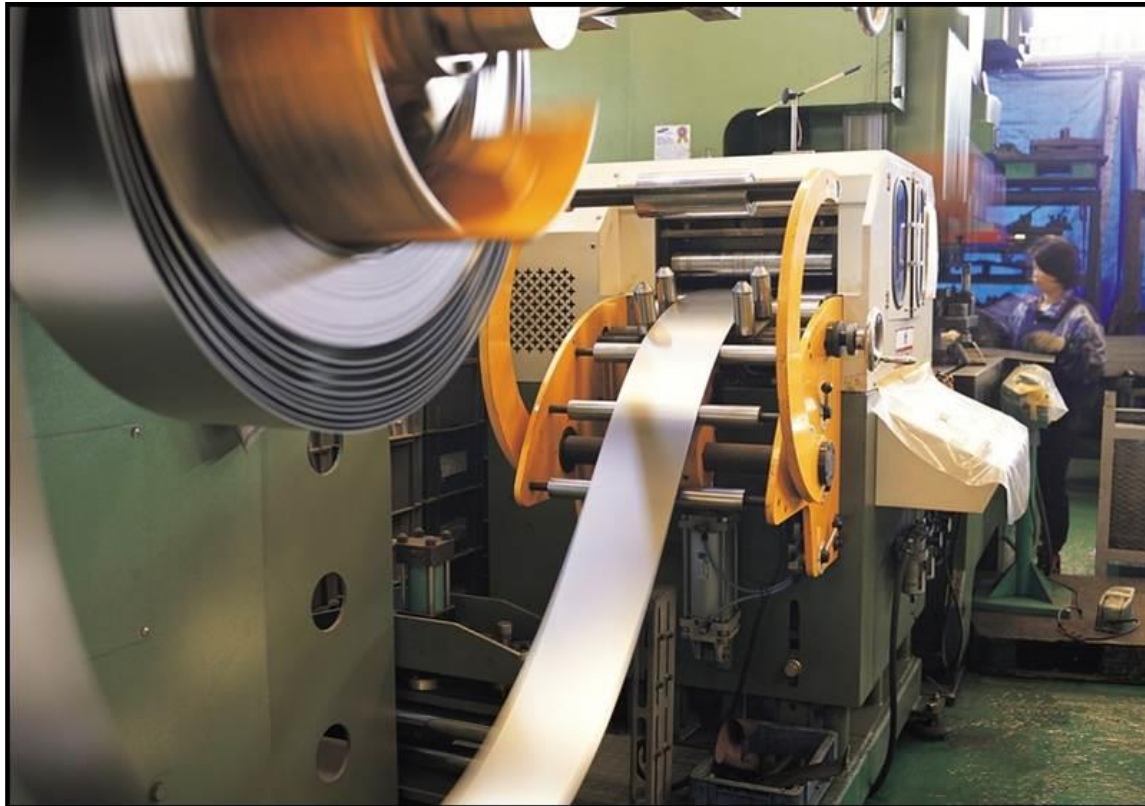


Solutions for Counting Non-Serialized Parts, with 9 Customer Examples



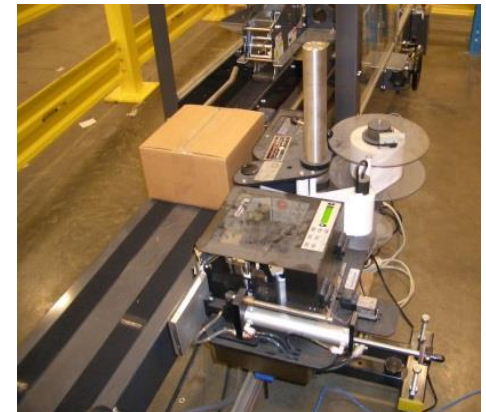
SPEDE Automated Parts Counting Solutions

Common Problems with Manual Parts Counting:

- Parts are mis-identified
- Parts are mis-counted
- Defective parts are intermixed with Good parts
- Incorrect Part Number, Qty or other data gets printed on the label

Technologies We Use to Ensure Accurate Counting:

- Vision sensors to verify/ validate parts
- PLCs to control parts counting
- Weigh scales to automate counting
- Vision sensors with Conveyor / Diverter control to detect and divert defective parts
- Counts only good parts for packing
- Counts scrap for OEE analysis
- Correct container label is triggered to print automatically
- Can use Print & Apply technologies for labeling

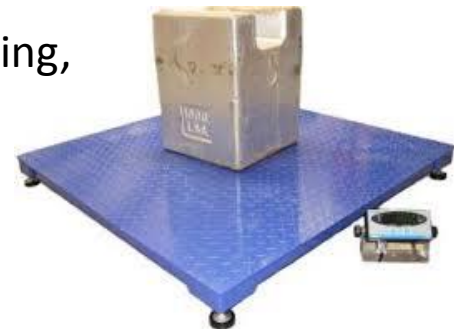


PLC-controlled Print & Apply Labeling

SPEDE Automated Parts Counting Solutions

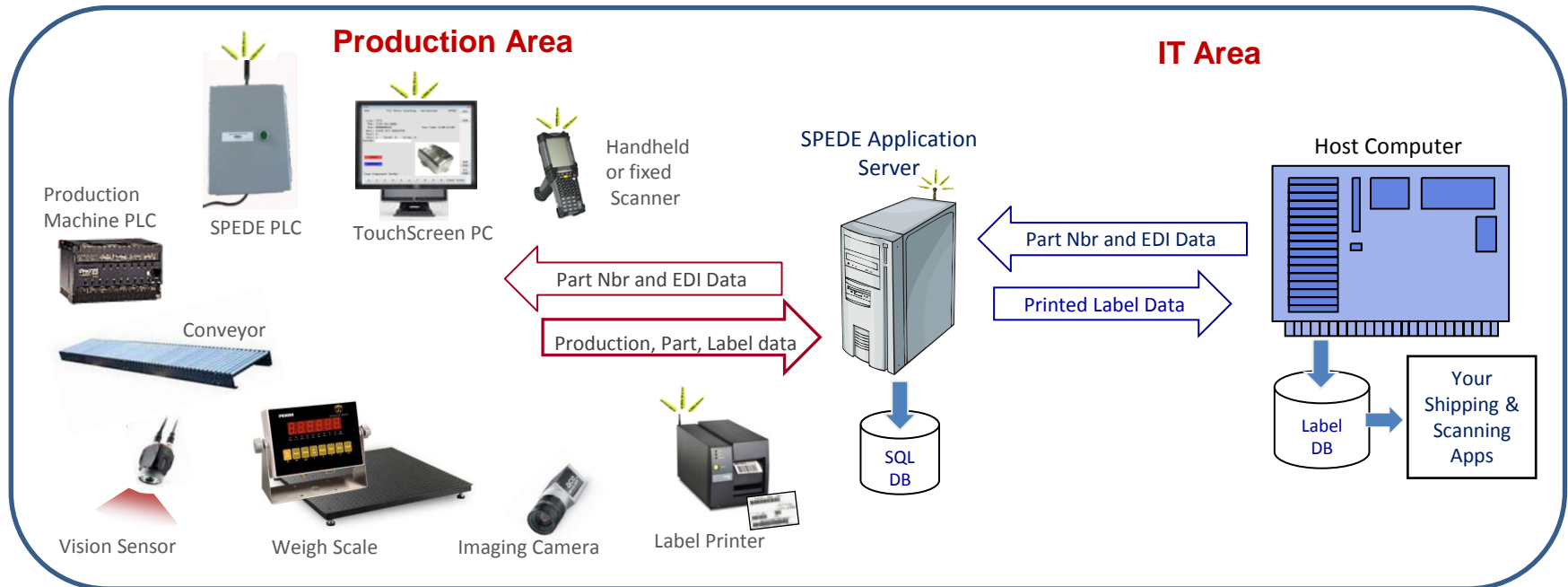
The SPEDE Software Platform and Apps -

- Control the WiFi network of interfaced devices including:
PLCs, Scales, Vision Sensors, Cameras, Touchscreen PCs,
Label Printers, Conveyors, Diverters
- Interfaces to ERP, EDI, Release Accounting, OEE Systems
- Prints labels automatically when pack counts are correct
- Creates Label Database for Traceability, Inventory Tracking,
Auditing, Web Reports, Inquiries
- SPEDE Apps include WIP Tracking, Packing, Labeling,
Inventory Tracking, Traceability



Interface to Weigh Scale ensures
Packed Quantity is correct

Overview of SPEDE and your Host Systems



SPEDE Apps Interface to and Control Production Area Devices

- PLC, Touchscreen PC, Handheld Scanner, Vision Sensor, Scale, Printer, Imaging Camera

Prints Labels + Collects OEE Data

- Gets label data from host ERP, EDI, Release Accounting
- Time-stamps & logs printed label data, piece count, scrap & cycles data into SQL DB
- Printed Label Data is available to Host systems for Parts Traceability, OEE analysis, Shipping, etc.

Non-Serialized Counting – Customer Example #1

Parts Are Counted by Weigh Scale

- Scale connected via RS-232 or TCP/IP
- Part level piece weight, layer count, total pieces
- SPEDE provided Tare Button on touch screen
- Tare between layers if inter-layer dunnage
- +/- percentage variance
- Removing parts from scale decreases count
- Weights recorded in SPEDE

Customer Examples:

- Nissin - brake pad
- TGMO - map pocket
- Busche – suspension knuckle



Non-Serialized Counting – Customer Example #2

Parts Are Counted by Weigh Scale + Vision Verification

- Scale connected via RS-232 or TCP/IP
- Part level piece weight, layer count, total pieces
- SPEDE provided Tare Button on touch screen
- Tare between layers if inter layer dunnage
- +/- percentage variance
- Keyence Vision Sensor controlled by SPEDE
- Part must pass vision then weight
- Removing parts from scale decreases count

Customer Example:

Nissin Brake - engine mount bracket,
aluminum castings

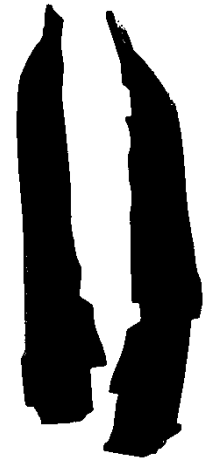
NISSIN



Non-Serialized Counting – Customer Example #3

Parts Are Counted by Vision only

- Keyence Vision Sensor controlled by SPEDE
- 1 to 4 Sensor per line
- Sensors can be ganged together
- Logical AND, all sensors must pass
- Logical OR, any sensor can pass
- Triggered by external object sensor
- Good part increments count
- Onscreen minus, can be supervisor only



Customer Examples:

- Sonoco OH and TN – EPS/EPE bumper filler, door filler, tire jack holder
- TMD vision only – 4 vision sensors for Honda service

Non-Serialized Counting – Customer Example #4

Parts Counting with Vision + Conveyor Controls

- SPEDE provided PLC controls/panel box
- Dry contact to start/stop/reset conveyor
- SPEDE touchscreen conveyor controls for start/stop/reset
- Keyence Vision Sensor (1 to 4)
- Bad part on Vision fail
- Dry contact for pneumatic diverter for good/bad parts
- Good parts diverted by pack count
- Multiple pack out trays, printer per pack out tray

Customer Example:

NASCO Conveyor – Non Honda coil suspension springs

NHK
NASCO



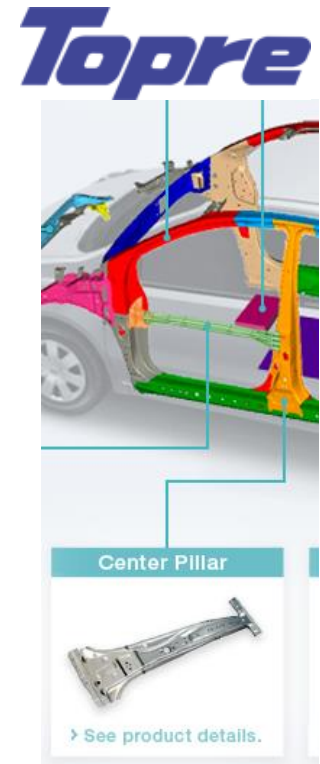
Non-Serialized Counting – Customer Example #5

Parts Counting by discrete I/O from Production Machine PLC to SPEDE PLC

- SPEDE provided PLC controls/panel box
- Dry contact input to SPEDE PLC
- +/- contact for increment/decrement
- Optional binary contacts for part number determination
- Onscreen +/- count adjustments, can be supervisor only

Customer Example:

Topre - Center pillar and L/R threshold



Non-Serialized Counting – Customer Example #6

Simple PLC Count

- Dedicated Poke Yoke per part number
- SPEDE reads “COUNT”
- Optional onscreen Plus/Minus/Scrap button

Customer Example:

TMD Fayetteville – HVAC duct, dedicated part poke yoke



Non-Serialized Counting – Customer Example #7

Simple PLC Count with Part Validation

- SPEDE reads machine “cycle counter” address
- SPEDE reads “PLC Part Number” address
- SPEDE Compares PLC part number to current, error if incorrect
- On counter “change” piece count increment +1
- Optional onscreen Plus/Minus/Scrap button

Customer Example:

TMD Jefferson - HVAC duct components



Non-Serialized Counting – Customer Example #8

Simple PLC Count with Part Validation with Heart Beat

- SPEDE writes to Heartbeat address every 500 msecs, PLC verifies and clears
- SPEDE reads machine “cycle counter” address
- SPEDE reads “PLC Part Number” address
- SPEDE Compares PLC part number to current, error if incorrect
- On counter “change” piece count increment +1
- Optional onscreen Plus/Minus/Scrap button

Customer Example:

Nissin Brake OH – Caliper Lines



Non-Serialized Counting – Customer Example #9

PLC-Generated Count with Part Validation

- SPEDE reads machine “piece counter” address
- SPEDE reads “PLC Part Number” address
- SPEDE Compares PLC part number to current, error if incorrect
- SPEDE matches PLC piece counter
- Optional onscreen Plus/Minus/Scrap button

Customer Example:

Topre 2500A Press

Topre



About our Customers...

Automotive Suppliers: Tier 1, Tier 2

- Supply to Honda, Mazda, Mitsubishi, Nissan, Subaru, Toyota, Ford, GM, FCA, etc.
- Medium to large companies, multiple plants
- Use various ERP, EDI, Release Accounting systems

Installations typically include:

- PLCs, Vision Sensors, TouchScreen PCs, Conveyor interfaces, Diverters, Scales, Imaging Cameras, Printers
- Serialized Part / Lot Traceability
- Real-time Data Collection

Functionality can be phased-in over time:

- At Production Lines
- At Plant Sites
- With New Technologies



Meet a Few SPEDE Customers...



For More Information ...

To Get Started or Get More Information -

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Simplifying Processes.... Standardizing Excellence.®

About Us:

Founded in 1980, SPEDE Technologies is a software and systems integration company specializing in automated QC solutions that increase accuracy, efficiency and visibility in production area processes.