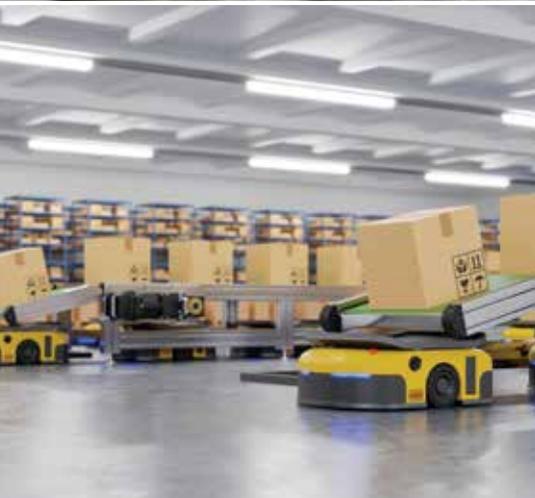


# Material Handling Solutions



# The Material Handling Market Is Evolving, Fast

With the continuing shift to eCommerce and globalization, the demand for logistics, distribution, and fulfillment has never been greater. Manufacturers of material handling equipment must find innovative ways to move goods more reliably, accurately, and faster. Banner Engineering partners with companies to meet these challenges. As a leading automation manufacturer for material handling companies, we offer market and customer-specific products that increase productivity, enhance safety, and drive efficiency.

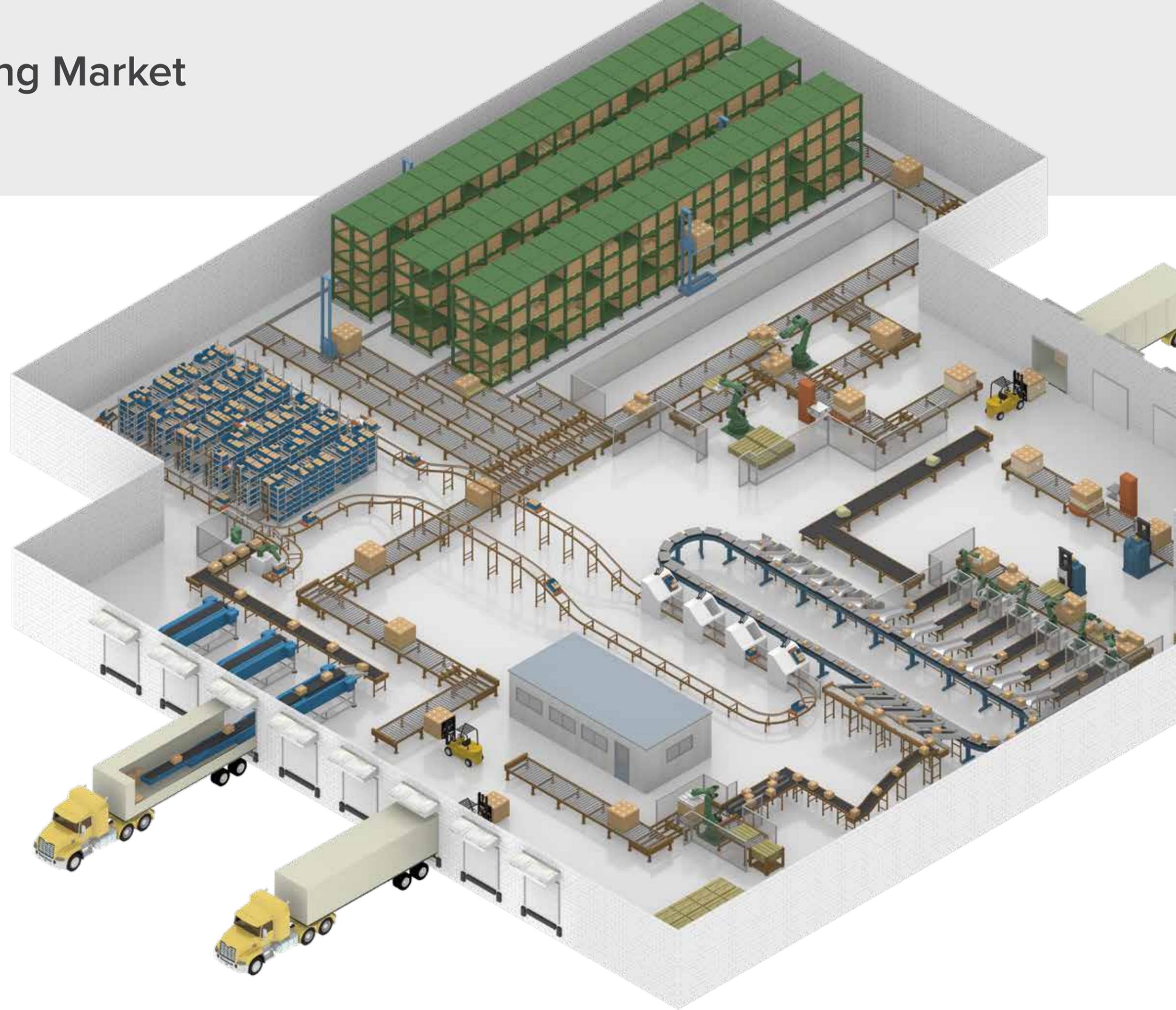
## Transition to a Smart, Connected Distribution Center

The days of basic sensors operating on isolated pieces of equipment are gone. Today, Banner smart sensors provide visibility for operations and maintenance teams, with immediate process improvements after quick set—from detecting jams to creating just-in-time predictive maintenance. Gathering and sharing this actionable data is made easy with Banner industrial wireless technology. Previously unavailable data is collected and sent to the cloud where custom dashboards provide insight for continued optimization.

In addition to sensors, Banner offers greater efficiency at every point of the process with smart lighting and networked safety products, leading a vast catalog of automation solutions.

## Getting Started

Throughout these pages, you will be introduced to Banner products and applications, used in various segments of the material handling market. Contact us to speak directly with an industry expert who understands your business, objectives, and challenges. We'll answer your questions and help you find the right products and solutions.



# Loading Docks

## Dock Status/Availability

- Easy-to-see LED indication provides daylight visibility
- Sealed housings resist outdoor elements like rain and snow
- Products: WLS27, SP350

## Truck Detection

- Robust, long-range radar technology senses in tough outdoor conditions
- Multiple output types simplify integration with systems
- Products: T30R

## Trailer Illumination

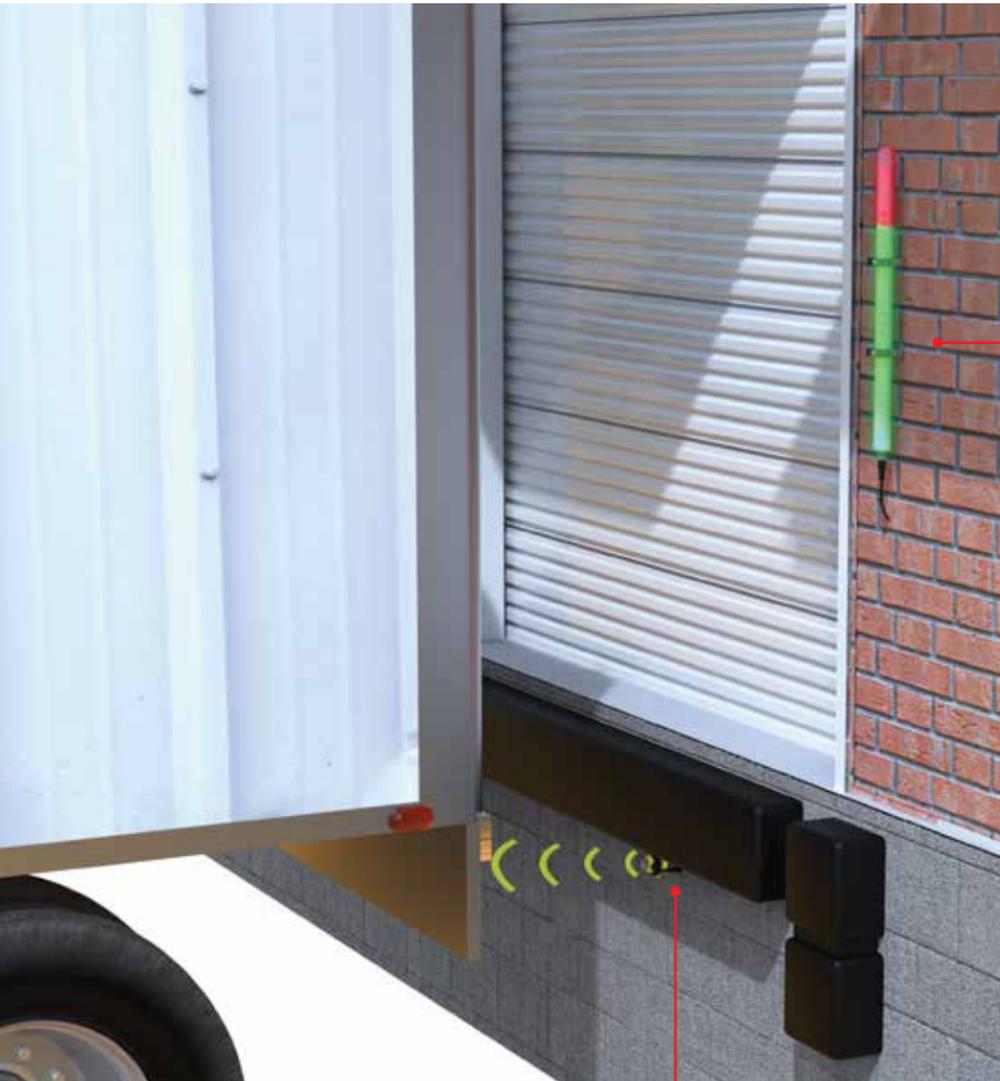
- Bright, uniform LED light provides illumination for operators
- Durable construction improves reliability in harsh environments
- Products: WLB72

## Call for Support

- Reliable touch buttons allow operators to signal managers for help
- Wireless technology makes installation fast and easy
- Products: K70 Wireless, Direct Select

## Dock Door Position

- Simple photoelectric sensor determines when door is open
- Powerful sensing technology withstands dust buildup and improves reliability
- Products: QS30, QS18



Traffic-light-style indication for dock availability with the SP350



Multicolor and animated status indication with the WLS27 Pro Strip Light



The Pro Series programmable multicolor LED devices from Banner Engineering offer limitless possibilities for advanced indication of dynamic machine states, operator interaction, and process statuses. Use Banner's Pro Editor Software, IO-Link, or PICK-IQ® for real-time communication across your factory.



Pulse Pro output for direct integration with Banner lights. Direct process feedback which only requires power; no controller needed.



Reliable, long-range truck detection with the T30R Radar Sensor



Enhance visibility, improve productivity with the WLB72 Strip Light



Multiple sensing modes and versatile mounting options available with the QS30 or QS18 Sensors



Notify staff of issues at the dock with the battery-powered wireless DirectSelect operator interface



Open and close dock doors with the durable and bright K50 Touch Button

# Conveyors

## Control and Indication

- Durable capacitive touch buttons withstand harsh conditions
- Bright LED indication notifies workers of machine status
- Products: K30, K50, S22, SSA-Series E-stop

## Leading Edge Detection

- Multiple sensor designs to fit any conveyor
- Various technologies to detect everything from boxes to pallets
- Products: TTR, SAB, LX, QS18, Q20-2

## Machine Status Indication

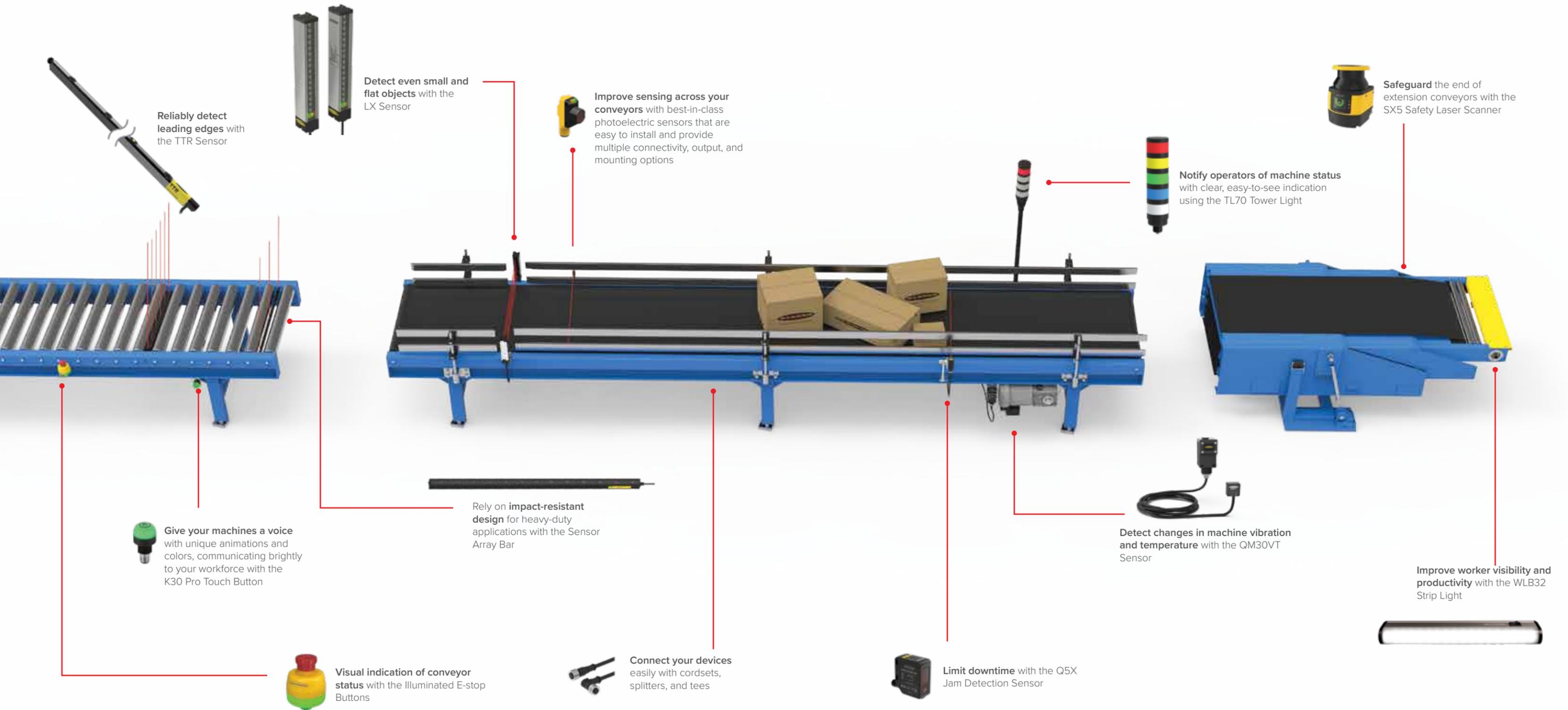
- Bright, uniform LED lights help machines communicate with operators
- Programmable models allow for more unique custom animations
- Products: TL30, TL50, TL70, WLS15, WLS27, WLS28

## Predictive Maintenance

- Easy-to-install vibration and temperature sensors monitor equipment around the clock
- Reduce unplanned downtime by scheduling maintenance
- Products: QM30VT, Q45 All-in-One, DXM700, Solutions Kit

## Jam Detection

- Detect conveyor jams faster and with greater accuracy
- Industry-standard M12 connector makes installation easy
- Products: Q5X Jam Detection Sensor



# Work Stations

## Andon Lights

- Bright LED lights notify managers from long distances away
- Complete plug-and-play solution simplifies installation
- Products: TL70 Andon Light

## Overhead Lighting

- Reliable LED lighting improves operator visibility
- Variety of lengths, colors, brackets, and power input options adapt to any workstation
- Products: WLB32, WLB72, WLS28, WLB92

## Pick-to-Light/Put-to-Light

- Easy-to-see lights improve operator speed and accuracy
- Available with built-in sensors to reduce mispicks
- Products: PTL110, K30, K50

## Barcode Reading

- Reliable detection of 1D and 2D barcodes improves productivity
- Variety of models provide flexibility based on detection range, barcode type, and communication interface
- Products: ABR3000, ABR7000, VE

**Provide adjustable levels of illuminations** for pack station workers with the WLB32

**Notify managers** when a worker needs help by simply pressing a button on the TL70 Andon Light

**Improve pick accuracy** by using lights, displays, and sensors to guide operators with the PTL110 with PICK-IQ

Start scanning **multiple types of barcodes** quickly and easily with the ABR Series of Barcode Readers

**Deploy multiple pick-to-light buttons quickly** with minimal wiring using the PICK-IQ technology

Provide an alternative method to **call for support** using the wireless K70 Touch button, which sends a signal to a central area\*

**Sense picks over a larger area** with the PVD100 Array

**PICK-IQ™**

Add intelligence to your picking and order fulfillment applications. PICK-IQ™ communication enables greater speed and accuracy in medium and large scale pick-to-light systems. Pick-to-light devices powered by PICK-IQ are easy to use, interchangeable, and scalable to create flexible pick-to-light systems that set up quickly and adapt to changing needs.

# Robots and AGVs

## Measurement Sensors

- Various range, output, and accuracy options fit any application
- Durable housings withstand tough environments
- Products: Q4X, Q5X, LM, LE, T30UX, T30R

## Machine Status Indication

- Bright LED lights improve machine-to-human communication
- Numerous form factors simplify machine design and installation
- Products: WLS27, WLS28, K90, TL30, TL50, TL70

## Personnel Detection

- Robust light curtains withstand impacts
- Various length, resolution, and mounting options simplify installation
- Products: LS, SLC4

## AGV Status/Signaling

- Programmable LED lights provide turn-signal and machine status to operators
- Impact-resistant housings withstand harsh conditions
- Products: WLS15, WLS27, K50

## AGV Safety

- Reliable safety laser scanners detect people and objects
- Standard encoder inputs integrate speed into detection algorithm
- Products: SX5, SC10



Increase awareness of machine status by adding multicolor indicators WLS27 Strip Light or TL70 Tower Light

Accurately measure the distance to objects from an end-of-arm tool with the Q4X Laser Distance Sensor

Improve the overall safety of your equipment and simplify design with the durable LS Series Safety Light Curtain Available with muting accessories

Provide machine operators with easy-to-use K30 Touch Buttons that use bold colors to indicate the current status

Quickly determine which E-stop has been pressed by using the SSA Lighted E-stop These install quickly and provide added diagnostics with ISD safety network technology

Improve worker visibility and productivity with the WLB72 strip light

Use K30, K50, or K70 low-profile, durable, and programmable lights for their intuitive features such as "turn signals"

Offer additional illumination and bolder indication by using the programmable WLS15 Pro Strip Light

Monitor all safety devices and provide critical output signals with the SC10 Safety Controller with ISD

**ISD** In-Series Diagnostics (ISD) makes it easy to access diagnostic data from devices in a safety system without special equipment or designated cabling. Users can troubleshoot machine safety systems, prevent system faults, and reduce equipment downtime.

Utilize multiple sensing modes and versatile mounting options with the QS30 or QS18 Sensors

Avoid obstructions and people with the SX5 Safety Laser Scanner Available with encoder inputs to measure speed

# Storage and Retrieval

## Package Dimensioning

- Fast and accurate sensors measure goods moving down a conveyor
- Various models adapt to any mounting requirements
- Products: EZ-ARRAY, MINI-ARRAY, Q5X, VE Smart Camera

## Machine Status Indication

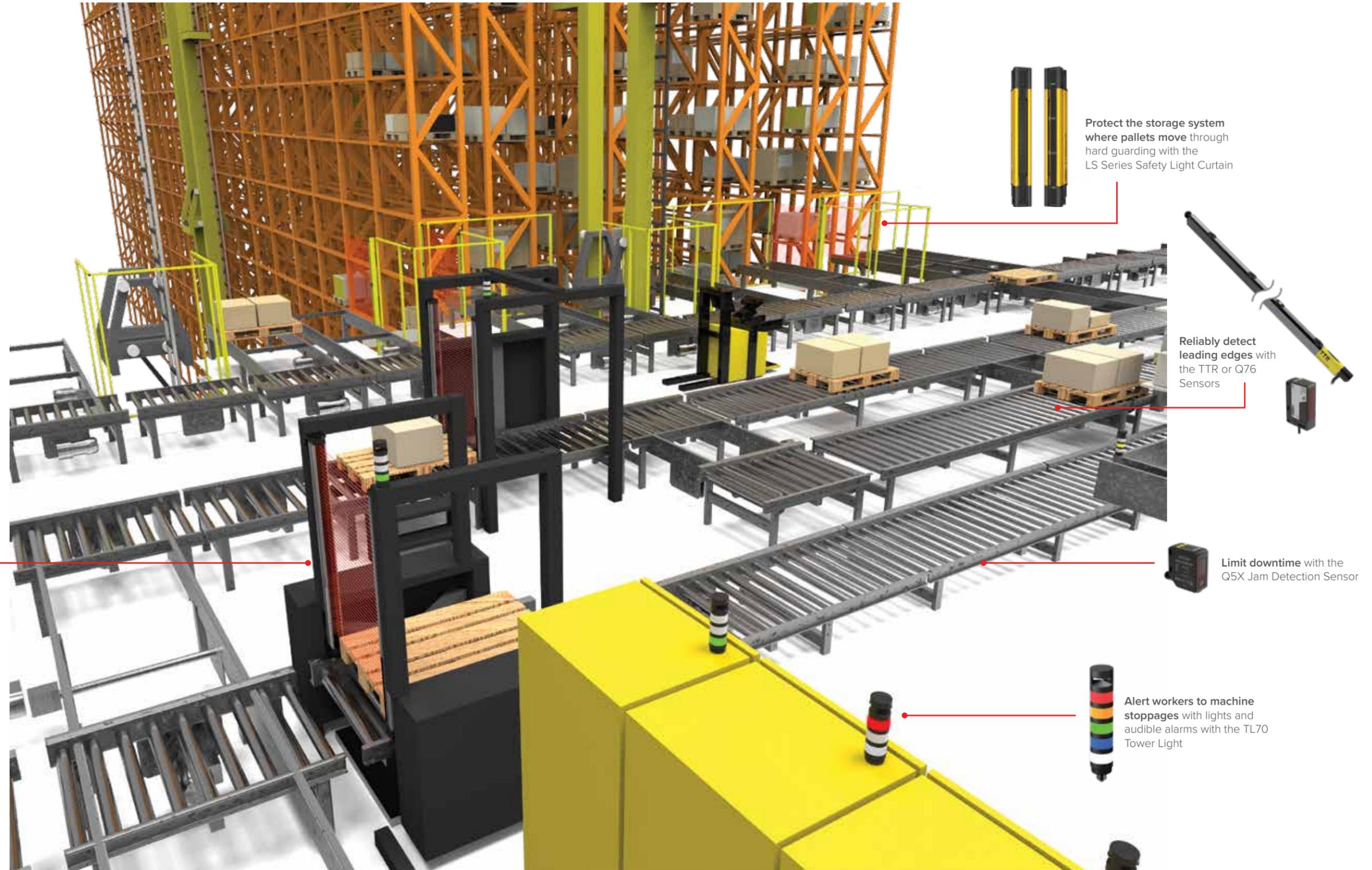
- Bright LED lights improve machine-to-human communication
- Numerous form factors simplify machine design and installation
- Products: WLS27, WLS28, K90, TL30, TL50, TL70

## Crane Position Sensing

- Long-range sensors provide accurate feedback on machine position
- Basic photoelectric sensors detect when pallets are in position
- Products: LTF, LT7, Q20-2, QS18

## Personnel Detection

- Robust safety light curtains withstand impacts
- Various length, resolution, and mounting options simplify installation
- Products: LS, SLC4



Accurately measure distances up to 24 m away by using the LTF24 Sensor



Read virtually any type of barcode fast and reliably with the ABR Series of Barcode Readers



Quickly determine which E-stop has been pressed by using the SSA Lighted E-stop  
These also install quickly and provide added diagnostics with our ISD safety network technology



Protect the storage system where pallets move through hard guarding with the LS Series Safety Light Curtain



Reliably detect leading edges with the TTR or Q76 Sensors



Limit downtime with the Q5X Jam Detection Sensor



Measure pallets and packages with 5 mm resolution to ensure goods are directed to the right location using the EZ-ARRAY



Alert workers to machine stoppages with lights and audible alarms with the TL70 Tower Light

# Sortation

## Package Detection

- Precision sensors accurately measure goods for proper routing
- Various sensor technologies and form factors adapt to any machine design
- Products: EZ-ARRAY, MINI-ARRAY, Q4X, Q5X

## Product Position on Belt Sorter

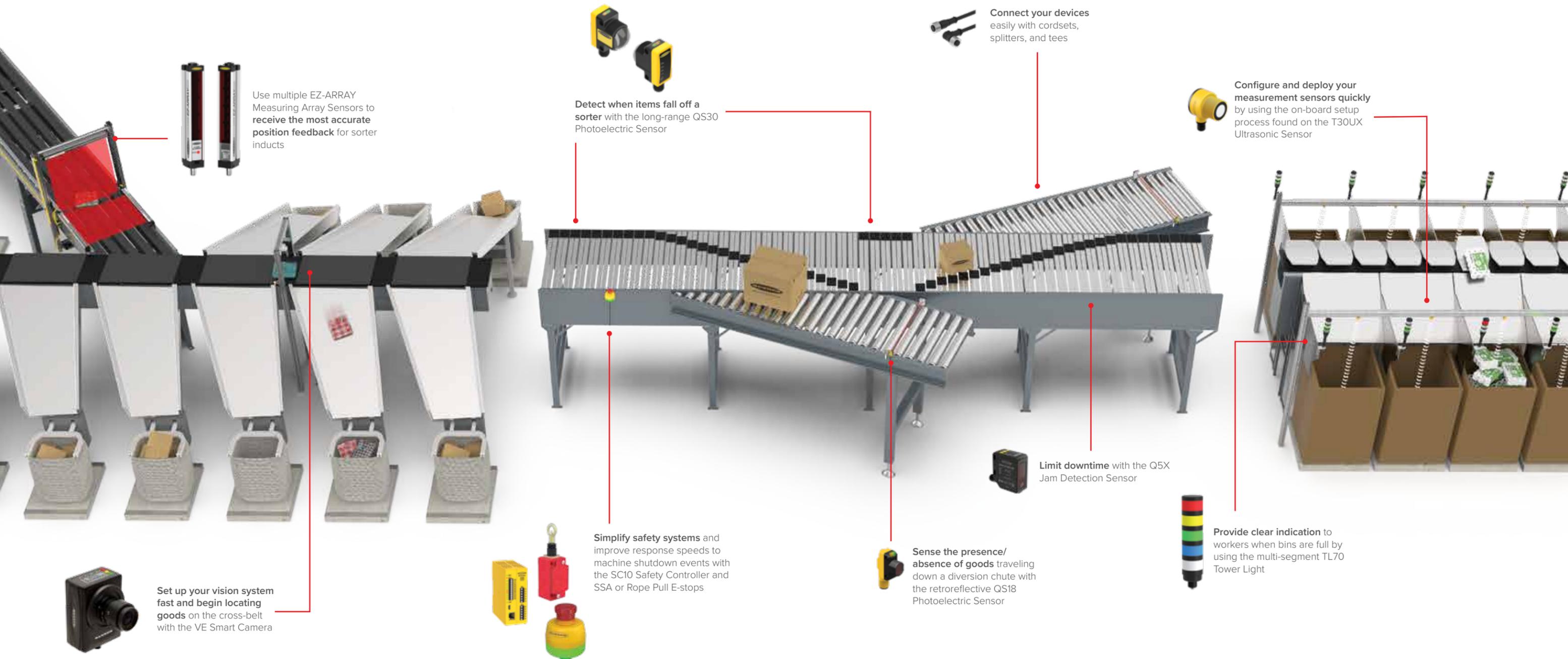
- Easy-to-use sensors determine if goods are located properly on sorters
- Multiple signal types ranging from discrete, analog to x/y coordinates adapt to any machine design
- Products: VE, iVu, Q4X

## Sorter Divert Sensing

- Simple photoelectric sensors determine if goods were diverted down the correct chute or if a jam is present
- Several sensor options provide flexibility to detect any type of package
- Products: QS18, LX, SAB

## Bin Level Measurement and Indication

- Robust laser, ultrasonic, and radar technologies accurately measure bin level
- Easy-to-see LED lights notify workers when bins are full
- Products: T30UX, Q5X, T30R, QS18, TL50



Use multiple EZ-ARRAY Measuring Array Sensors to receive the most accurate position feedback for sorter inducts



Detect when items fall off a sorter with the long-range QS30 Photoelectric Sensor



Connect your devices easily with cordsets, splitters, and tees



Configure and deploy your measurement sensors quickly by using the on-board setup process found on the T30UX Ultrasonic Sensor



Limit downtime with the Q5X Jam Detection Sensor



Simplify safety systems and improve response speeds to machine shutdown events with the SC10 Safety Controller and SSA or Rope Pull E-stops



Sense the presence/absence of goods traveling down a diversion chute with the retroreflective QS18 Photoelectric Sensor



Provide clear indication to workers when bins are full by using the multi-segment TL70 Tower Light



Set up your vision system fast and begin locating goods on the cross-belt with the VE Smart Camera



Banner Engineering manufactures industrial automation products that include sensors, LED lights and indicators, machine safety components, and industrial wireless devices. These products help produce the cars we drive, the food we eat, the medicine we take, and many of the things we touch every day. Headquartered in Minneapolis since 1966, Banner is an industry leader with more than 10,000 active products, operations on six continents, and over 5,500 employees, factory and field representatives, and application engineers. Every 3.5 seconds a Banner product is installed somewhere in the world.



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