

Why it is critical to inspect labels during printing.

Thermal printing is an extensively used and mature technology that is extremely reliable but that doesn't prevent print issues occurring when printing labels. Manufacturers depend on thermal printing for product identification, dosage information, voltage currents, use by dates, batch information, model and serial numbers, to name a few. Literally billions of product identification labels are printed each year and the supply chain, downstream assembly processes and consumers are all dependent on the information printed.

But don't be surprised, many print issues can and do happen when using thermal print technology.

At the printer level, printheads can run hot; platen rollers wear over time; printhead pressure varies; media substrate changes from batch to batch; adhesion of the wax/resin can vary, darkness and intensity or speed settings in label designs can get inadvertently changed; wrong media can be loaded, the media can get jammed; the media can 'drift' out of alignment; ribbons can and do break.

At the network level, networks go down and power outages occur jeopardising the integrity of data and causing duplicate labels, 'lost' labels and unnecessary or uncontrolled reprints.

At the software level, variable data can fall out of sync, incorrect data files and templates can be incorrectly selected by users, print jobs can be sent to the wrong printer, buffer files and data can be inadvertently deleted in a printer power down cycle.

And at the end of running a print job there is no visibility, without inspection, to know what has and hasn't been printed. There are many pitfalls in printing labels in a production process.



Contractual and Compliance Requirements

Other reasons why it is essential to inspect include contractual supply agreements and regulatory compliance requirements - one incorrectly or defective label can lead to total delivery rejects and chargebacks, and at worst can lead to foreclosure by regulatory authorities for repeated non-compliance.

Anyone working in compliant industries will be fully aware, compliance requirements can be demanding and onerous. To fully meet compliance requirements such as those mandated by the Food & Drugs Administration demands process control, strict batch reconciliation, user access control and an audit trail history. It also requires that accurate and correct data is printed and recorded without duplicates along with the correct territory information.

Realtime Inspection Can Address Printing Problems

Only through realtime inspection can all of these complex issues be captured. With innovative product solutions such as the [Perceptor PTXL](#) software with TSC Printronix printer and ODV-2D camera, you now have realtime inspection of labels - with the ability to automatically overstrike and destroy non-compliant, duplicate or poorly printed defective labels...without human intervention at print speeds of up to 6" (150mm)/second.

By design Perceptor PTXL will hold the printing process to prevent unauthorised labels from being printed and when running, check printed labels in realtime for barcode verification, data and human readable content, print blemishes, patterns and symbols, duplicate labels, and ISO data content validation to UDI and GS1 for the Medical Device, Pharma, Life Sciences and IUID for the US Defence industry.

Inspecting Labels can drive down costs and increase throughput

Inspecting labels does not just ensure print quality and data compliance, it can also drive down production and labor costs, reduce material wastage and increase throughput. It removes the need for timely and costly manual inspection.

In addition with the accurate visibility and data captured from inspecting printed labels, business systems (ERP/MES/WMS) can be updated in realtime for accurate production data and realtime operational performance metric reporting. Detailed analysis by product, printer, material, shift, plant location, inspection failure errors, to name a few, are all available.

Inspection also removes the possibility for delivery rejection and chargebacks as a consequence of incorrectly or poorly printed product identification labels.

With cloud based technology all devices can be networked globally to all share the same inspection templates and record data to one central global database from which performance metrics and Microsoft Power BI can analyse large data to help drive efficiency gains.

With the adoption of technology, increased processing power, improvements in OCR algorithms, faster IT infrastructure and cloud based solutions, manufacturers do now have it within their grasp to control the print process and avoid poorly printed defective or duplicate labels from being released into the supply chain.

About the Author

Mark Worlidge is the CEO and Founder of Perceptor Inspection Technologies Ltd and the Global Product Lead for Perceptor PTXL.

He has over 25 years experience in selling and supporting 2D DataMatrix verification and complex machine vision solutions

With a wide range of experience in deploying OCR/OCV applications to pharma, medical device and life sciences manufacturing he is well versed in the challenges of reliable printing and inspection solutions.

Operational Gains:

- Fully meet compliance requirements
- Control the print process
- Avoid duplicate labels and serial numbers
- Ensure correct data content
- Capture and destroy poorly printed labels
- Fully automate print requisition and inspection
- Benefit from performance metrics reporting for efficiency gains