PRODUCT SECURITY INDUSTRY SOLUTIONS

Serialization, Track-and-Trace, Encryption, and Authentication

COGNEX

COGNEX PRODUCT SECURITY SOLUTIONS

PROTECTING PRODUCTS AND THEIR BRANDS FROM MANUFACTURING TO DISTRIBUTION AND POINT-OF-SALE

Industries are increasingly turning to product security solutions to safeguard their products and meet industry requirements. Cognex's industrial barcode readers and machine vision systems address these concerns head-on by delivering the industry's highest read rates, superior quality and assembly inspections, and supply chain protection. Cognex technology reads, inspects, and authenticates products at the unit- and package-level, easily exchanging security data with third party software and hardware systems to verify the safe and accurate movement of products.

Through our industry partnerships and thirty years of experience, Cognex offers both custom and off-the-shelf vision and identification solutions for product security solutions providers, OEMs, marking companies, and end users. Cognex products can be specified into all levels of a product security apparatus, from mark-and-read equipment to enterprise layer software. So whether you're designing a labeling machine, packing machine, or a custom serialization solution, Cognex machine vision technology can meet your needs today and equip you for the future.

$726 MILLION
2019 REVENUE

2,300,000+
SYSTEMS SHIPPED

350K UNITS SHIPPED IN 2018

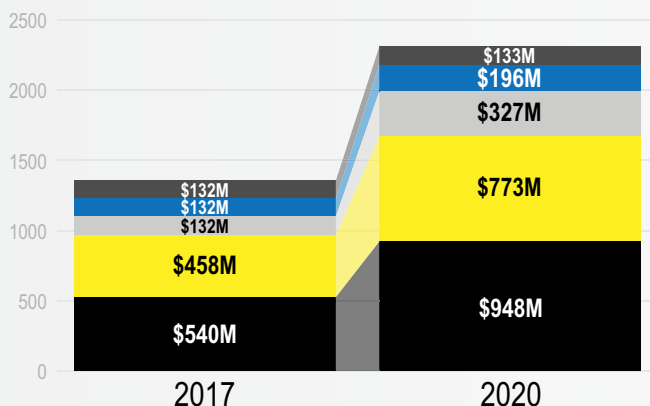**97.5%** ON-TIME DELIVERY

39 YEARS IN THE BUSINESS

99.4% FIELD-FAILURE RATE

SERIALIZATION, TRACK-AND-TRACE, AND AUTHENTICATION REQUIREMENTS

Mounting regulations are driving the pharmaceutical, medical device, beverage, tobacco, and luxury goods industries to adopt new technologies to secure their supply chains. Next generation serialization, track-and-trace, and encryption technologies now help manufacturers exporting into regulated markets adapt their packaging to meet traceability requirements. Even in the absence of regulation, many manufacturers want to track their products through the supply chain in order to stop counterfeiting, minimize the production and distribution of unsafe or lower quality products, and reduce the magnitude of recalls.

SERIALIZATION
OF GOODS
Assign unique, traceable numbers to individual saleable units

TRACK & TRACE
THROUGH THE SUPPLY CHAIN
Locate each unique saleable unit and related data

AUTHENTICATION
AT POINT OF DELIVERY
Verify a product has not been counterfeited

PRODUCT SECURITY MARKET SIZE

- Other
- Beverage
- Tobacco
- Medical Devices
- Pharma

2017
- $132M
- $132M
- $132M
- $458M
- $540M

2020
- $133M
- $196M
- $327M
- $773M
- $948M

1-D AND 2-D BARCODE READING

IDENTIFICATION AND DATA VALIDATION FACILITATE SERIALIZATION AND TRACEABILITY

Barcode reading is essential to any track-and-trace initiative. Most products contain a unique serial number in the form of 1-D or 2-D barcodes, which allow them to be tracked and traced as they move through the supply chain from production to the end user. Documenting this chain of custody throughout the product lifecycle makes it possible to verify the location of products and retrieve them in the case of a recall.

Cognex products allow companies to optimize the decoding process, increase system performance, and improve communications. Cognex's image-based barcode readers offer industry-leading 99.9% read rates and industrial connectivity to keep pace with mark-and-read machines' high speeds and throughput levels. Cognex offers both off-the-shelf and OEM barcode reading solutions that can be specified directly into track-and-trace systems.

Documents inspection and code-reading results to comply with industry regulations, including UDI and GTIN

Reads challenging 2-D tax stamp codes found on tobacco and alcohol products

Supports a wide range of 1-D and 2-D barcode symbologies including DataMatrix, GS1-128, GS1 DataBar, DotCode, and Pharmacode

Product Security Industry Solutions
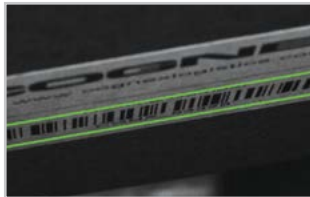
Delivers high read rates for challenging, damaged, and omnidirectional codes

Provides end-to-end traceability for recall efficiency

5 MP sensor and wide field-of-view handle multi-code, high-speed lines

Easy set-up and deployment reduce build cycles and time to market

Universal communications protocols simplify integration between reader and plant network

OPTICAL CHARACTER RECOGNITION & VERIFICATION

## OCR/OCV CAPTURES AND VERIFIES PRODUCT INFORMATION IN HUMAN-READABLE FORMATS

As manufacturers prepare for compliance with global traceability requirements and transition from batch- to item-level serialization, it's important to keep in mind that compliance requires much more than simply reading codes on labels or parts. Information about manufacturing date, lot, and product expiration must also be associated with serialization data. OCR and OCV technology captures product information printed in human-readable formats at both the batch and item level.

Cognex vision systems read codes located on individual units and cartons, validating alphanumeric text against GS1 linear and DataMatrix codes. OCRMax,™ a font-trainable OCR and OCV tool, sets industry records for ease of use, read rates, and speed. This powerful algorithm prevents misreads, handles process variations, and provides easy font management with minimal training required. Smart cameras with OCR technology include on-board image processing and are easily configured to deliver results with low demand on additional infrastructures, such as CPU units or embedded PCs.

Confirms origin, date/lot, expiration, and other manufacturing data

Integrated, high-performance image formation systems produce even, diffuse illumination, eliminating the need for costly external lighting

Superior read rates with OCRMax

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(17)191125
(10)ABCD1234
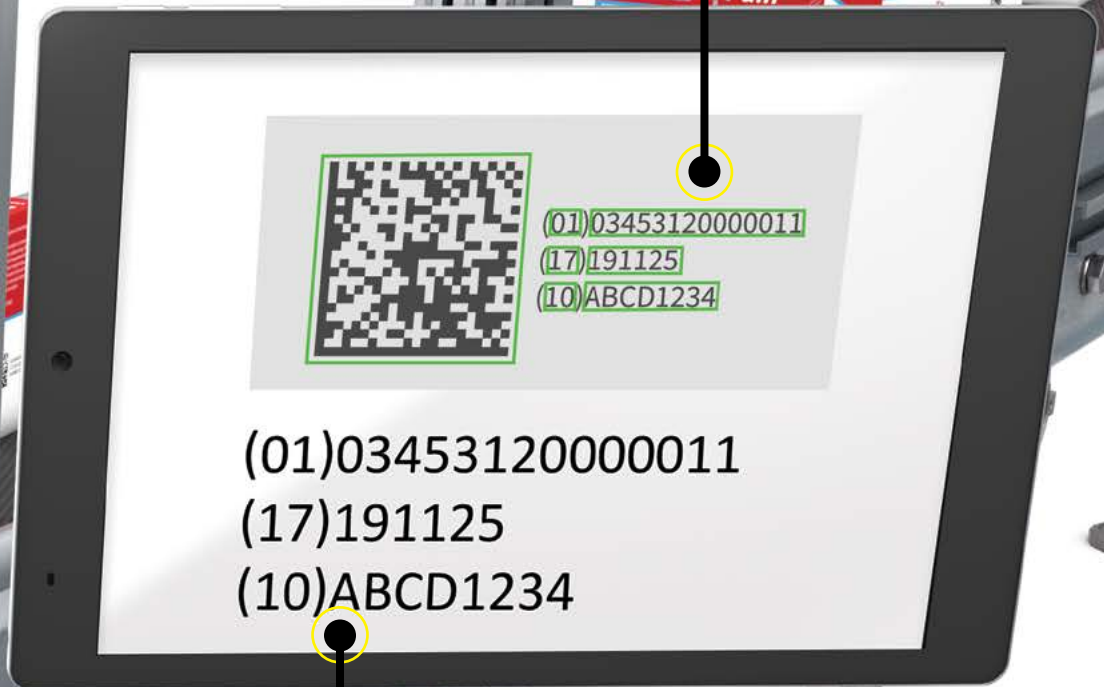
Grades against GS1 linear and DataMatrix codes to meet FDA's UDI label requirements

PERFORMANCE FEEDBACK & CODE QUALITY ANALYSIS

BARCODE QUALITY METRICS IMPROVE PROCESS CONTROL

Regulators require manufacturers to track and log barcode quality statistics on every product. A dip in reading performance can grind production and distribution lines to a halt and create gaps in essential tracking data. Cognex image-based barcode readers provide exceptional feedback on every code they read. DataMan® barcode readers provide real time performance feedback, flagging issues such as system malfunctions or configuration changes, to restore peak performance quickly. Readers aggregate data from each scan point, allowing facility managers to monitor performance and implement corrective actions to achieve higher read rates and peak productivity. Software collects and grades the quality of barcode images and provides valuable process control metrics across an entire facility. No-read images are archived for image analysis later, where they can be used to pinpoint errors upstream.

Ensures code quality and compliance with industry and application standards

Barcode verifiers capture images and generate reports to demonstrate compliance with industry guidelines

Product Security Industry Solutions

Web-enabled HMI can be accessed and controlled anywhere in the facility

Stores images for audits, tracking, and monitoring code marking systems

In-line code quality grading detects print degradation

Flags no-reads and scanning failures for process control optimization

Image offload and storage for no-read events

Transmits code data from all scan points to the MES (Manufacturing Execution System)

Automatically locates all readers on the network for fast setup

LABEL AND PACKAGING INSPECTION

CORRECT PRINTING ERRORS AND ANALYZE NO-READ EVENTS

Manufacturers must diagnose and correct errors in the code marking process as they happen in order to prevent machine assists and downtime and ensure that codes can be read by other readers in the product distribution chain. Cognex vision systems validate the presence, accuracy, and readability of codes applied to labels or marked directly onto products, flagging defects and those printed outside the field of view. Vision systems also verify a product's contents match its label. In the case of no-read events, vision tools analyze archived images to reveal the underlying cause, whether it be low-contrast printing, faulty placement, or damage.

Error-proofs the print/apply process

Identifies poorly printed and damaged codes on labels and protects against print quality degradation

Catches missing, flagged, and damaged labels

Ensures label integrity

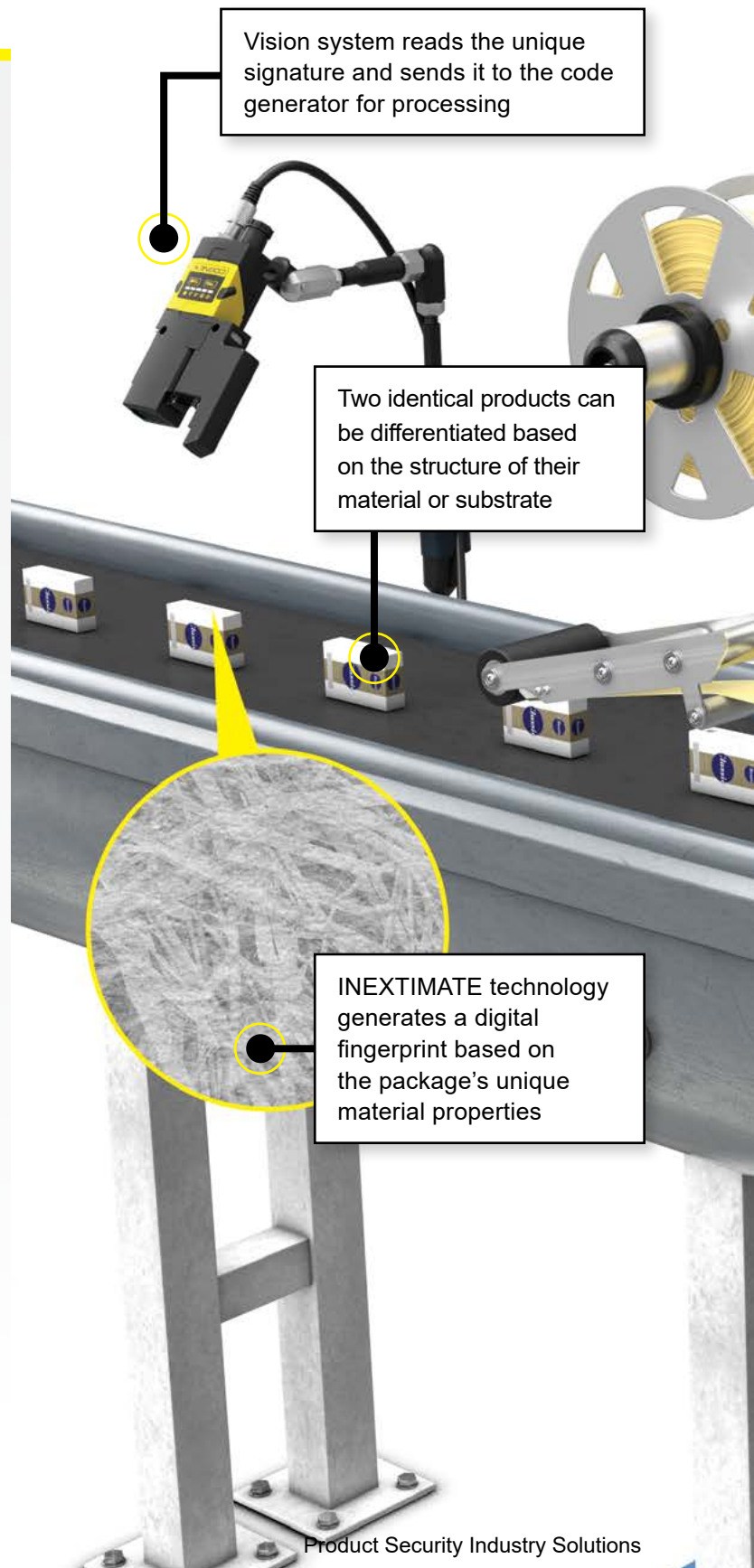Reveals causes of failure in post-processing of no-read images

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X DAMAGED LABEL

Diagnoses and corrects errors as they happen
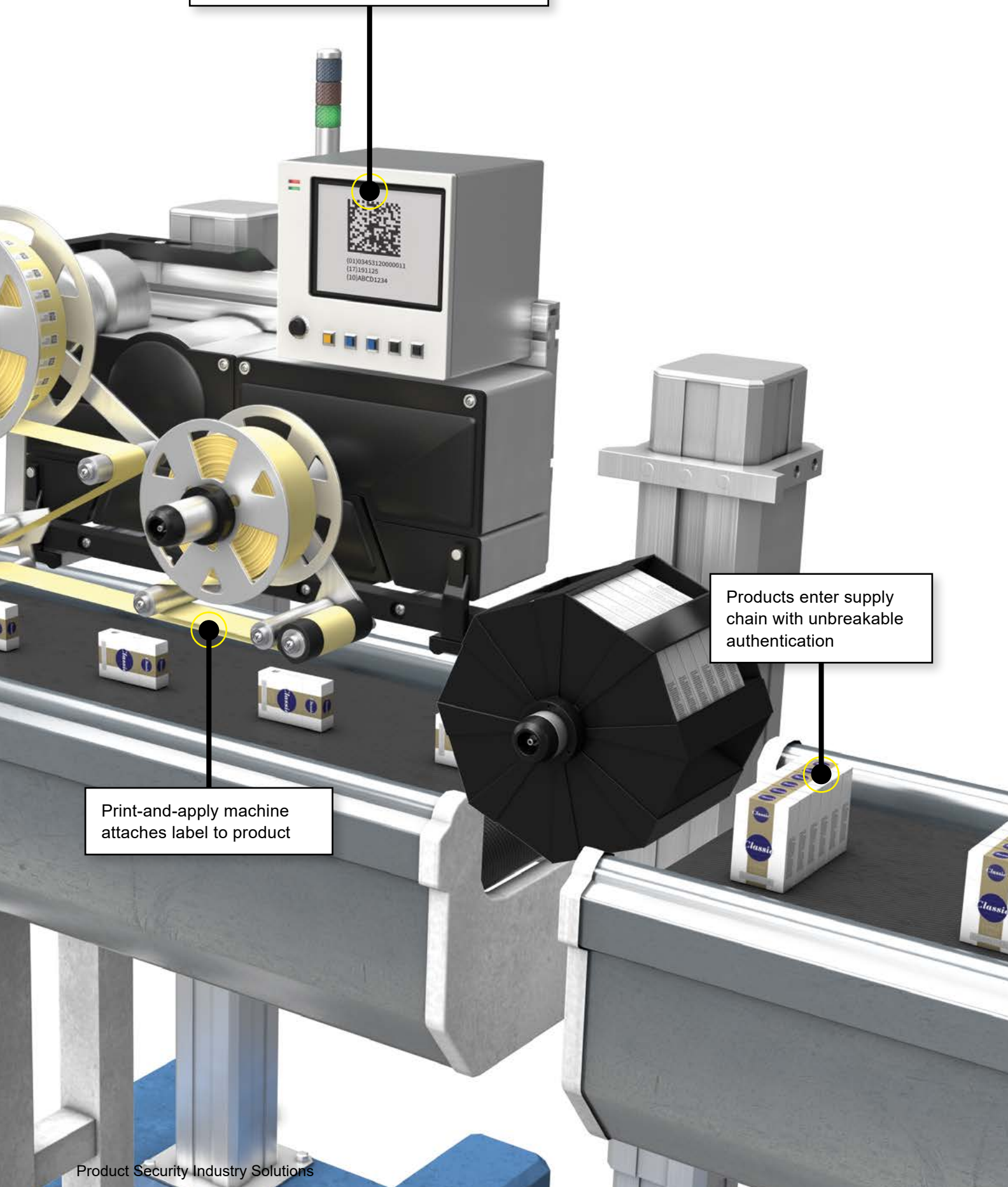
PRODUCT AUTHENTICATION
THE ULTIMATE SOLUTION AGAINST COUNTERFEITING

Products become susceptible to counterfeiting when their identity and provenance cannot be verified. To combat the potentially hazardous distribution of falsified or mislabeled products, legitimate manufacturers are turning to item-level serialization. DataMatrix codes embed detailed information about the manufacturer, product ID, expiry date, and each item's unique serial number. Codes are marked on individual finished goods and their aggregated packaging. This makes goods identifiable and traceable at multiple stages of handling, including the point of sale. In addition to embedding critical product information into these codes, companies can take the additional step of using digital and/or physical technologies for product authentication.

Cognex solutions can further isolate the source and extent of safety, quality, and counterfeiting problems by leveraging authentication technologies that are compatible through all stages of the supply chain. Inexto's INEXTIMATE™ digital technology securely creates and authenticates codes first by capturing the unique fingerprint of an item's material structure, then digitally generating a secure and unique attribute that becomes part of its code. This high-speed technology creates an impenetrable lock between the identity and authenticity of an item. For industries that use physical encryption techniques such as UV or hologram, Cognex provides secure DataMatrix encryption technology to generate hidden or encrypted codes that can be read using DataMan readers.

Vision system reads the unique signature and sends it to the code generator for processing

Two identical products can be differentiated based on the structure of their material or substrate

INEXTIMATE technology generates a digital fingerprint based on the package's unique material properties

Product Security Industry Solutions

A GS1-compliant code is generated containing a unique, secure serial number

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(10)ABCD1234

Products enter supply chain with unbreakable authentication

Print-and-apply machine attaches label to product

CLOUD-BASED MOBILE DATA CAPTURE
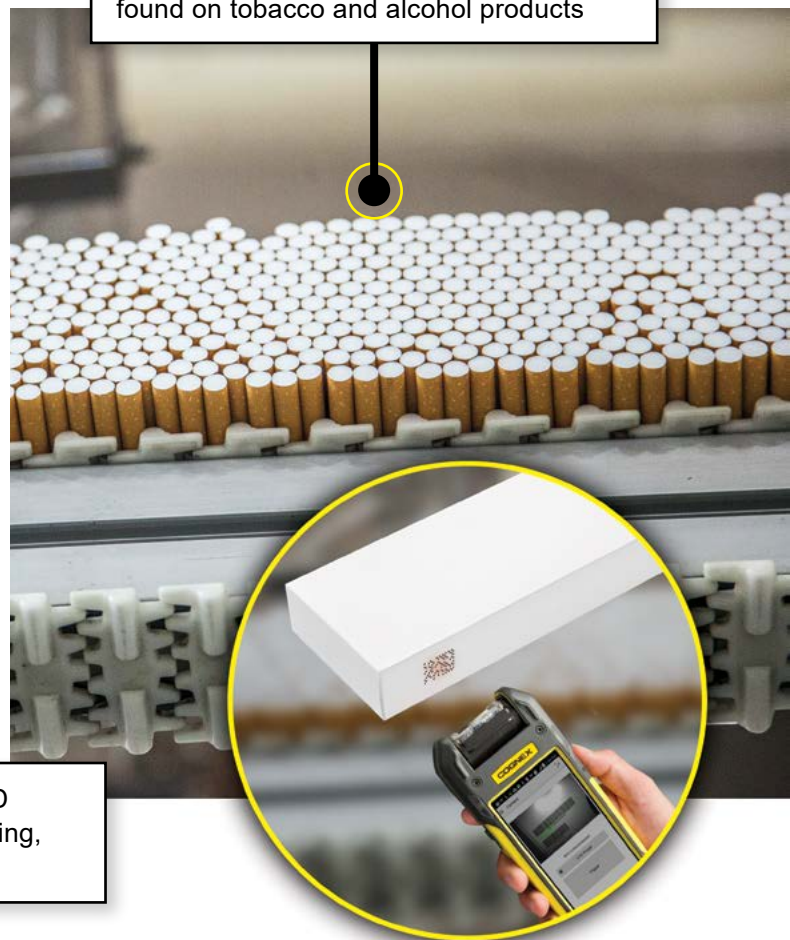## CONNECT TO TRACK-AND-TRACE SYSTEMS FROM ANYWHERE

From scanning inventory to collecting track-and-trace events, data capture is essential for distribution. Mobile terminals offer greater functionality for many logistics supply chain applications. This is especially true during distribution in industrial environments that require 1-D and 2-D barcode reading and optical character recognition (OCR) on packages and pallets at standard-, long-, and extended-range. Cognex's MX-1000 vision-enabled mobile terminals read label-based barcodes on packages and equipment. Its common software development kit (SDK) is scalable with the latest smartphone technology and allows open third-party development.
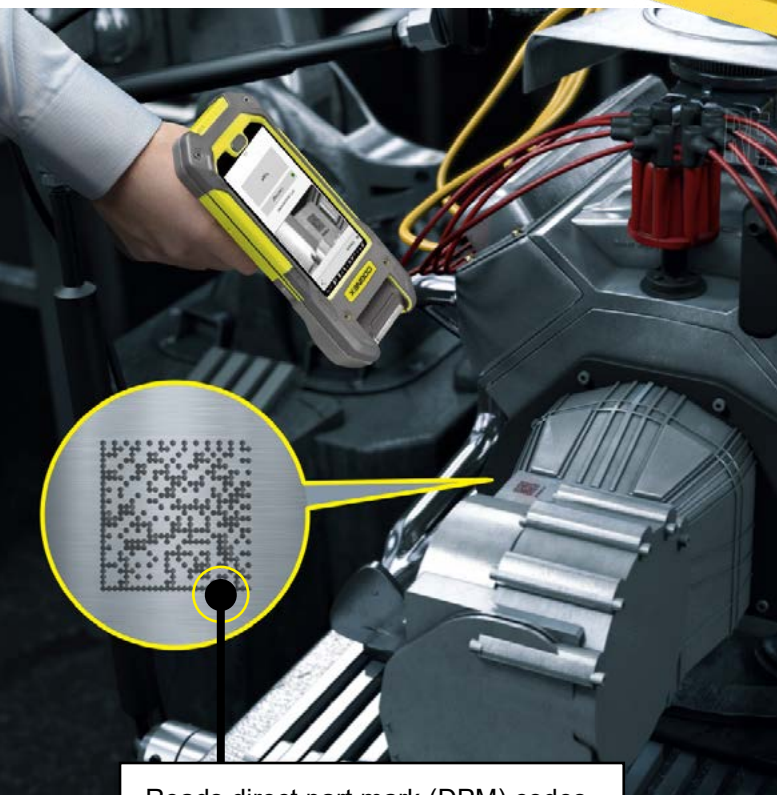
Convenient, common SDK platform allows third-party development

Reads DotCode symbology found on plastic-wrapped cigarette packaging as well as challenging 2-D tax stamp codes found on tobacco and alcohol products

Ideal for reading standard 1-D barcodes and small 2-D DataMatrix codes found on bottles, cardboard packaging, multi-pack boxes, and more

Product Security Industry Solutions

Supports standard smartphone models and technology

Rugged design for harsh industrial environments

Fast deployment with no local server

Reads direct part mark (DPM) codes including dot peen and laser marked codes found on a variety of parts and sub-assemblies

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34KCC 0802GG

Reads codes even at extended range

BUILD YOUR VISION

2D VISION SYSTEMS

Cognex machine vision systems are unmatched in their ability to inspect, identify and guide parts. They are easy to deploy and provide reliable, repeatable performance for the most challenging applications.

www.cognex.com/machine-vision

3D VISION SYSTEMS

Cognex In-Sight laser profilers and 3D vision systems provide ultimate ease of use, power and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.

www.cognex.com/3D-vision-systems

VISION SOFTWARE

Cognex vision software provides industry leading vision technologies, from traditional machine vision to deep learning-based image analysis, to meet any development needs.

www.cognex.com/vision-software

BARCODE READERS

Cognex industrial barcode readers and mobile terminals with patented algorithms provide the highest read rates for 1D, 2D and DPM codes regardless of the barcode symbology, size, quality, printing method or surface.

www.cognex.com/barcodereaders

COGNEX

Companies around the world rely on Cognex vision and barcode reading solutions to optimize quality, drive down costs and control traceability.

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