Lean and Green: Profiting from Reductions in Food Waste

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Henry Ford’s inspiration

Hounshell (1985)
The Food Industry is NOT Lean

Product variability
Inconsistent product quality
Giveaway
Food on the floor
Out of life
Badly utilised equipment and inputs
Physical errors
Damage and theft
Carcase imbalance
Inefficient layout
Repetitive handling and moving
Household food waste
Inefficient administration
Sub-optimal use of staff
Consumed
### Waste map (Horticultures)

**Total Waste: 14%**

~ same as Margin for this SKU

<table>
<thead>
<tr>
<th>Last 100 yards</th>
<th>Logistics loss</th>
<th>Manufacturing waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out of Life</td>
<td>Quality waste</td>
<td>RTM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary depot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Primary depot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depot Adjustment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unsold</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepacking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacturing loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacturing waste</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set up losses</td>
</tr>
</tbody>
</table>

- Out of Life: 41%
- Quality waste: 11%
- RTM: 2%
- Secondary depot: 0%
- Primary depot: 1%
- Depot Adjustment: 2%
- Unsold: 16%
- Prepacking: 15%
- Manufacturing loss: 8%
- Manufacturing waste: 4%

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Waste Map (Chilled)

Total Waste: 5.8%
Margin for this SKU = (13.6%)
Packing line capability: Two sigma capability!!

211 grams: 3
215-220 grams: 27
220-225 grams: 55
225-230 grams: 76
230-235 grams: 74
235-240 grams: 50
240-245 grams: 14
245-250 grams: 1
More: 0
F&D vs. Manufacturing

Source ABI (2012) and SMMT (2008)

Automotive: 15
Toyota: 35
Dell: 80
Tesco: Clear Lean & Green Strategy
Tesco’s Growth and profitability

- £400m saving due to lean thinking. Starts systematically deploying clubcard information.
- Start of lean & green programme. Extending efficiency to whole chain.
- 1/3 UK market share. Clear environmental strategy and action.
Case Study: 10 steps Value Chain Analysis

Day 1
Lean VCA workshop
- Team build
- Lean familiarisation
- Construct ‘big picture’ map

Day 2-6
Detailed Mapping
- Mapping of both physical processes & information flows within each facility

Day 7
VCA Current State
- Construct overall current state map and identify opportunities

Day 8-9
VCA Future States
- Develop future state maps
- Chain opportunities
- Cost/benefit matrix

Day 10
Executive report
- Detailed action plan
- Implementation roadmap
<table>
<thead>
<tr>
<th>Category</th>
<th>Waste Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down grade to dice</td>
<td>Meat cut &amp; pack waste</td>
</tr>
<tr>
<td>Giveaway: over spec cuts</td>
<td>Manufacturing waste</td>
</tr>
<tr>
<td>Drip loss</td>
<td>Logistics loss</td>
</tr>
<tr>
<td>OOL ingredients</td>
<td>Store Waste</td>
</tr>
<tr>
<td>Under weight packs</td>
<td></td>
</tr>
<tr>
<td>Line &amp; changeover waste</td>
<td></td>
</tr>
<tr>
<td>Give away (on ave. 4% of packs</td>
<td></td>
</tr>
<tr>
<td>are overweight)</td>
<td></td>
</tr>
<tr>
<td>Primary depot</td>
<td></td>
</tr>
<tr>
<td>Shrinkage &amp; RDC waste</td>
<td></td>
</tr>
<tr>
<td>Quality waste</td>
<td></td>
</tr>
<tr>
<td>Out of Life</td>
<td></td>
</tr>
</tbody>
</table>

Waste = 11.5%
Headline opportunities

1. Review and align product spec. with customer needs

2. Minimise product waste and enhance shelf-life and On Shelf Availability

3. Reduce inventory, reduce chain lead-time and no. touches

4. Demand amplification and demand distortion
50% of food CO2 attributed to “animal foods”
Customer benefits

- Fresher products
- Higher availability
- Lower prices
- More consistent product
- Less environmental impact
Potential benefits to share with the whole chain

<table>
<thead>
<tr>
<th>Benefit</th>
<th>%</th>
<th>Improve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food waste</td>
<td>50%</td>
<td>1000 T</td>
</tr>
<tr>
<td>CO₂</td>
<td></td>
<td>15,000 T</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td>20 osp</td>
</tr>
<tr>
<td>Lower costs</td>
<td>8%</td>
<td>£xxxxm</td>
</tr>
<tr>
<td>Sales uplift</td>
<td>4%</td>
<td>£yyyym</td>
</tr>
<tr>
<td>Productivity increase</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Inventory reduction</td>
<td>25%</td>
<td></td>
</tr>
</tbody>
</table>
Variation is the root of all evil

You need stability before you can pinpoint areas to improve
In-house Lean and Green Interventions

Hotspots analysis

Legend:
- Green - OK
- Yellow - Marginal
- Red - issue
Green Big Picture Map with A3’s
Create a Lean and Green Business

Creating a Lean and Green Business System

Techniques for Improving Profits and Sustainability

Keivan Zokaei • Hunter Lovins
Andy Wood • Peter Hines

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A PRODUCTIVITY PRESS BOOK