

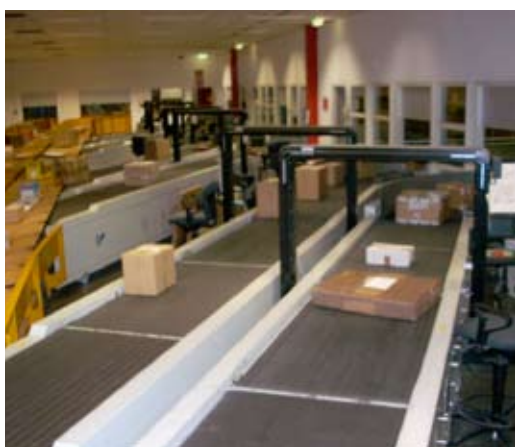


Case study: TNT Post Parcel Service Deploys Prime Vision OCR & Video Coding Solutions Nationwide

The business case for OCR at the Parcel Division of TNT in The Netherlands is a compelling one. With parcel volume expanding but the time frame in which to sort those parcels remaining inflexible TNT has invested in Parcel Vision, a comprehensive, turnkey OCR and video coding system from Prime Vision. It promises to boost throughput by up to 12%, reduce staffing levels, increase sorter capacity and most importantly cut operating costs.

The company's impressive record is 98.5% next-day delivery for all standard rate parcels, a tough quota to maintain but one that has seen its business grow steadily year on year. Just 10 years ago this division was running at a deficit but with market trend on its side and a strong commitment to succeed it is now a profitable and highly strategic part of the TNT Group.

Twelve camera systems



Identical Prime Vision systems have now been installed in the three TNT parcel-sorting hubs in The Netherlands to uphold this gold-standard. They are at Amsterdam and Zwolle that respectively serve the top quadrants of the country and Dordrecht responsible for the southern half. The hardware involved is an Accu-Sort camera on each of two FKI tilt-tray sorters per hub for top-side scanning, so twelve camera systems in total.

Beyond that however is a bank of Prime Vision solutions that feed off this image capture. Video coding and comprehensive training for that application, image archive and label identification – a tool for reading standard label formats – are powerful drivers for greater sorting efficiency. This will effectively replace a system based on fixed mounted and hand held laser bar code readers and conveyor-side manual coding stations.



So how will this Prime Vision Parcel Vision system deliver such wide-ranging benefits for TNT? To understand that naturally requires a brief explanation of the sorting requirements. Each of the sorting centres typically accepts parcels from 18:00 hours but the peak of activity is invariably from 23:00 hours to 3:00 the following morning. During this

time the first priority is high level sorting for dispatch to the other distribution centres throughout that peak period.

Time critical

The 3 am deadline for the last dispatch is critical. To allow sufficient time for the second sort the trucks cannot leave any later as the receiving distribution centre may be a two-hour drive away. The time window is therefore fixed with no flexibility to accommodate higher volumes. The only option is to start sorting before 18:00 hours but of course the bottlenecks occur later in the shift when the greater volumes arrive.

“In the perfect world with a strong bias to EDI parcels, we could achieve a throughput of 18,000 parcels per hour, but of course it’s never that easy!” explained Project Leader OCR, Gabby van der Arend and former Manager of Dordrecht Sorting Centre “Typically a mixture of EDI and non-EDI will allow us to process 16,000 per hour but with volumes often topping 110,000 in a 6 hour shift we needed to accelerate the sorting process.”



Gabby van der Arend :

“We have a terrific relationship with Prime Vision, our lines of communication are short and we see each other a lot.

Two years ago Dordrecht took the initiative to take volume away from this peak sorting time by combining the first and second sort on parcels destined for its own distribution centres. It also increased the number of first sort destinations but the expansion was limited by available floor space. Whilst helping to a degree these moves failed to have any significant impact on throughput in the face of increasing volumes so the decision was taken to introduce OCR. And the choice of Prime Vision OCR was galvanised by glowing reports from both Post Denmark and TNT in Arnhem both of whom had adopted Post Vision to great effect.



Fast and accurate

The potential to improve sorting efficiency extends throughout the Parcel Vision system. It reads machine-print or handwritten address details, 1D and 2D barcodes and article numbers automatically regardless of the parcel's size, shape and orientation. High Yield Character Reading - HYCR™ technology – maximises the accuracy of the system to well above the human average. Another important component is Prime Vision region-of-interest



finder that uses a neural network that can be trained to recognise specific parcel and label characteristics.

The TNT Parcel Vision system is combined with Key Vision, a data entry solution that considerably improves the efficiency of manual data entry. The ROI finder has an

important role in this regard too as the automatic rotate, crop and zoom feature presents an image that is quick and easy to read.

“Manual data entry is where we currently have the greatest bottleneck at the Dordrecht site,” Gabby van der Arend explains. “No matter how quickly the parcels are loaded onto the inducts those that are not automatically read are stuck on the sorter until they are processed manually. A good operator will code a maximum of 550 parcels per hour and typically we would have 16 stations in operation throughout the shift. But, with our sorters offering us a capacity of 21,000 per hour it’s easy to see that we are not maximising the potential of our automation.”



The new Prime Vision system will take the manual data entry away from the conveyor-side stations to a dedicated room with PC screens and QWERTY keyboards for each operator. This video coding pool is a much more operator friendly environment and of course the entire process has been designed to increase productivity significantly.

The OCR system is expected to read half the parcel images so the video coding requirement in any event will be less. To increase the cost saving potential further the system also incorporates a 'second try' facility. If 25 seconds proves to be insufficient time to capture all the images on the parcel there is another opportunity for data capture when the parcel reaches the second camera on the sorter loop.

Fewer operators



Images of the no-reads are then instantaneously fed to the video coders who, thanks to Key Vision's ROI feature can process the parcel far quicker. As a result throughput is anticipated to climb from 550 to 650 parcels per hour per operator. In combination with the efficiency of OCR these performance gains will allow TNT to reduce its operator numbers from 16 to just 8 and still hit its productivity target.

The monitoring of video coding accuracy is already a standard procedure at TNT and the new system will naturally continue this capability. The company has an impressive accuracy rating of 99.5%, which is, maintained through continuous assessment. The Video Coding system has more than 1,000 ready-loaded quality control images pre-loaded that are fed into the normal video coding process so that quality control becomes automatic and extremely effective. These known 'fake' images are automatically compared against the database to measure accuracy and the score per operator is used pro-actively to maintain quality control and accuracy.

Three year payback

"This OCR investment will allow us to increase productivity to between 17,500 and 18,000 parcels per hour,"



Gabby van der Arend explains. “And I think our goals are quite conservative. Yet despite this we are still anticipating full system payback in just three years.”

One of the main benefits of the Parcel Vision system is the ease with which it can be adjusted and enhanced to meet new requirements. The management information it produces will help considerably in this planning. Gabby van der Arend continues, “This is just first-phase for us. OCR is a project for continual development, its potential is huge.” Parcel Vision also provides the basis for adding value to the service TNT offers its customers such as track & trace and image archiving. And one of the applications that is at the top of the list for development is European label reading, a very expensive process as manual coding is currently the only option.

Gabby van der Arend adds, “We have a terrific relationship with Prime Vision, our lines of communication are short and we see each other a lot. It’s not a case of one company supplying another; we’re a working partnership. Everyone has such energy for this project.”



“The staff are keen to be part of this change and of course our customers will benefit from knowing that the quality service, of which TNT is justly proud, is assured well into the future,” she concludes. “Thanks to Parcel Vision we will also have the flexibility to respond to changing market needs and minimise process costs.”

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