

An **infra-red** truck ID system for automated yard operations

An automatic truck identification system, aimed at ensuring correct container moves and positioning, has been developed by International Terminal Solutions.

IN A CONTAINER YARD OPERATION, SEVERAL functions are required to ensure that a container move has been undertaken correctly and put in the right position.

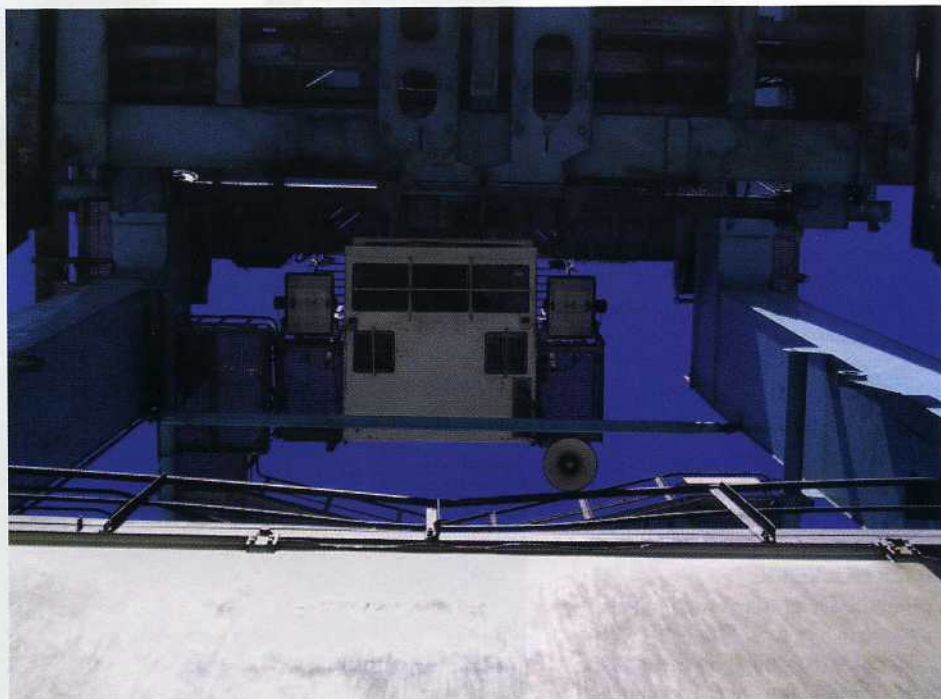
A paper-based system is not always satisfactory, as other factors come into play and the box can be wrongly positioned. With a radio-data system, container information is real time, which means that the database is updated in real time.

In reality, it is difficult to predict the actions of yard equipment operators who often do "odd" things, leading to anomalies in reported container positions. A position determination system (PDS) will help as it automatically and reliably monitors the position of containers, which is OK if the unique container identity can be confirmed in "that" location. A PDS might only confirm that "a" container is in a particular position – not necessarily "the" right container.

So, once the location is reliably identified, the identification of the container also needs to be confirmed. This can be achieved automatically by an infrared (IR) truck identification (ID) system.

INFRA-RED SOLUTION

An IRID system consists of truck transmitters, IR Receivers on the handling equipment, system



software connected to a PDS system and is linked to the yard planning database software.

When a truck arrives at an RTC, the system automatically identifies the truck. If the move is in the system memory, the system then

IR receivers are located on the terminal handling equipment.

automatically selects the work instruction for the operator. If the work instruction is not in the system memory, the system automatically searches the terminal planning system for the identified truck and associated work instruction. When the move is completed, the full move details and position are updated automatically.

For transshipment most terminals operate in two ways. One involves discharging containers into a holding area and then into an export area – meaning two "groundings" of the container.

A more efficient way is to discharge containers straight into an export stack. To do this – firstly there is a need for good planning, and secondly it is reliant on operators putting containers accurately into the planned yard slots, which is not always guaranteed.

The ITS IRID system can achieve this by automatically identifying the exact move in real time. Twistlocks on the spreader can now be interlocked so that the operator only picks up the right container and puts it into the right slot. This works using warnings for an invalid move, prior to pick-up. Similarly, if picking up from a stack, a



The system software is connected to a PDS systems and linked to the yard planning system.

IMPROVING GATE SPEED

A further development to the base infrared system, aimed at improving and automating the terminal gate process, is also underway at ITS.

The idea is that external road truck operators wishing to participate and reduce terminal waiting times are supplied with secure, encrypted, infrared transmitters. The trucker makes an appointment for arrival at the gate – preferably by Internet. Just before arriving at the terminal, the truck's identity is read by a reader which is located on the side of the road leading towards the terminal gate.

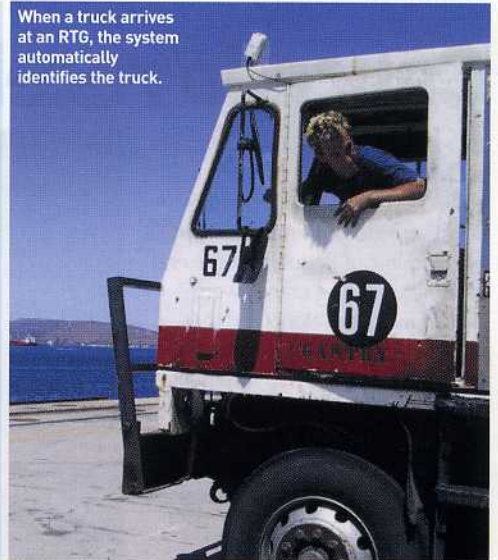
Via a matrix sign, the truck is directed into the appropriate pre-appointment (or non-appointment) lane.

The "appointment" lane is directed to the correct gate, where data will be ready to instruct the driver to go to the appropriate terminal location, so that he spends negligible time at the barrier. Handling equipment is automatically assigned by the terminal operating system to load/discharge the container. At the yard slot, the driver removes the transmitter from the dashboard in the cab, points it at the handling equipment as it approaches, which automatically identifies the truck, the container, and the planned yard slot. The handling equipment then performs this move.

The road trucker then moves away – if he has another job (pick-up) to carry out, he goes to this yard slot and repeats the procedure to receive the container.

The system has a range of up to 40m and has an encrypted infrared code – based on the keylock encryption system – to ensure the correct information is securely transmitted.

When a truck arrives at an RTG, the system automatically identifies the truck.



warning is given not to pick up the wrong container. Once the right container is picked up, the twistlocks are interlocked until the container is put in the right location, thus preventing the container being put in the wrong position. When putting it on a chassis, the information about the actual truck is automatically transmitted back the terminal operating system.

ON TRIAL

In summary, the system automatically searches for the truck and automatically selects the move, with no operator input required. Without operator input, it can guarantee good reliable data. Providing keyless operation into and out of the stack with operator warnings and can be configured to inhibit invalid container moves.

A version of the ITS IRID system has been on initial trial at APM Terminal's Algeciras terminal to monitor operational performance.

ITS now has a contract to expand the trial to further trucks and RTGs to allow a full gang to operate and fully evaluate the major operational benefits. Maersk Espana has some 46 RTG's and 102 trucks at its terminal. **CM**

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