Production Area QC

Leveraging Technology to Automate Processes and Improve Quality and Efficiency

© 2019, SPEDE Technologies. 440-808-8888 www.SPEDE.com

24930 Detroit Road Suite E Cleveland, OH 44145

SPEDE Technologies

Technology is Key to QC

SPEDE WiFi Solutions integrate a wide variety of technologies:

- Production Machine PLCs
- Vision Sensors
- Conveyors/ Diverters
- Weigh / Count Scales
- USB Camera systems
- 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

© 2019, SPEDE Technologies.

Key Benefits of Automating

1. Eliminate or control redundant tasks that cause operator errors
2. Simplify procedures to reduce labor, inefficiency
3. Software-enforced Standard Operating Procedures (SOPs) ensure consistent performance and account-ability -- every line, shift, day
4. Real-time 20/20 visibility into operations, including WIP, Production, Packaging, Labeling, Shipping
5. Automatically create detailed serialized Traceability records – backward/ forward

© 2019, SPEDE Technologies.

SPEDE Solutions Automate These Processes

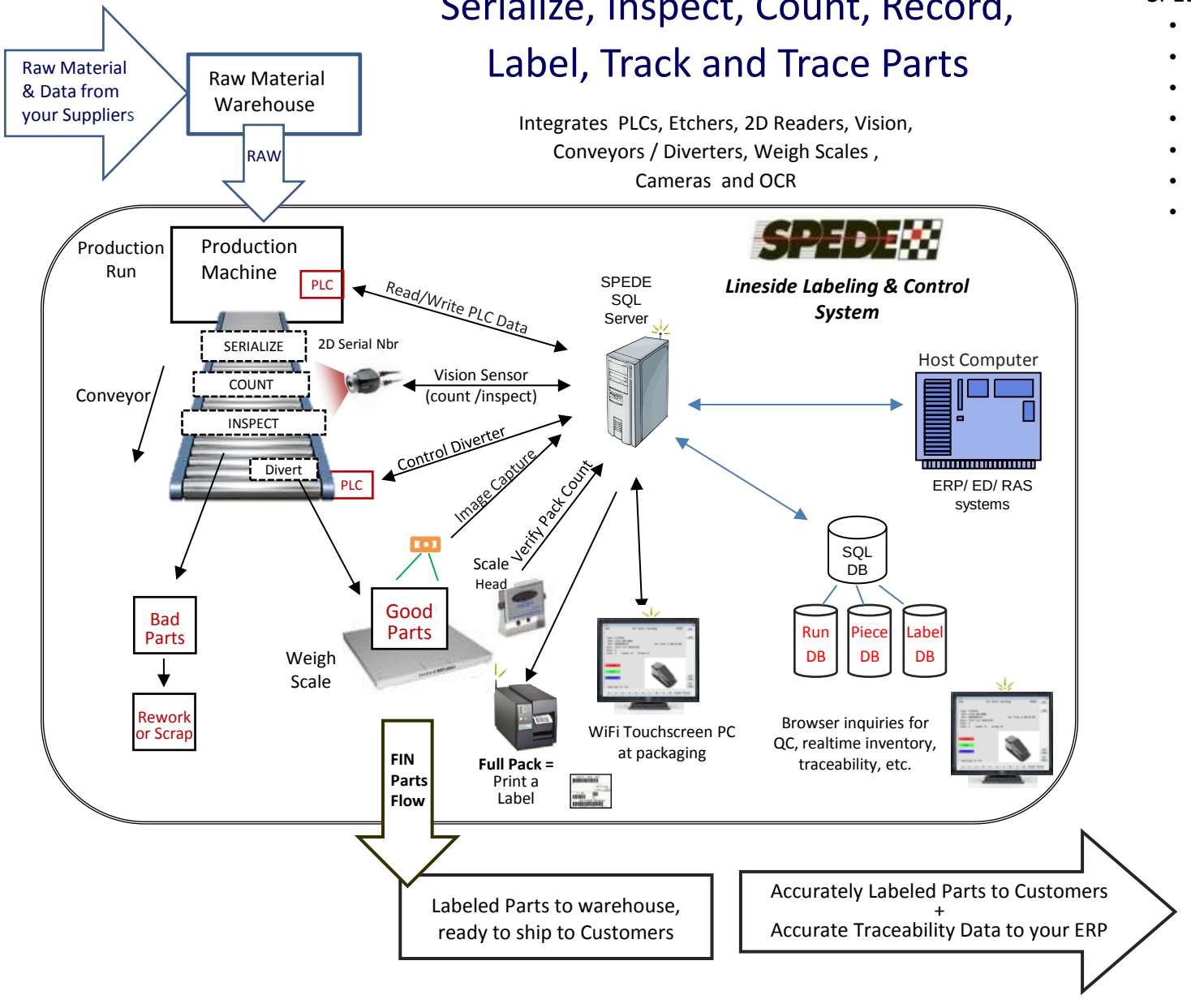
1. WIP Components Tracking
2. Parts Identification
3. Parts Counting
4. Serialized Parts Labeling
5. Detecting Good Parts vs. Scrap
6. Production Reporting
7. Packing Containers/ Dunnage
8. Container Labeling
9. Parts Tracking
10. Shipping
11. Traceability – RAW, WIP, FIN
12. For Honda – Small Lot Store,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

© 2019, SPEDE Technologies.

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

© 2019, SPEDE Technologies. 440-808-8888 www.SPEDE.com

Simplifying Processes... Standardizing Excellence.®

6 Advantages of SPEDE Automation

1: Error Prevention

- Identify good parts vs. scrap / divert the 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

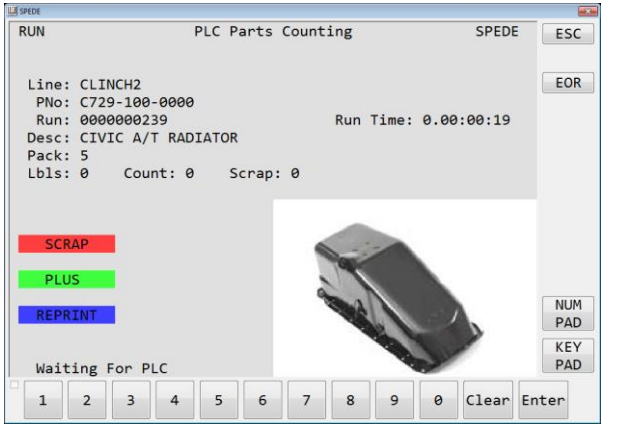
A Vision Sensor can detect the missing parts in this Jack Kit

© 2019, SPEDE Technologies.

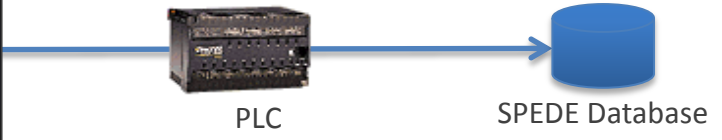
6 Benefits of SPEDE Automation

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



Line-side Touchscreen PC Displays Real-time Parts Counting Data



Part Nbr	Description	Run Nbr	Start	Stop	Elapsed	Scrap	Good	Containers
C729-103-0000	ACCORD M/T RADIATOR	000012001	08:03:22	12:01:10	03:57:48	11	200	40
C729-103-0000	ACCORD M/T RADIATOR	000012004	13:01:06	17:38:57	04:37:51	19	240	48
C729-103-0000	ACCORD M/T RADIATOR	000012007	18:20:07	23:30:45	05:10:38	9	260	52
					13:46:17	**39**	**700**	**140**
C729-101-0000	CIVIC M/T RADIATOR	000012012	07:58:26	12:10:00	04:11:34	13	180	36
C729-101-0000	CIVIC M/T RADIATOR	000012016	13:12:35	17:28:20	04:15:45	8	160	32
C729-101-0000	CIVIC M/T RADIATOR	000012017	19:00:05	23:40:10	04:40:05	11	205	41

© 2019, SPEDE Technologies. 440-808-8888 www.SPEDE.com

Simplifying Processes... Standardizing Excellence.®

SPEDE Technologies

6 Benefits of SPEDE Automation

3: Accurate Packing and Labeling

Automates the Processes of Identifying, Packing, Labeling Parts

- PLC supplies the part number / run data / count
- Counts only “good” pieces toward a pack count

Prevents Mis-labeling of Parts that Look Alike

Interfaces to Scales

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

Interfaces to Vision Sensors

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

Weigh Scale Can Trigger Labels to Print

Prints serialized label automatically

- When pack count/dunnage is correct
- Host ERP / EDI supplies label data
- Actual weights are collected and stored with label data in SPEDE SQL label database

© 2019, SPEDE Technologies.

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

Printed By: Dan Worthington
Report Date: 01/08/2013
Report Time: 08:35:00
Page: 1 of 1

Container Trace: 0319804-05088465

Part Nbr	Description	Run Nbr	Line Nbr	Create Date	Create By	Qty	Item S/N
C729-101-0000	CIVIC M/T RADIATOR	000012001	CLINCH2	11/05/2012	JSMITH	5	AB879762351
							AB879762352
							AB879762353
							AB879762354
							AB879762355

© 2019, SPEDE Technologies. 440-808-8888 www.SPEDE.com

6 Benefits of SPEDE Automation

4: cont'd: Serialized 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

© 2019, SPEDE Technologies.

6 Benefits of SPEDE Automation

5: Process Control and Accountability

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

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.

© 2019, SPEDE Technologies.

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

© 2019, SPEDE Technologies. 440-808-8888 www.SPEDE.com

Simplifying Processes... Standardizing Excellence.®

SPEDE Technologies

Meet a Few SPEDE Customers...

© 2019, SPEDE Technologies. 440-808-8888 www.SPEDE.com

24930 Detroit Road Suite E Cleveland, OH 44145

SPEDE Technologies

For More Information …

Call or Email:

Bob Bunsey

bbunsey@SPEDE.com

440-808-8888 x22

www.spede.com

Enabling Automotive Suppliers to Increase Accuracy, Efficiency and Profitability with Innovative Automated Solutions, since 1980.

Simplifying Processes.... Standardizing Excellence.®

© 2019, SPEDE Technologies.

SPEDE Technologies