Poka Yoke Solutions for Accurate Packing & Labeling

Simplifying Processes... Standardizing Excellence.®

SPEDE *Technologies*

Poka Yoke = Mistake-proof

The Japanese term "Poka-yoke" means introducing a mechanism into a process to prevent human errors, by automating the process and/or by alerting the operator if an error is happening.

SPEDE Poka Yoke Solutions interface to a variety of existing legacy and new technologies including:

- PLCs
- Weigh Scales
- Vision Sensors
- Conveyors / Diverters
- USB Cameras
- Label Printers
- Host ERP, EDI, OEE Systems

PLC-controlled Print & Apply Labeling

* Supports Poka Yoke Requirements for Honda MPR Compliance

PLCs Control the Labeling Process

The PLC supplies the Part Number, Run data, Piece Count

- o Ensures the printed label always matches the part being made
- o Triggers a label when a pack count of "Good" Parts is reached
- o Can interface to test jigs to identify Scrap
- o Can use a SPEDE PLC at production lines if no production machine PLC

- SPEDE controls piece counts at Start of Run, End of Run

- SPEDE controls partial packs & counts at End of Run, End of Shift

- SPEDE collects PLC data for Traceability, Accountability, OEE analysis
  - o Can display real-time production data at line-side on TouchScreen

PLC   SPEDE Database
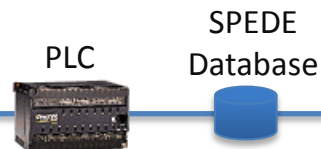
Displays Real-time Production Data:
- Part Number
- Operator Nbr
- Shift, Date
- WO Nbr
- Lot Nbr
- Machine Cycles, Cycle Timestamp
- Part Counts : Good, Scrap, Re-work
- Machine Stats & Metrics, etc.

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Weigh Scales Ensure Accurate Labeling

SPEDE Interfaces to Existing Weigh Scale to Receive Weight

- Weight can be used for piece counting or full pallet validation

- Adjustable tolerances accommodate piece weight variances

- Automatically prints a label when weight/count is correct
  - Option: displays "print button" on Touchscreen when weight/count is correct
  - Operator touches "print button" to print the label

- Actual weights are collected and stored with label data in the Label Database

- Optional integration with Vision can provide:
  - Vision-check to ensure part is correct
  - Weight verification to ensure part is placed in dunnage

Weigh Scale Can Trigger Labels to Print

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Vision Sensors Prevent Labeling Errors

Vision Sensors Can Be Used for:

- Pack and Re-pack control

- Part Validation: Is this part good, scrap or rework?

- Part Verification: Is this the correct part for this process?

- Part Counting: to Pack Count

- Kit Validation: Is Kit complete and correct?

- Dunnage layer validation: all slots filled in this layer?

- Can also read 2D serial on individual parts for accurate counts and traceability
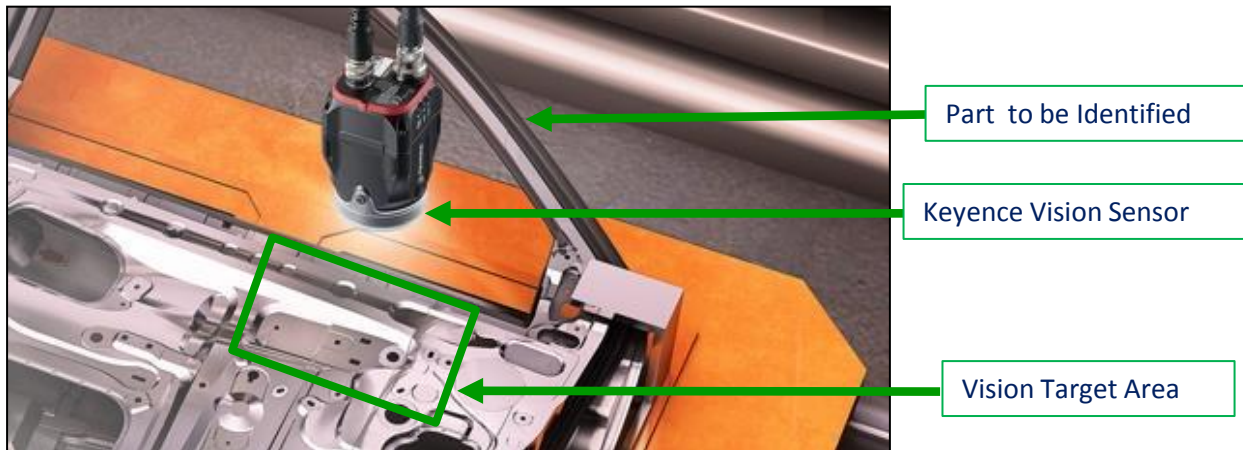

Vision Sensor

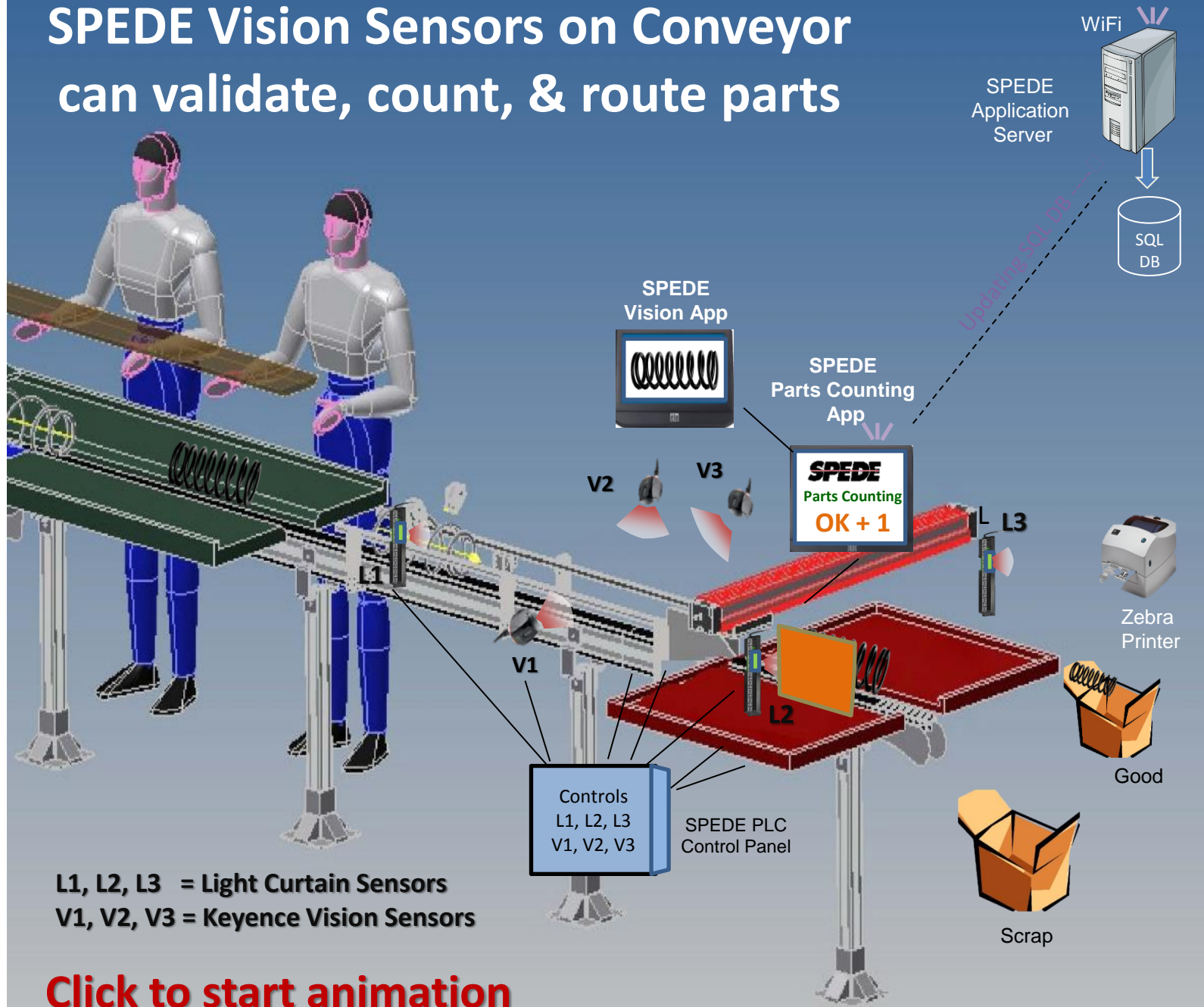Vision can detect open slots in this Jack Kit

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Vision Sensors Can Prevent Labeling Errors

How Vision Prevents Packing Errors

- Vision Sensor is "trained" to recognize a part number by its unique attribute
- At Packing, the part is moved under the sensor
- Sensor uses image capture & pixel analysis to identify the part
- If part is correct, the running part count is incremented
- If part is wrong, an audio/visual signal prevents a packing error
- When pack count is reached, SPEDE prints a container label

Part to be Identified

Keyence Vision Sensor

Vision Target Area

SPEDE Vision Sensors on Conveyor can validate, count, & route parts

WiFi

SPEDE Application Server

SQL DB

Updating SQL DB

SPEDE Vision App

SPEDE Parts Counting App

SPEDE
Parts Counting
OK + 1

V2

V3

L3

L1

V1

L2

Zebra Printer

Good

Controls
L1, L2, L3
V1, V2, V3

SPEDE PLC Control Panel

Scrap

L1, L2, L3   = Light Curtain Sensors
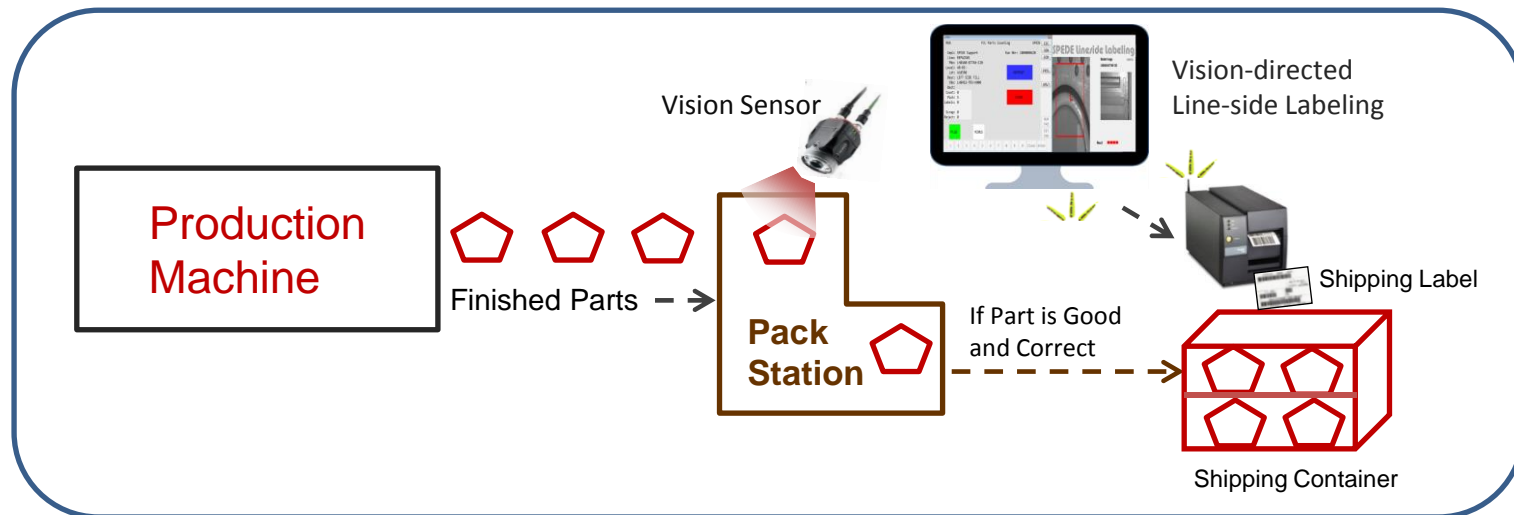**V1, V2, V3 = Keyence Vision Sensors**

Click to start animation

Using Vision for Accurate Packing & Labeling

Diagram of Vision-directed for Packing / Labeling

- Use Vision when Parts are packed at the production machine
- Use Vision if no PLC is present to count the parts
- Vision sensor identifies and counts "good" parts
- Operator can press a Touchscreen to record scrap
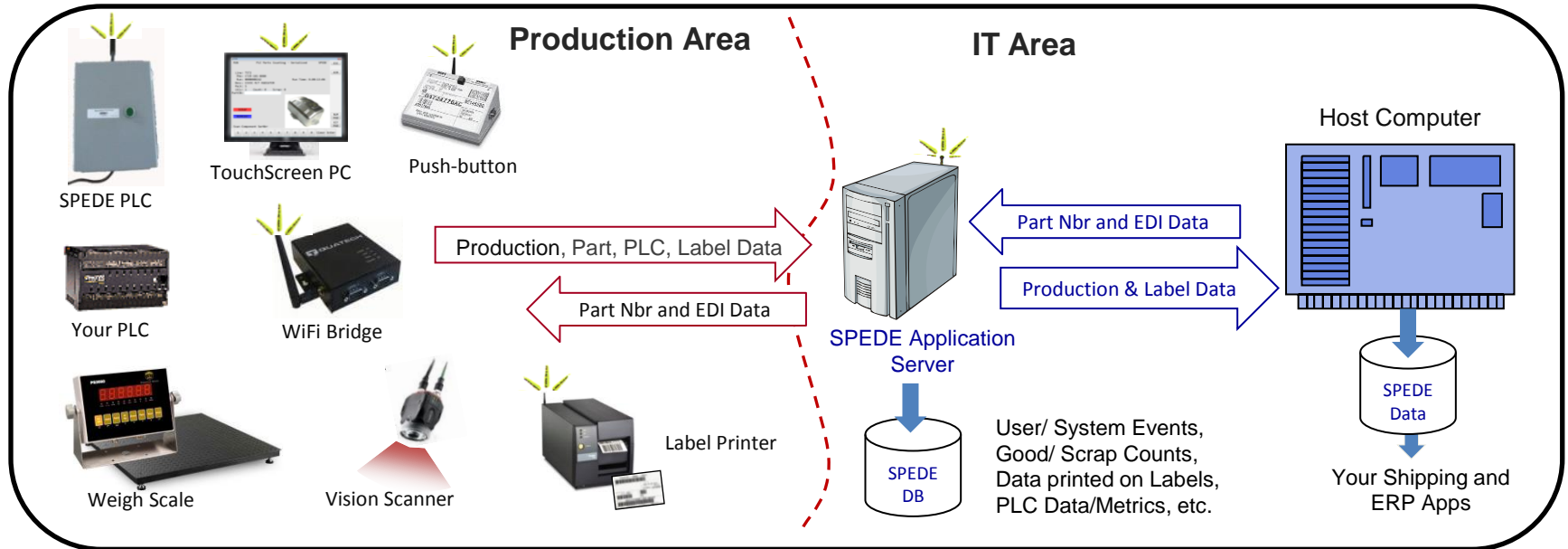- SPEDE prints the container label at pack count of good parts

Vision Sensor

Vision-directed Line-side Labeling

Production Machine

Finished Parts

Pack Station

If Part is Good and Correct

Shipping Label

Shipping Container

Using USB Cameras to Control Packing

Interfaces to a USB Camera at Packing

- Camera captures image of the part being packed
- Verifies the part is correct
- Validates the part is "good" vs. scrap
- Validates the Dunnage layer is filled before starting next layer
- Takes a photo of the completed layer
- Video can provide proof that packing requirements were met for each layer, in case of customer inquiry

Interfacing to Devices and Host Systems

Production Area

SPEDE PLC

TouchScreen PC

Push-button

Your PLC

WiFi Bridge

Weigh Scale

Vision Scanner

Label Printer

Production, Part, PLC, Label Data

Part Nbr and EDI Data

IT Area

SPEDE Application Server

SPEDE DB

Part Nbr and EDI Data

Production & Label Data

User/ System Events, Good/ Scrap Counts, Data printed on Labels, PLC Data/Metrics, etc.

Host Computer

SPEDE Data

Your Shipping and ERP Apps

SPEDE Server Hardware Requirements
- Local Windows server, MS SQL, 500GB Hard Drive, remote access

Local Network Requirements
- TCP/IP to SPEDE Server
- TCP/IP to production PLC
- Prefer WiFi to SPEDE server, wired ethernet to PLC

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A Sample of 3 SPEDE Customers…

How these Honda Suppliers are using Vision at Packing

Sonoco

Vision is set up on a mobile cart

Bumper Filler

Jack Kit

Nissin Brake

Vision is set-up on a fixed table

Machined Casting

Nisco

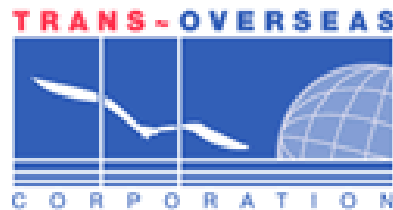A Laser etches 2D Serial Number

Vision reads the 2D Serial Number

Door Trim

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Meet a Few of our Customers...

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To Discuss Your Line-side Project...

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About Us:

SPEDE Technologies is a software and systems company specializing in solutions for automotive suppliers since 1980. Our focus is automating Production Area processes to increase efficiency, eliminate errors and improve profitability.

Our Customers are mid-size to Fortune 500 auto suppliers with multiple plant sites throughout the U.S. and in Mexico. They rely on SPEDE Automated Line-side Solutions to keep their mission-critical processes running smoothly, 24/7.

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