Ruggedised equipment designed for spreaders

CAPEX and OPEX Analysis of Disruptive Technology

How will the implementation and operational use of spreader OCR impact the finances of a container terminal?

The New Era is Here - John Lund from Visy Oy explains...

The current pandemic has caused uncertainty in ways the world hasn't experienced in a long time. Ports and terminals are aware that they will be forced to undergo changes on a scale unimagined since the events of September 11, 2001. These changes will undoubtedly present challenges and alter business processes through the use of technology. The good news is that technology for terminal operations is incredibly more advanced than it was in 2001.

Vision technology today, including modern optical character recognition ("OCR"), isn't comparable to the systems deployed following 9/11. The improvements in hardware and advances in artificial intelligence and machine learning have combined to create tools previously only seen in science fiction films. TopView, Visy's spreader OCR application, is a disruptive technology, with a strong business case, born from this combination.

TopView is an automatic OCR system designed specifically for spreaders and applicable on all container handling equipment ("CHE"). The configuration is simple: Ruggedised cameras, lights and device cabinets with a PC and cutting-edge software. Nothing else. The result is over 98% correct container ID reads from raw OCR results. With the use of loading lists, the OCR results produce close to 100% correct container ID reads. The data captured by TopView is automatically shared with a terminal operating system ("TOS"), or other 3rd party systems, to drive automation. The data exchange happens as soon as the twistlocks engage, so the box ID is known even before the cargo is moved. TopView instantly turns an ordinary spreader into a smart device.

Outcome Focus

Our industry is obsessed with outcome. There is a lot of intriguing automation technology on the market, but the question must be asked, what outcome will it have on operations? Furthermore, there are extensive CAPEX and OPEX calculations to consider.

In the case of OCR generally, the operational benefits are clear, and we hear them all the time. The benefits are some variation of the following:

- ☞ **R**educe operating expenses
- ☞ **O**ptimise safety and security
- ☞ **I**ncrease throughput capacity

These 3 overarching benefits are inevitably connected to KPI's such as truck turnaround times, moves per hour, cost per lift, lost time for injury, and the like. Conveniently, these 3 points suggest there is an "ROI," but what happens when we drill down into the CAPEX and OPEX realties of a new OCR application such as TopView? For example, what happens when we explore the financial implications of deploying TopView on STS cranes?

TopView CAPEX Analysis

The first consideration is, what do you want to accomplish with OCR in your STS operations? The usual answer is, automatic container ID recognition to improve KPI's concerning gross moves and berth moves per hour. Identifying the box, and quickly and correctly bringing it into the terminal system during

unloading operations, or moving it out during loading operations, are the primary concerns. As stated, TopView will achieve close to 100% correct read rates with the use of loading lists. The flexibility of the system allows it to work with all types of spreaders including single, twin and tandem. Best of all, since the OCR results are sent as soon as the twistlocks engage, the operator will know immediately if the wrong box has been hooked and will prevent the slowdown associated with wrong moves. The high accuracy and fast data exchange of TopView improve quayside KPI's better than conventional STS OCR systems.

The next consideration is, how much will it cost? If your primary concern is to capture container IDs in STS operations, why would you invest in a large-scale system with 20 or more cameras, lights, moving parts and whatever else might be required? The spreader is the only piece of equipment on the terminal that touches every box. It is the common denominator in your operation, so why not simply retrofit it into a smart device?

TopView utilises minimal hardware, which makes it considerably less expensive than any other STS OCR system on the market, all while delivering better OCR results. TopView is the right choice from a CAPEX perspective and easily outclasses any conventional STS OCR system.

Another consideration when investigating STS OCR is establishing how long will it take to install and determining if the installation will suspend operations. Most terminals are familiar with swapping spreaders. It's a routine part of STS upkeep. Since TopView hardware is only on the spreader itself, it is installed while the unit is offline in the shop, and before it is put into service. Software and integration work happen in the background, in parallel to other project work.

Therefore, there is no disruption to STS operations during system installation, and the professional services associated with the project are modest. When the spreader is put into service, the STS OCR system goes live immediately with instantaneous benefits. It's a straightforward process and CAPEX friendly.

TopView OPEX Analysis

STS OCR support and maintenance can be burdensome, especially if the system has 20 or more cameras all over the beams. How do you as a terminal manager quickly and safely service so many components? What kind of spare parts inventory must be managed? How do you ensure that the focal length of new cameras is correct when swapped?

What are the insurance implications of having personnel climb the cranes to exchange parts or clean the camera lenses as specified in the OCR SLA? What are the training requirements and interests of labour? Will drilling and fixing cameras to the crane affect the structural integrity of the CHE or present warranty issues? There are a lot of STS OCR aftermarket issues impacting OPEX that often aren't considered during the project's evaluation phase. These issues must be understood or else your financial planning will fall off the quay!

In the case of TopView, all primary components have redundancy and are located on the spreader. If parts need to be serviced, everything is located in one place: on the spreader. Work will be done during scheduled maintenance periods or when the spreader is offline in the shop. With such uncomplicated support and

maintenance, there will be no disruption to operations…or the need to put personnel in harm's way 60-meters above the quay! Because the system uses minimal hardware, and all spreaders use the same equipment, spare part inventory supplies are small. If a camera needs to be replaced, there is only 1 camera type. Lights? Only 1 type. Device cabinet? Only 1 type. Minimalism is the genius of the design, which means a lower cost of ownership and reduced OPEX when compared to conventional STS OCR systems.

Other Management Considerations

Looking at other areas of terminal operations, TopView is used on every type of CHE with a spreader, not only STS cranes. TopView is therefore applicable in all types of operations, not only marine terminals. Do you have mobile harbour cranes ("MHC") outside your current automation system? TopView is the best way to automate MHCs.

What about the need to meet those "ROI" objectives in the stacks or in other parts of the operation? TopView is used on RMGs, RTGs, reach stackers, and any other CHE with a spreader. By using TopView in the yard, you give your CHE eyes to see every movement, confirm stack integrity, and produce photographic evidence with an audit trail. Put in terms of outcome: no more lost boxes and therefore improved KPIs associated with such problems.

TopView is a disruptive OCR technology for all terminal operations. From an operational standpoint, its performance meets or exceeds that of any other STS OCR system in existence. From a financial perspective, the CAPEX and OPEX are a fraction of the burden presented by conventional systems. By adding this simple technology to your CHE, and turning your spreaders into smart devices, you will achieve your desired operational and financial outcomes. ∎

TopView turns any spreader into a smart device