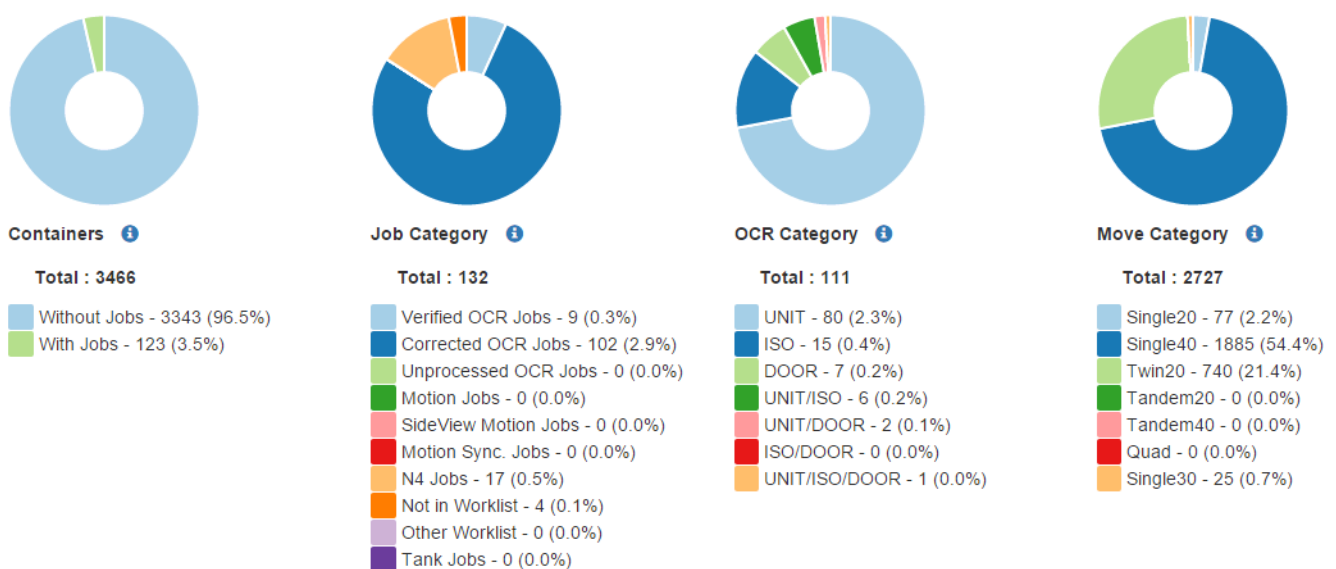
- Easily accessible maintenance position: camera home base
- Minimal equipment: two BoxCatchers per crane
- No moving cables inside the rails: Inductive Power Transfer (IPT) and liquid coax
- Lifetime warranty on mechanical components
- Remote monitoring and software updates



Vessel statistics: focus on exceptions instead of naked OCR read rates

Terminal operators are rightly interested in statistics of complete moves, not in the reading of a single container number. It's all about fully automated processing of complex container moves. The combined reading of the container number, ISO code, door direction, seal presence, ... is what matters. But when you calculate the success rates of the combined read result, you get disappointing numbers.

To better manage expectations, Camco focuses on exceptions instead of naked OCR read rates when communicating OCR results. A shift towards KPIs expressed in the number of exceptions is a more practical approach and gives customers a more realistic idea of the success of their crane solution. It also allows better resource planning with respect to the number of operators needed for handling vessels.



Example of Vessel Statistics, available in ImageSearch application