Packaging Total System Cost Calculation Model

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Content overview

1. Why do a Total System Cost Calculation

2. How can a result look like and what does it take.

3. Two calculated comparison cases

4. Conclusions
Developing or Changing Packaging raises Questions,…

How will **switching packaging configurations** impact my total cost?

How does **material cost** impact my total cost?

How will **reducing packaging failure** impact my total cost?
How can you find the answers?

Analyze and find out...

... through a Total System Cost Calculation
Why a Total System Cost calculation?

→ TO get a picture of total cost to use of a packaging solution
→ TO break down the different cost elements
→ TO compare total cost between packaging options
→ TO get facts for an improved packaging strategy

→ BECAUSE it shows YOU the data to ensure the most Cost Effective Solution
The total system costs complete it

Package type / Material

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What are the Total Packaging System Costs?

**Packaging Material**
- Top Web Cost
- Bottom Web/Tray Cost
- Packaging Materials

**Device Packing**
- Transportation Cost
- Material Losses from QC/Process Yield
- Packaging Cycles per minute
- # of Operators
- Labor Rate
- # of Shifts
- # of Sealing Machines
- Fixed Cost of Packaging
- Transportation Cost to Sterilizer

**Sterilization**
- Fixed Validation Costs
- Variable Cost per Pallet
- Transportation Costs

**Distribution & Transportation**
- Inventory & Logistics
- Transportation Costs

**Package Base Factors**
- Device Type, Weight, and Price
- Package Type
- Package Size
- # of Packages

**Package Qualification**
- Initial Validation Costs
- Payback Period
- % of Validation Costs Allocated to Package

**Product Returns**
- Yield Losses From Damaged Packaging
- % of Returned Devices Repackaged
- Recall Costs

**Depreciation Costs**
- Depreciation Time
- Machine Costs
## Case study 1 – Rigid blister vs. Pouch

<table>
<thead>
<tr>
<th></th>
<th>Rigid Tray</th>
<th>Pouch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Units</strong></td>
<td></td>
<td>100,000 Implants/year</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td></td>
<td>EUR 560 EUR/piece</td>
</tr>
<tr>
<td><strong>Package Type:</strong></td>
<td>Rigid Tray vs. Pouch</td>
<td></td>
</tr>
<tr>
<td><strong>Top web material:</strong></td>
<td>Tyvek® 1073B – Coated</td>
<td></td>
</tr>
<tr>
<td><strong>Bottom web:</strong></td>
<td>PETG vs. PET/PE</td>
<td></td>
</tr>
</tbody>
</table>

**Table:**

<table>
<thead>
<tr>
<th>(Total Packaging Cost € / YEAR)</th>
<th>Rigid Tray</th>
<th>Pouch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packaging Material</strong></td>
<td>40,000</td>
<td>18,000</td>
</tr>
<tr>
<td><strong>Device Packing</strong></td>
<td>62,743</td>
<td>83,938</td>
</tr>
<tr>
<td><strong>Sterilization</strong></td>
<td>34,322</td>
<td>52,852</td>
</tr>
<tr>
<td><strong>Distribution &amp; Transportation</strong></td>
<td>10,692</td>
<td>15,500</td>
</tr>
<tr>
<td><strong>Product Returns</strong> (Return rate %)</td>
<td>30 (0.02%)</td>
<td>50 (0.03%)</td>
</tr>
<tr>
<td><strong>Package Qualification</strong></td>
<td>20,000</td>
<td>18,000</td>
</tr>
<tr>
<td><strong>Machine Depreciation Costs</strong></td>
<td>4,000</td>
<td>1,800</td>
</tr>
<tr>
<td><strong>Total Annual Cost</strong></td>
<td>171,787</td>
<td>190,141</td>
</tr>
</tbody>
</table>
Case study 1 – Material Cost versus Total Cost

Packaging 1: Tyvek® 1073B – Coated, **Rigid Tray**
Packaging 2: Tyvek® 1073B – Coated, **Pouch**

A Rigid Tray Increases Material Costs 22,000 EUR/year...

... but Saves 18,354 EUR/year by
- a better production rate,
- consuming less space in a transport box
→ reduced transport and sterilization costs/pallet
Transport and Distribution – Source of risk

Will your packaging survive?
Case study 2 – Form-Fill-Seal blister Paper vs. Tyvek®*

Units: 1,000,000 Injection devices/year
Selling Price: EUR 10/piece
Package Type: Form Fill Seal package
Incumbent Material: 60g/m² Paper/11g/m² grid lacquer
New Material: Tyvek® 2FS – Uncoated

<table>
<thead>
<tr>
<th>(Total packaging cost € / YEAR)</th>
<th>60g/m² Paper</th>
<th>Tyvek® 2FS™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging Material</td>
<td>26,892</td>
<td>34,365</td>
</tr>
<tr>
<td>Device Packing</td>
<td>264,225</td>
<td>264,748</td>
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<tr>
<td>Sterilization</td>
<td>156,152</td>
<td>156,152</td>
</tr>
<tr>
<td>Distribution &amp; Transportation</td>
<td>60,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Product Returns</td>
<td>153,000 (1%)</td>
<td>25,500 (0.3%)</td>
</tr>
<tr>
<td>Total Annual Cost</td>
<td>592,269</td>
<td>540,765</td>
</tr>
<tr>
<td>Delta</td>
<td>-51,504</td>
<td></td>
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<tr>
<td>Package Qualification Cost</td>
<td>0</td>
<td>50,000</td>
</tr>
</tbody>
</table>
Case study 2 – Break-even Analysis of Return Cost*

Incumbent Material: Paper/60g/sqm 11g/sqm grid lacquer coated
New Material: Tyvek® 2FS™ – Uncoated, constant at 0.3%

Total Cost Euro/year as a function of % Return
(Break-even calculation)

→ Low performing packaging drives costs up as of an 0.5% recall rate

Requalification cost is excluded from this chart

Material costs:
2FS and APET/PE peel: €0.034/pkg
60g Paper and APET/PE: €0.027/pkg

*simulation case
What does the DuPont analysis tool look like?

- A Microsoft® Excel-based model
- User input with drop-down choices
- The model provides suggested data based on
  - Region
  - Package type
  - Package material
Influence factors for Return Costs:

• Device Costs to Sell
• Total % of returns
• Product wasted or reprocessed?
• Transport/Customs in the case of export
Not every VALUE can be calculated…

Packaging Material

- Less risk of failure
- Performance data package
- Regulatory compliance
- Technical support
- Meets pharma requirements
- Versatility
- Market trust
- Branded material elevates quality
- Long Shelf life
- Processing flexibility
- Particle free handling/opening
What comes next?

1. Check if your current cost calculation model is taking all necessary cost elements into account

2. Review if a new total cost calculation for an existing or new packaging product line is needed.

3. Consider a packaging strategy for a better cost control, quality and compliance

Contact us if you need to improve your products
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