CLEAN /LEAN MANUFACTURING

Working for a clean environment through Lean Manufacturing
Who are we?

- Originally a stand alone Puerto Rican company, recently acquired by Keller Crescent.
- Started operations on 1986.
- Located in Juncos, PR.
- Approximately 100 employees
- Turn over < 2%.
Our Products

- **Inserts**
  - Roll inserts
  - Flat inserts
  - Folded inserts
  - RTA folded outserts
- **Labels**
  - Pressure sensitive labels
  - Anti-counterfeiting labels
  - Special applications
- **Printing mats / Plates**
- **Insert multi-pack presentations**
- **Vinyl pouches**
<table>
<thead>
<tr>
<th>Customer</th>
<th>Products</th>
<th>Years of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pfizer (Wyeth)</td>
<td>Inserts / outserts, Labels</td>
<td>24 years</td>
</tr>
<tr>
<td>Combe</td>
<td>Inserts / Labels</td>
<td>24 years</td>
</tr>
<tr>
<td>Fenwal (PR &amp; Dominican Republic)</td>
<td>Inserts / outserts, labels</td>
<td>15 years</td>
</tr>
<tr>
<td>Baxter</td>
<td>Labels / Printing mats</td>
<td>15 years</td>
</tr>
<tr>
<td>Suiza Foods. Inc.</td>
<td>Labels</td>
<td>15 years</td>
</tr>
<tr>
<td>Vaquería Tres Monjitas</td>
<td>Labels</td>
<td>10 years</td>
</tr>
<tr>
<td>Edwards Lifesciences</td>
<td>Labels, &amp; printing mats</td>
<td>10 years</td>
</tr>
<tr>
<td>Patheon</td>
<td>Inserts / outserts &amp; labels</td>
<td>8 years</td>
</tr>
<tr>
<td>Legacy</td>
<td>Inserts / outserts &amp; Labels</td>
<td>8 years</td>
</tr>
<tr>
<td>Abbott</td>
<td>Labels / Printing mats</td>
<td>7 years</td>
</tr>
<tr>
<td>Typenex Medical</td>
<td>Labels</td>
<td>3 years</td>
</tr>
<tr>
<td>Warner Chilcott</td>
<td>Vinyl pouches</td>
<td>1 year</td>
</tr>
<tr>
<td>Cristalia</td>
<td>Labels</td>
<td>1 year</td>
</tr>
<tr>
<td>Hewlett Packard</td>
<td>Labels</td>
<td>1 year</td>
</tr>
</tbody>
</table>
Facilities

- 48,000 sq. ft
- We will add a second building this year
- Electrical emergency power generator
- Water reserve supplies
- Full sprinkler system
Our Vision

- We are the preferred supplier for highly controlled printed components and graphic arts services. Our commitment is to provide Total Customer Satisfaction (TCS).
- We add value by using advanced technology and sharing mutual knowledge.
- We provide a stable working environment, promoting growth for our Organization and associates.
Market Trends - Opportunities

- Product Patents Expiration
- Large size Outsert
- Vision Systems
- New Bar Codes– RSS / Data Matrix
- Supply Chain Management
- Anti-counterfeiting measures
- Electronic inserts

- Labels Print on Demand or Digital Applications
- Six sigma quality program
- Lean manufacturing application
- Electronic files management
- ISO Standards
- Stringent FDA Regulations
The Business of Paradigms

We have to change the way we do business

Our New Paradigm...

Clean Lean Manufacturing

"NO! I don't have time to see any crazy salesman – we've got a battle to fight!"
Our Goals Today

- Present the Clean Lean Manufacturing Concept as an element of a bigger business philosophy.
- Give a testimony that a small company can apply the concept without investing a lot of money.
- That we can be productive and still protect the environment.
What is Lean?

- A systematic way to:
  - Identify and eliminate waste (no added value activities) through continuous improvement
  - Force the product flow as the customer pulls it
  - Look for perfection on the manufacturing processes.
Selected an area for the Pilot Program (Blood Bag labels)
- Represents 48% of the total sales for Labels.
- It has an 89% uptime on press and 47% uptime on the slitting / inspection process.
- Customer wants for us to reduce the lead time.
- It has a dedicated area, making it appropriate to implement a self directed team concept.
Printing Process

- Ink
- Anilox Plate
- Plate cylinder
- Print cylinder
- Plate
- Raw material roll
Die cutting process

Occurs in line with the printing process (on the press)
Slitting and Inspection Process

- Knives
- Strobe light
- Bar code scanners
Lean Manufacturing Process Steps

- Conducted awareness session
- Created core team
- Educated core team
- Prepared Value Stream Mapping
- Conducted brainstorming sessions
- Developed future mapping
Core Team
Inventory and Production Control

Raw material requisition

3,199 M units

Purchasing

Order 3,199 M units

Raw material

requisition

Forecast

Baxter Maricaco & Mexico

Order 253 M/day

3 meses

Proyección

5,060 M units/month

3,036 M 4"x3"
2,024 M 4"x4"
2,000 - 4"x3"
1,500 - 4"x4"

5,060 M units/month

2 shifts

450 min available

Job Jackets and plates

Documentation Center

Pre-Press

Job Jacket

Pre-Press

Job Jackets and plates

Press

270.2 M (4"x3")
180.14 M (4"x4")

Press

2 shifts

450 min available

Uptime 89%

Yield = 85%

2 shifts

900 min. available

Uptime 47%

Yield = 99.5%

4.4 days

1.78 days

7 days

Production cycle

13.18 days

Time to produce 1M

2.7 min.

1062.6 M (4"x3")
708.4 M (4"x4")

180.14 M (4"x4")

1.78 days

2.2 min/1M

Setup = 10 min.

2 shifts

900 min. available

Uptime 47%

Yield = 99.5%

450 min available

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Lean Manufacturing Process Steps

- Received the visit of EPA Assessor to assist in process mapping development from the environmental aspect point of view.
- Educated another seventeen (17) associates, that will participate in the working teams.
- Create sub-working teams.
- Continuous Improvement
Lean Manufacturing Process Steps

- Identified three major goals:
  - Reduce material waste by 7%
  - Reduce process down time by 47%
  - Improve material planning process to reduce inventory level

- Developed action plan
## Material Waste Reduction

<table>
<thead>
<tr>
<th>Action</th>
<th>% Reduction</th>
<th>$ Value / Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit switch adjustment</td>
<td>1%</td>
<td>$9,651</td>
</tr>
<tr>
<td>Raw material handling</td>
<td>3%</td>
<td>$28,953</td>
</tr>
<tr>
<td>Setup improvements</td>
<td>2%</td>
<td>$19,302</td>
</tr>
<tr>
<td>Tooling improvements (plates quality, press counter accuracy)</td>
<td>1%</td>
<td>$9,651</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7%</strong></td>
<td><strong>$67,557</strong></td>
</tr>
</tbody>
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Down Time Reduction

- Operators waste too much time to get the materials needed to perform their operations.

- Only 1 QA Inspector available at the area for the 3 stations (1 press and 2 slitting). This causes down time at the stations waiting for the availability of the QA to certify line clearances, OK to run and closing of an operation.
Down Time Reduction

- Shortened distance from raw material staging to the press.
- Installed cages inside the press station to have tooling required for next job already available.
- Combined QA Inspector and Packer function at the slitting stations to avoid down time waiting for the QA approval.
Material Planning

- Our raw material supplier is located in France
  - Their raw material is provided from the USA
  - This creates a 3 month lead time to ship
  - Additional 4 to 5 weeks in transit due to intermediate port used and change on cargo ship.
  - 3 to 5 days to clear US Customs

- Found faster shipping alternative from France directly to PR
  - Reduction of 3 weeks in transit time
Other Program Benefits

- Reduction of raw material and miscellaneous materials usage cost.
- Reduction of material disposition expenses.
  - Waste management cost
  - Hazardous material disposition services
    - Incineration
    - Disposition service companies
    - Shredding cost
- Reduction of utilities consumption
- Reduction of storage and transportation costs.