Technology Solutions to Improve QC and Efficiency in Production Area Processes

 440-808-8888 www.SPEDE.com

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Technology is Key to Quality Control

SPEDE WiFi Solutions integrate a wide variety of technologies:

- Production Machine PLCs
- Vision Sensors
- Conveyors/ Diverters
- Weigh / Count Scales
- USB Cameras
- OCR
- 2D Encoders, Etchers, Scanners
- Label Printers
- Touchscreen PC browser
- WiFi and Wired networks
- Interfaces to Host ERP, EDI, RAS, OEE systems

Vision Technology can ensure that Finished Parts are accurately Identified, Counted and Packed

Key Reasons to Automate

1. Eliminate or control manual tasks that cause errors due to confusion, boredom, distraction
2. Simplify procedures to reduce labor, inefficiency
3. Enforce Standard Operating Procedures (SOPs) via software controls to ensure consistent performance and accountability
4. Real-time 20/20 visibility into operations, including WIP tracking, Production, Packing, Labeling, Shipping
5. Automatically create detailed Traceability records - from final end item back to its raw parts / components, and forward through production and final shipment to customer

SPEDE USB Camera is using color detection to validate and count parts

SPEDE Solutions Automate These Processes

1. WIP Components Tracking
2. Parts Identification
3. Parts Counting
4. Parts Tracking
5. Serialized Parts Labeling
6. Detecting Good Parts vs. Scrap
7. Production Reporting
8. Packing of Containers/ Dunnage
9. Container Labeling
10. Shipping
11. Traceability – RAW, WIP, FIN
12. For Honda – Small Lot Store, Honda Batch

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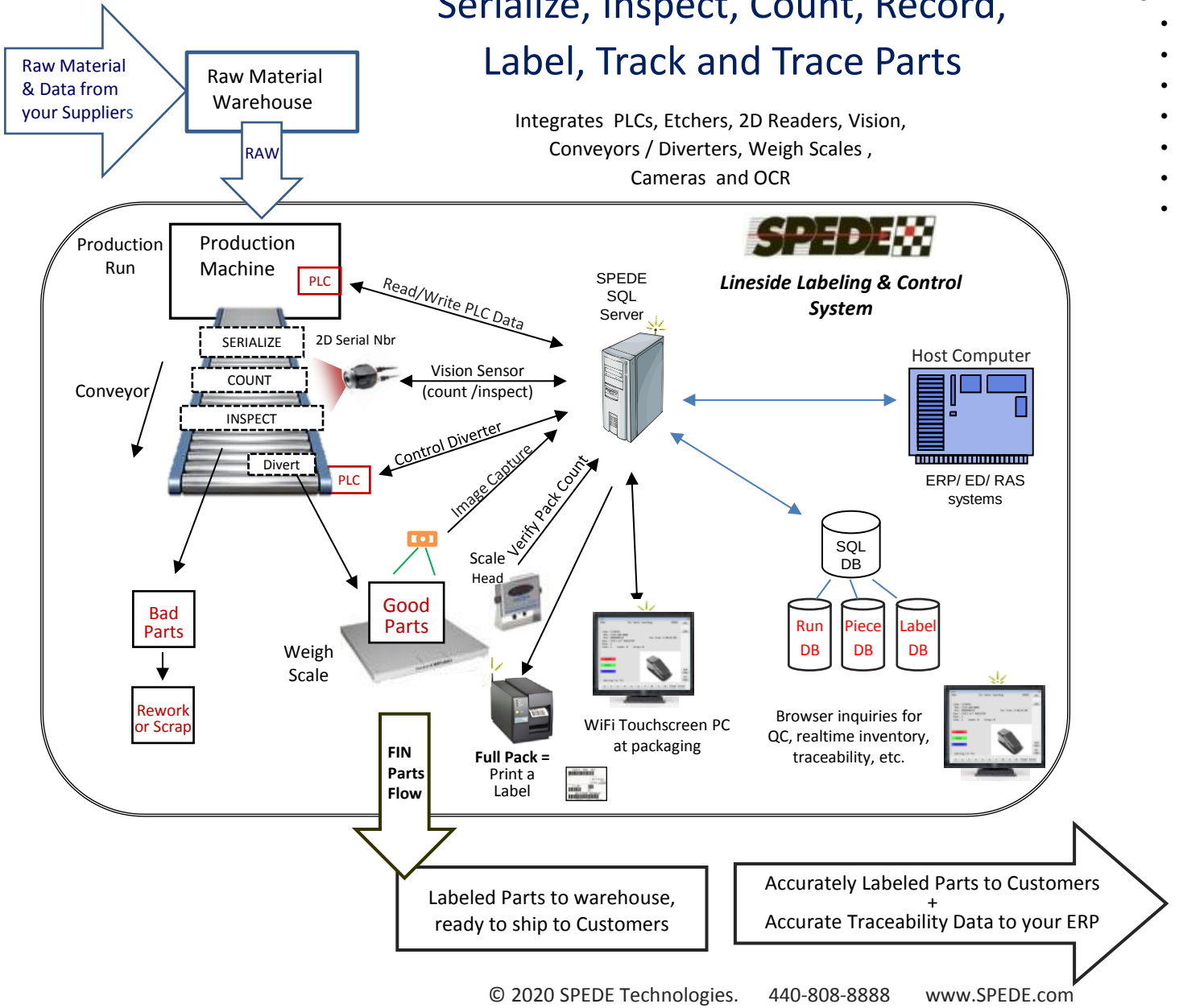
Diagram of SPEDE Automated Functionality

Serialize, Inspect, Count, Record, Label, Track and Trace Parts

Integrates PLCs, Etchers, 2D Readers, Vision, Conveyors / Diverters, Weigh Scales , Cameras and OCR



SPEDE reads the Part and ...

- Verifies the Part for correctness
- Diverts wrong or bad part
- Counts good parts toward pack count
- Weigh-counts the Parts Container
- Prints the Customer Container Label
- Collects OEE Data / Updates host apps
- Collects Track &Trace Data

Phase-in Your Functionality

- Automate Container Labeling
- Automate Piece Counts
- Serialize Individual Parts
- Validate Tools / Components
- Validate Parts for correctness, defects
- Control Partials at end of run /shift
- Display real-time Piece Counts, Label Status, Machine Data, etc. on Touchscreen PC
- Export Label Data to EDI / Shipping
- Export Production Data to ERP / OEE
- Trace Serialized Parts by Part Number, Lot, Container, Line, Run Date, etc.
- Trace Parts Forward to Customer; Back to Production/ Suppliers
- Create a History of Individual Parts including Rework
- Confirm Processes / Accountability
- Honda MPR Compliance

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6 Benefits of SPEDE Automation

1. Error Prevention

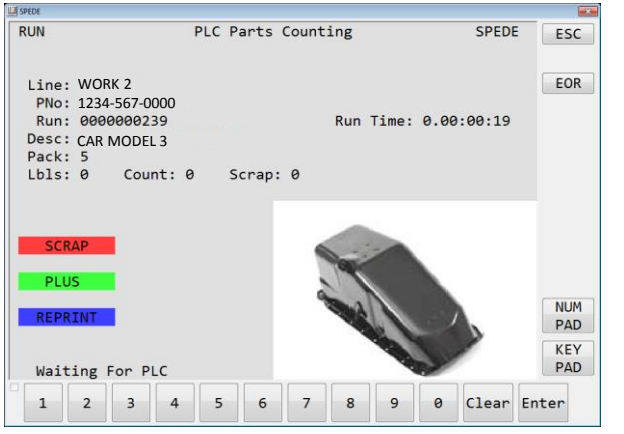
- Distinguish good parts vs. scrap / divert scrap
- Validate the correctness of a part at packing
- Validate the correctness of a machine tool at set-up
- Ensure part is correctly routed through sequence of operations
- Prevent mis-labeling of parts /containers
- Prevent scrap parts from being shipped
- Prevent incorrect parts / quantities in shipments
- Prevent dunnage and kitting errors – under/ over packed

A Vision Sensor can detect the missing parts in this Jack Kit

6 Benefits of SPEDE Automation

2. Real-time Production Data

- For analyzing efficiency, monitoring actuals vs scheduled
- Use TouchScreen PC at line-side to view / edit
- Real-time piece counts, label status and run data
  - Automatically counts both Good and Scrap pieces
  - Automatically sends production data to your host systems



Real-time Parts Counting Data at Lineside

PLC

SPEDE Database

View / Print Real-time Production Data →

Report From: 11/04/2012
Report To: 11/10/2012
Sort Order: Part Nbr Descending

Printed By: Paul Jacobson
Report Date: 01/05/2013
Report Time: 14:35:00
Page: 1 of 1

Part Nbr	Description	Run Nbr	Start	Stop	Elapsed	Scrap	Good	Containers
1234-567-0000	CAR MODEL 2	000012001	08:03:22	12:01:10	03:57:48	11	200	40
1234-567-0000	CAR MODEL 2	000012004	13:01:08	17:38:57	04:37:51	19	240	48
1234-567-0000	CAR MODEL 2	000012007	18:20:07	23:30:45	05:10:38	9	260	52
					13:46:17	**39**	**700**	**140**
1234-567-9999	CAR MODEL 1	000012012	07:58:26	12:10:00	04:11:34	13	180	36
1234-567-9999	CAR MODEL 1	000012016	13:12:35	17:28:20	04:15:45	8	160	32
1234-567-9999	CAR MODEL 1	000012017	19:00:05	23:40:10	04:40:05	11	205	41
					13:07:24	**32**	**545**	**109**

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6 Benefits of SPEDE Automation

3. Accurate Packing and Labeling

Using Weigh Scales to:

- Receive Accurate Piece Counts / Weights
- Trigger a container label when count/ weight is correct

Weigh Scale Can Trigger Labels to Print

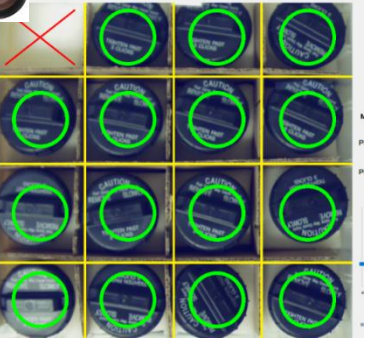
Using Vision Sensors to:

- Count and verify the manufactured part is “good”
- Verify dunnage layer is correct
- Verify all components are in a Kit

Using USB Cameras to:

- Count parts as they are placed in dunnage
- Read a 1D/2D barcode or OCR characters on the part
- Verify part via image, serial nbr, and/or OCR on part
- Direct the operator to fill slots in sequence
- Verify all dunnage slots are filled with the correct part
- Provide video proof that dunnage was filled correctly
- Verify Pack Count in dunnage is correct

USB Camera



PC screen shot shows I slot missing a part.
Container label won’t print until slot is filled.

Green Circles indicate slot has correct part.

Prints serialized label automatically

- When pack count/dunnage is correct
- Host ERP / EDI supplies label data

6 Benefits of SPEDE Automation

4. Automatic Traceability by Component / Part / Container

- A serial number is linked to each Part's production data:
  - Production Machine, Run Date, Shift, Operator, Lot, Location, etc.
  - Container Serial Number(s) in which the Part was packed
  - All other Serialized Parts in a generalized Container
- Provides Traceability by Part, Lot, Container, Line, Run Date, etc.
- Forward Traceability from Production out to Customer
- Backward Traceability from Production back to Receiving, Raw Components, Supplier

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Report Time: 08:35:00
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Container Trace: 0319804-05088465

Part Nbr	Description	Run Nbr	Line Nbr	Create Date	Create By	Qty	Item S/N
1234-567-0000	CAR MODEL 2	000012001	WORK 1	11/05/2012	JSMITH	5	AB879762351
							AB879762352
							AB879762353
							AB879762354
							AB879762355

6 Benefits of SPEDE Automation

4. cont'd: Automatic Traceability

- Part Serialization
  - Etching, labeling or 2D at line-side
  - Reading Part serial nbrs at each station
- Container Label Serialization
- WiFi handheld and forklift scanners can scan label at Shipping for traceability from production to Customer
- Enables focused recalls to a specific Lot / Container / Part Serial Nbr

Laser etching 2D Serial Number

Vision Scanner reading 2D Serial Number

Serialized Internal Labels

6 Benefits of SPEDE Automation

5. Process Control and Accountability

- All SPEDE operations require Associate sign-in
- All transactions are retained and accessible in the SQL Txn DB
- Ensures SOPs are followed

Sample Manufacuring Metrics Report

	OEE %	Earned DL Hrs	Actual DL Hrs	Net Var.	Labor Prdvty %	Mach. Util %	F.G. Scrap %	In-Proc. Scrap %
All Department Total(s)	83.4%	853	1,013	(160)	84.2%	87.8%	2.0%	1.0%

Total Parts	Good Parts	Scrap Parts	Available Time	Unscheduled Down Time	Machine Hours Worked	Actual Downtime Hours	Earned Machine Hours
28,304	27,583	721	261	20.05	229.42	66.02	223.53

Actual Man Hours	Man Hour Downtime	(S) Finished Scrap $	(SM) Misc Scrap $	(I) In-Proc Scrap $	Total Scrap $
770	242	$4,035.74	($59.51)	$2,076.35	$6,052.58

OEE Factors:	Utilization %	*	Good Part %	*	Machine Efficiency %	Total Production $
	87.8%		97.5%		97.4%	$205,285.19

	OEE %	Earned DL Hrs	Actual DL Hrs	Net Var.	Labor Prdvty %	Mach. Util %	F.G. Scrap %	In-Proc. Scrap %
5515 Crankshaft	95.2%	141	168	(27)	83.8%	82.3%	0.6%	0.2%

Total Parts	Good Parts	Scrap Parts	Available Time	Unscheduled Down Time	Machine Hours Worked	Actual Downtime Hours	Earned Machine Hours
885	880	5	21	2.92	17.28	6.72	20.11

Actual Man Hours	Man Hour Downtime	Shift Count	(S) Finished Scrap $	(SM) Misc Scrap $	(I) In-Proc Scrap $	Total Scrap $
121	47	3.00	$253.62	$0.00	$108.44	$362.06

OEE Factors:	Utilization %	*	Good Part %	*	Machine Efficiency %	Total Production $
	82.3%		99.4%		116.4%	$44,890.02

Typical Production Data stored in DB:

- Part Number
- Operator Nbr
- Shift, Date, Time
- WO Nbr
- Lot Nbr
- Machine Cycles, Cycle Timestamp
- Part Count: Good, Scrap, Re-work
- Machine Stats & Metrics, etc.

6 Benefits of SPEDE Automation

6. Enables and Simplifies Honda MPR Compliance

- Pre-production
- Process Set-up
- Production / WIP
- Re-pack / Re-label
- Small Lot
- Pass thru
- Shipping
- Accountability & Traceability

AIAG
Automotive Industry Action Group

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