Honda North America Purchasing

Working together to achieve Global Competitiveness, Locally

Honda Overview

Purchasing in NA

Supplier Development

- Stability Improvements
- Production Characteristics
- Lean Partnership
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Stability Improvements

Production Characteristics

Lean Partnership
Global Operations

Over 150 Facilities Worldwide

- Regional Headquarters
- Sales
- Research and Development
- Production (parts included)

Over 150 Facilities Worldwide
Six Operating Regions

North America Regional Operations
South America Regional Operations

China Regional Operations
Europe/Middle East/Africa Operations

Japan Regional Sales Operations
Asia/Oceania Operations
North American Production
Honda North America Purchasing

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Purchasing in NA

Supplier Development

- Stability Improvements
- Production Characteristics
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North America Purchasing Vision

We will develop and manage a competitive and stable supply base to support all of Honda’s North American Manufacturing facilities with world class Quality, Cost, Delivery, and Development.

- Develop supplier capabilities to meet QCDD (Quality, Cost, Delivery & Development) requirements
- Develop and manage material flow to meet plant requirements with optimum inventory levels at competitive logistics cost.
- Manage purchased parts cost to achieve globally competitive costs and support Honda Motors’ competitiveness.
- Understand future direction of the industry and develop strategies and systems to enable Honda Motors and our suppliers to adapt to changes and gain competitive advantage.
- Build a world class purchasing organization through development of associates and business practices.
Honda Suppliers in North America

Number of Suppliers
- 600+ OEM Suppliers supplying our N.A. Mfg facilities ($16 Bil)
- 5,000 MRO Suppliers for N.A. OEM

Locations of Suppliers
- United States: Suppliers located in 34 States
- Canada: Suppliers located in 2 Provinces
Honda North America Purchasing

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Purchasing in NA

Supplier Development

Stability Improvements
Production Characteristics
Lean Partnership
High Level Purpose:
Move entire supply base toward self-directed improvement capability.

Methodology:
Level and type of support varies according to supplier capability. Not a one size fits all approach.

Stable Suppliers
Characteristics:
- Lean Network
- High Level Purpose
- Honda Involvement
- ‘Hands-on’ Assistance

Honda Involvement
Facilitation
Self-Directing

Suppliers
Stability

Best Suppliers
Self-Motivated
Stable Suppliers
Lean Network

Benchmark Suppliers
Training
Teaching
Problem Solving
Hands On Doing

Facilitating
Strategic Partnering
Networking/Showcase
Benchmarking

‘Hands-on’ Assistance

Honda Involvement
Facilitation
Self-Directing
Stability Improvement Process

1. Systems
2. Process

OE Survey

Assessment

Identify the gaps, set baseline & targets

Analysis

Specified Action Plan

Problem Solving Strategy
Training Plan
Implementation Plan

Supplier Selection

Situation Analysis (SA)

Monthly Progress
Mid Project Check
Final Report

Do (D)

Check (C)

Implement Plan

Management Check

Act (A)

Adjust plan if necessary
Standardize improvements
Implement on 2nd line

Identify supplier with Q&D concerns
Supplier was working most weekends to meet Customer Demand, which negatively impacted workforce stability and the QCD performance of the Supplier, Honda and most importantly the final Customer.
Detailed line performance analysis showed poor process balance & poor OEE (high downtime, lost time and scrap)
Goals and Objectives

<table>
<thead>
<tr>
<th>Measurables</th>
<th>Baseline Data</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Production</td>
<td>463 daily average</td>
<td>670 daily</td>
</tr>
<tr>
<td>Overtime Hours</td>
<td>54.8 monthly</td>
<td>0 (zero)</td>
</tr>
<tr>
<td>Process Utilization</td>
<td>128%</td>
<td>93%</td>
</tr>
<tr>
<td>OEE</td>
<td>50.8%</td>
<td>70.3%</td>
</tr>
<tr>
<td>Operating Rate</td>
<td>72.7%</td>
<td>84.8%</td>
</tr>
<tr>
<td>Performance Rate</td>
<td>73.2%</td>
<td>84.2%</td>
</tr>
<tr>
<td>Quality Rate</td>
<td>95.5%</td>
<td>98.5%</td>
</tr>
<tr>
<td>Line Balance</td>
<td>66%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Advanced Planning tools allow various Scenarios to be tested to establish detailed performance targets.
### Specified Action Plans (SAP)

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
<th>Baseline</th>
<th>Targets</th>
<th>Actual</th>
<th>Gap Closure</th>
<th>Action Items</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conduct parallel projects using an outline for activity, without any given criteria to address success.</td>
<td>for standard process for continuous improvement.</td>
<td>Develop standard process for activity.</td>
<td></td>
<td></td>
<td>11.1 Outline process to be followed for improvement projects.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Improve line balance by 16% (66% to 82%). Reduce work stations from 26 to 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.1.6 Enhance current downtime tracking to better capture specifics on all concerns</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Improve PPLH by 16.6% (PPLH 10.6 to 15.9).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.2.3 Improve PPLH by 16.6%</td>
<td></td>
</tr>
</tbody>
</table>

#### S.A.P. Objective
Instruct in BP Philosophies approach to Continuous Improvement / OEE tracking system

<table>
<thead>
<tr>
<th>Action Item No.</th>
<th>Action Item</th>
<th>Tasks</th>
<th>Who</th>
<th>Expected Impact</th>
<th>Actual Impact</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>Outline process to be followed for improvement projects.</td>
<td>Establish kick off meeting for Line 21 (Olympus). BP Training for supplier team members. Evaluation of existing system based on data (situation analysis). Set goals and objectives. Develop improvement plans / line modifications.</td>
<td></td>
<td>Ability for Panasonic to facilitate on entry.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.2</td>
<td>Provide necessary training for team members (Line 21).</td>
<td>OEE Training.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.3</td>
<td>Coordinates and guides on parallel activity LB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Comments
- Action item 11.1 stopped due to new hires.
- Action item 11.2 stopped due to new hires.
- Activity adjusted due to new hires.
- Activity adjusted due to new hires.
- Activity adjusted due to new hires.
Implementation of detailed data collection and analysis systems and input from the associates on the production floor yielded excellent results.
## Final Results

### Measurables

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Goals</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Production</td>
<td>463 daily avg</td>
<td>670 daily</td>
<td>730</td>
</tr>
<tr>
<td>Overtime Hours</td>
<td>54.8 monthly</td>
<td>0 (zero)</td>
<td>0</td>
</tr>
<tr>
<td>Process Utilization</td>
<td>128%</td>
<td>93%</td>
<td>84%</td>
</tr>
<tr>
<td>OEE</td>
<td>50.8%</td>
<td>70.3%</td>
<td>76.4%</td>
</tr>
<tr>
<td>– Operating Rate</td>
<td>72.7%</td>
<td>84.8%</td>
<td>83.3%</td>
</tr>
<tr>
<td>– Performance Rate</td>
<td>73.2%</td>
<td>84.2%</td>
<td>92.8%</td>
</tr>
<tr>
<td>– Quality Rate</td>
<td>95.5%</td>
<td>98.5%</td>
<td>98.9%</td>
</tr>
<tr>
<td>Line Balance</td>
<td>66%</td>
<td>82%</td>
<td>84%</td>
</tr>
</tbody>
</table>

### Output:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct O/T</td>
<td>-$2,365K</td>
<td></td>
</tr>
<tr>
<td>Indirect O/T</td>
<td>-$592K</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-$2,957K</td>
<td></td>
</tr>
</tbody>
</table>

### Input:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Honda Labor</td>
<td>$68K</td>
<td></td>
</tr>
<tr>
<td>Honda Travel</td>
<td>$75K</td>
<td></td>
</tr>
<tr>
<td>Supplier Labor</td>
<td>$18K</td>
<td>$161K</td>
</tr>
</tbody>
</table>

### Out/ In

18:1
Supplier Support Model – Production Characteristics

High Level Purpose:
Move entire supply base toward self-directed improvement capability.

Methodology:
Level and type of support varies according to supplier capability. Not a one size fits all approach.

Stable Suppliers

Honda Involvement
‘Hands-on’ Assistance
Facilitation
Self-Directing

Training
Teaching
Problem Solving
Hands On Doing

Training
Teaching
Facilitating
Strategic Partnering

Training
Teaching
Networking/Showcase
Benchmarking
Improving Production Characteristics

in Mass Production & New Model

- Value Stream Mapping
- 3P: Production Preparation Process
- Summary of Results
VSM: Shows Production & Information flow from the Customer to Raw Material - Identifies sources of waste and provides a common language
The purpose of 3P is to **design out waste** and **simulate** the process with a cross functional team to achieve a higher level of safety, quality, productivity and delivery at start-up.

### Applications:
- New Products
- Design Changes
- Changes In Demand
- Relocation Of Process
- Mass Production Improvements

### Objectives:
- Use Minimal Resources to Meet Customer Takt Time
- Eliminate Waste Prior to Production Start

### 3P Methodology:
- Clear Objectives (MP Eff. WIP, Flr Space)
- Cross-functional Team (prod, quality, ms, maint,)
- Creativity Before Capital
- Quick and Crude vs. Slow and Elegant
- Tight Focus On Time (1 week)

### Traditional Method:
- Low Associate Involvement
- Excessive Capital Investment
- Copy of Existing Process
- No Simulation
- Parts Presentation Afterthought

### 3P Method:
- Cross-functional Involvement
- Lower Capital Investment
- Process Innovation
- Cycle Time Simulation
- Planned Parts Presentation

### 1 Week Schedule:

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td></td>
<td><strong>3P / Lean Training</strong></td>
</tr>
<tr>
<td>Tuesday</td>
<td><strong>Situation Appraisal</strong></td>
<td><strong>Create 7 Alternatives</strong></td>
</tr>
<tr>
<td>Wednesday</td>
<td><strong>Evaluate Alternatives</strong></td>
<td><strong>Full Scale Mock-up</strong></td>
</tr>
<tr>
<td>Thursday</td>
<td><strong>Simulate / Kaizen</strong></td>
<td><strong>Documentation</strong></td>
</tr>
<tr>
<td>Friday</td>
<td><strong>Results Presentation</strong></td>
<td></td>
</tr>
</tbody>
</table>
3P – Eliminating waste prior to New Model

AFTER 3P

- VA time = 50.9
- Total M/P = 22 for two shifts all 4 parts.

BEFORE

- VA time = 66.9.
- Total M/P = 16 for two shifts all 4 parts.

PPLH WIP FL/SP

<table>
<thead>
<tr>
<th></th>
<th>PPLH</th>
<th>WIP</th>
<th>FL/SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Time Savings</td>
<td>32.7</td>
<td>N/A</td>
<td>9100</td>
</tr>
<tr>
<td>Savings % IMP</td>
<td>45</td>
<td>N/A</td>
<td>4820</td>
</tr>
<tr>
<td>$450K</td>
<td>N/A</td>
<td>$300K</td>
<td></td>
</tr>
</tbody>
</table>

3P Proposal

- Annual Savings = $450K
- 1st Yr Savings = $750K

One Time Savings = $300K
## Production Characteristics Results

### Supplier New Model 3P Results

<table>
<thead>
<tr>
<th>#</th>
<th>Supplier</th>
<th>PPLH</th>
<th>WIP</th>
<th>Floorspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
<td>Supplier</td>
<td>PPLH</td>
<td>WIP</td>
<td>Floorspace</td>
</tr>
<tr>
<td>1</td>
<td>Rail Sub-Assy</td>
<td>Rail Sub-Assy</td>
<td>24.0</td>
<td>33.7</td>
</tr>
<tr>
<td>2</td>
<td>Door Liner Assembly</td>
<td>Door Liner Assembly</td>
<td>19.1</td>
<td>31.7</td>
</tr>
<tr>
<td>3</td>
<td>Visor Assembly</td>
<td>Visor Assembly</td>
<td>19.0</td>
<td>31.0</td>
</tr>
<tr>
<td>4</td>
<td>Tire Cover Assembly</td>
<td>Tire Cover Assembly</td>
<td>28.0</td>
<td>55.0</td>
</tr>
<tr>
<td>5</td>
<td>Under Cover Injection Molding</td>
<td>Under Cover Injection Molding</td>
<td>25.7</td>
<td>34.3</td>
</tr>
<tr>
<td>6</td>
<td>Rear Knuckle Casting</td>
<td>Rear Knuckle Casting</td>
<td>19.4</td>
<td>20.8</td>
</tr>
<tr>
<td>7</td>
<td>Brake Hose Bracket Weld</td>
<td>Brake Hose Bracket Weld</td>
<td>146.0</td>
<td>211.0</td>
</tr>
<tr>
<td>8</td>
<td>Sash Weld</td>
<td>Sash Weld</td>
<td>32.7</td>
<td>45.0</td>
</tr>
<tr>
<td>9</td>
<td>Rear Tray Injection Molding</td>
<td>Rear Tray Injection Molding</td>
<td>15.5</td>
<td>26.3</td>
</tr>
<tr>
<td>10</td>
<td>Rear Knuckle Machining</td>
<td>Rear Knuckle Machining</td>
<td>49.8</td>
<td>53.8</td>
</tr>
<tr>
<td>11</td>
<td>Tire Mount &amp; Rear Fork Assy</td>
<td>Tire Mount &amp; Rear Fork Assy</td>
<td>14.5</td>
<td>14.5</td>
</tr>
<tr>
<td>12</td>
<td>Front Knuckle Sub-Assembly</td>
<td>Front Knuckle Sub-Assembly</td>
<td>51.3</td>
<td>102.5</td>
</tr>
</tbody>
</table>

**Average % Improvement:** PPLH: 48.2%, WIP: 54.8%, Floorspace: 35.4%

### Supplier Mass Production 3P Results

<table>
<thead>
<tr>
<th>#</th>
<th>Supplier</th>
<th>Title</th>
<th>PPLH</th>
<th>WIP</th>
<th>Floorspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rail Sub-Assy</td>
<td>Rail Sub-Assy</td>
<td>25.7</td>
<td>34.3</td>
<td>33.5%</td>
</tr>
<tr>
<td>2</td>
<td>Door Liner Assembly</td>
<td>Door Liner Assembly</td>
<td>19.4</td>
<td>20.8</td>
<td>7.2%</td>
</tr>
<tr>
<td>3</td>
<td>Visor Assembly</td>
<td>Visor Assembly</td>
<td>19.0</td>
<td>31.0</td>
<td>63.2%</td>
</tr>
<tr>
<td>4</td>
<td>Tire Cover Assembly</td>
<td>Tire Cover Assembly</td>
<td>28.0</td>
<td>55.0</td>
<td>69.6%</td>
</tr>
<tr>
<td>5</td>
<td>Under Cover Injection Molding</td>
<td>Under Cover Injection Molding</td>
<td>25.7</td>
<td>34.3</td>
<td>33.5%</td>
</tr>
<tr>
<td>6</td>
<td>Rear Knuckle Casting</td>
<td>Rear Knuckle Casting</td>
<td>19.4</td>
<td>20.8</td>
<td>7.2%</td>
</tr>
<tr>
<td>7</td>
<td>Brake Hose Bracket Weld</td>
<td>Brake Hose Bracket Weld</td>
<td>146.0</td>
<td>211.0</td>
<td>44.5%</td>
</tr>
<tr>
<td>8</td>
<td>Sash Weld</td>
<td>Sash Weld</td>
<td>32.7</td>
<td>45.0</td>
<td>37.8%</td>
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<td>10</td>
<td>Rear Knuckle Machining</td>
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<td>49.8</td>
<td>53.8</td>
<td>8.0%</td>
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<td>Tire Mount &amp; Rear Fork Assy</td>
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<td>14.5</td>
<td>14.5</td>
<td>0.0%</td>
</tr>
<tr>
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<td>Front Knuckle Sub-Assembly</td>
<td>Front Knuckle Sub-Assembly</td>
<td>51.3</td>
<td>102.5</td>
<td>99.8%</td>
</tr>
</tbody>
</table>

**Average 3P Improvement:** PPLH: 45.1%, WIP: 58.9%, Floor Space: 36.6%

### In-house (MMP) 3P Results

<table>
<thead>
<tr>
<th>#</th>
<th>Plant</th>
<th>Title</th>
<th>Associate Walking Distance</th>
<th>WIP</th>
<th>Floorspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MMP</td>
<td>Final Repair Area</td>
<td>9820</td>
<td>62.898</td>
<td>35.7%</td>
</tr>
<tr>
<td>2</td>
<td>MMP</td>
<td>AF Sub-Assy Area Layout</td>
<td>32039</td>
<td>10442</td>
<td>67.7%</td>
</tr>
<tr>
<td>3</td>
<td>MMP</td>
<td>Tank &amp; Rear Fender Assembly</td>
<td>747</td>
<td>585</td>
<td>21.6%</td>
</tr>
<tr>
<td>4</td>
<td>MMP</td>
<td>Engine Assembly</td>
<td>48.3</td>
<td>22.3</td>
<td>51.9%</td>
</tr>
<tr>
<td>5</td>
<td>MMP</td>
<td>Paint - PWC Move (L1 to L3)</td>
<td>2037</td>
<td>1158</td>
<td>43.2%</td>
</tr>
</tbody>
</table>

**Average % Improvement:** Assoc Walking: 44.0%, WIP: 47.8%, Floorspace: 29.5%
High Level Purpose:

Move entire supply base toward self-directed improvement capability.

Methodology:

Level and type of support varies according to supplier capability.

Not a one size fits all approach.

Honda Involvement

‘Hands-on’ Assistance  Facilitation  Self-Directing

Stable Suppliers

Training  Teaching  Problem Solving  Hands On Doing

Training  Teaching  Facilitating  Strategic Partnering

Training  Teaching  Networking/Showcase  Benchmarking

Lean Network
Supplier Challenges:

- Outstanding Quality
- Global Competition
- Flexibility
- Global Sourcing

Typically 95% of Total Lead Time is Non-Value Added!!!

Establish a Lean Network

- Comprised of 40+ Supplier Partners
- Lead by Steering Committee
  - 9 Supplier & 2 Honda members
- Facilitated by Honda
  - Coordinate meetings & communicate to members
  - Arrange Benchmarking visits
    - Share Best Practices
  - Coordinate Lean Workshops & Lean Training
  - Stabilize Network & position for growth
- Showcase Lean Implementations at annual Lean Network Conference
Supplier Lean Network

Lean Supplier Network Mission Statement

Through a diversified network of suppliers, guide the development, implementation, and measurement of Lean manufacturing practices by information sharing, best practices, and active participation.

Lean Principles & Best Practices To Improve QCD

Selection of Suppliers

Stable Suppliers

Non-Stable Suppliers

Network Provides

- Benchmarking
- Project Support
- Workshops (VSM, Kanban, 5S)
- Training (Mat’l Flow, TPM, Ergo)
- Quarterly meetings
- Monthly Steering Cmte Meetings

Team atmosphere for mutual learning, assistance & improvement within the Supplier base (networking)
Lean Network Workshop History

Workshops provided by Network members

- VSM (Value Stream Mapping)
- Set Up Reduction
- Pull / Kanban Systems
- Cellular Mfg
- Yokoten – Maintenance
- TPM
- Quick Changeover
- Material Flow
- Ergonomics & Safety
- MOST & Standardized Work
- OEE
- Labeling & Traceability
- 5S
- Energy Cost Reduction
- Safety
- Suggestion Systems

Attendance since 80Ki = 719 Supp Assoc

Training provided by Honda

- Lean Overview
- VSM (Value Stream Mapping)
- Lean Simulation
- Pull / Kanban Systems
- 5S
- Visual Workplace Mgmt
- OEE
- 3P (Prod. Prep. Process)

<table>
<thead>
<tr>
<th>Ki</th>
<th>Classes</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 04</td>
<td>28</td>
<td>448</td>
</tr>
<tr>
<td>FY 05</td>
<td>38</td>
<td>997</td>
</tr>
<tr>
<td>FY 06</td>
<td>42</td>
<td>683</td>
</tr>
<tr>
<td>Totals</td>
<td>108</td>
<td>1,828</td>
</tr>
</tbody>
</table>

Over 2,500 Supplier Associates trained by Honda and Network Members since FY 04
Expectations & Results

- Must have top management support.
- No layoffs as a result of improvement activity.
- Methods learned are applied at your facility.
- Results of Projects are showcased for the benefit of the network.
  - At Quarterly Meetings
  - At Fall Lean Network Conference

Lean Network Results

<table>
<thead>
<tr>
<th>Manpower Efficiency</th>
<th>- Sq. Feet</th>
<th>Inventory Reduction</th>
<th>Total Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>+8.1%</td>
<td>-447,000</td>
<td>-$30.7M</td>
<td>-$97.1M</td>
</tr>
</tbody>
</table>
North America Purchasing Vision

We will develop and manage a competitive and stable supply base to support all of Honda’s North American Manufacturing facilities with world class **Quality, Cost, Delivery, and Development**.

- Develop supplier capabilities to meet QCDD (Quality, Cost, Delivery & Development) requirements
- Develop and **manage material flow** to meet plant requirements with optimum inventory levels at **competitive logistics cost**.
- Manage purchased parts cost to achieve **globally competitive costs** and support Honda Motors’ competitiveness.
- Understand future direction of the industry and **develop strategies and systems** to enable Honda Motors and our suppliers to adapt to changes and gain competitive advantage.
- Build a **world class purchasing organization** through development of associates and business practices.