

APS goes train spotting

It is widely predicted that the major railroad operators in the US will sooner or later follow BNSF's path in Seattle and move to new intermodal terminals with a much denser operation, using stacking cranes instead of placing containers on chassis in vast parking lots.

Denser, stacked terminals require different operating systems, including graphical planning and management software for stacked containers, an effective system for tracking containers and equipment and a system for automatically sending work orders and confirming that the position of moved containers is accurately recorded to operate efficiently.

While many different technology solutions have been developed for marine container terminals, rail terminals present a different challenge. Rail cars vary in size and configuration and trains stop at different places on rail lines. Furthermore, rail terminals commonly split trains into sections and "live load" some containers straight from road to rail.

Enter RTS

San Diego-based APS Technology Group has developed OCR and Inspection stations and a patented Rail Car Tracking System (RTS) that can identify equipment at the rail terminal perimeter, track containers as the train moves into the terminal and throughout rail operations.

While Class I railroads use an EDI message with rail car and container information for track management, these messages are often only 90% accurate and rail terminals routinely manually inventory trains on arrival.

By placing rail portals at the perimeter of the terminal, APS can capture the car ID from the standard AEI/RFID tags and take high definition images of the car and container as the train passes. The APS OCR engine can then extract the container ID from the images and send an XML message to the TOS indicating total train axle count, rail car ID, container ID and where in the car well (tier and position of 20ft containers) individual containers are located.

This "virtual train" plan is now available to be used by the TOS for graphical planning processes in the same way a marine terminal uses a BAPLIE file, and the images can also be automatically scanned for damage.

Beyond the gate

Trains need to be tracked as they are moved through the terminal, split into sections and un(loaded) by the gantry cranes. APS vice president Allen Thomas explains that most of the new terminal designs have two main operational areas: storage or classification tracks where cars wait for access to working tracks or further segregation/amalgamation; and working or processing tracks where the trains are handled by the cranes.

The APS RTS system tracks trains via in-ground sensors placed just beyond track splits that record wheel movement overhead and determine the number of cars in a train based on axle count. The RTS shares data with the main OCR portal system to determine the cars and their line order on the storage tracks.

The working tracks need more detail to match the sequence-based train inventory to the actual location of the crane working the train. This is achieved by cross referencing RTS data with GPS position information from the gantry crane to determine exactly where the train has stopped. Sensors and overhead cameras then pinpoint the exact location of the ends of rail cars and the edges of containers, providing an exact location coordinate for each box.

By combining different systems, APS solves the process automation challenge of accurately identifying and inventorying the train, tracking it and identifying how it is handled without requiring any manual input from ground staff. As the train is worked, twistlock and crane hoist reference signals are used to record where containers are stacked or to confirm a container hand-off to a waiting tractor.

By implementing new terminals with

Automation services provider APS Technology has developed a system to automatically track and inventory a train at an intermodal terminal

widespan gantry cranes, railroad operators are seeking not just to make better use of space, but to increase the speed and accuracy of terminal processes, improve safety and reduce their environmental footprint.

Thomas adds that real time equip-

ment visibility is a key factor in achieving these goals and unlocking the operational benefits a (potentially) fully automated gantry crane operation can deliver.

APS has implemented its rail automation solutions at on-dock rail termi-

nals in the US including APMT's facility at Pier 400 in Los Angeles, DP World's Centerm facility in Vancouver and Washington United Terminals in Tacoma. It is in final contract negotiations with two Class I railroads at this time.

Meanwhile, APS recently secured its first business in Europe - a contract to provide its Automated Gate System (AGS) to Yilport in Istanbul at an offsite depot facility. The AGS will cover five lanes and include APS's OCR portal and its Driver Kiosk featuring integrated driver credential card readers. APS is also supplying damage inspection software to enable containers and seals to be inspected remotely in real time. □

The APS Rail portal - a key part of its automation system for intermodal terminals

