



Innovative strategies to save on overall packaging cost



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INNOVATION IN MEDICAL DEVICE PACKAGING: Is there any room for packaging innovation in a risk-adverse industry?

Like it or not, the medical device manufacturing industry leans towards the conservative side when it comes to packaging material selection and rightfully.

Packaging materials play a key role for physical protection of medical devices packed inside.

Packaging is also a key element to the Medical Device Industry when it comes to:

- **Efficiency of sterilization process:**

- Nobody wants to jeopardize sterilization by selecting materials that are preventing sterilizing agents to effectively penetrate its packaging
- Similarly, it is critical to evaluate the ability of gas to be evacuated from packaging after sterilization

- **Maintenance of sterility over time:**

- Porous webs are a type of packaging which functionalities go far beyond physical protection of devices: they also play an active role as a barrier to bacteria, viruses & other micro-organisms
- In the past, there have been cases of issues in sterility maintenance related to the wrong selection of packaging materials. One of the most common example being reprocessed linen that could be found in hospital sterilization units
- One must also take into account the fact that ability to maintain sterility must be event related
 - Not all packaging materials are suitable for all types of sterilization
 - During the sterilization process, some materials can see their properties negatively impacted by the sterilization process conditions, such as a high level of humidity, or high physical stretch on the materials during sterilization cycles

- **Safety in toxicological attributes:**

- It is important to select materials that would not release harmful chemicals on the medical device surface
- Medical device history also has its stories of wrong selection of chemicals to make a product cheaper, from « PIP implants » to solvent coating recipes that can be used in exotic locations because they « do the job of sealing & peeling » but may not have been checked for « toxic hazard » when intended for use in the medical device packaging field

What are the most common comments of the Medical Device Industry when confronted to the topic of cost saving in packaging?

Packaging performance is essential for the MD industry,
yet cost focus is a must to also remain competitive on market.
Different companies implement different strategies to meet that target.



STAY CONSERVATIVE: THE « DON'T TOUCH MY PRODUCT » COMMENT

• ROAD 1: Make it cheaper, keep it the same

That's the common « avenue » of any player who makes the assessment that:

- New packaging qualification costs are too high to consider a change
- Its material consumption with his supplier(s) will remain stable, hence no possibility to bargain for a better price thanks to higher volumes

The entire responsibility of cost decrease lies on the supplier, who is expected:

- to achieve it in its industrial manufacturing processes
- without any significant impact on material recipe and performance of the products being delivered

The supplier will have to give back all or part of those savings to his customer to offset regular inflation of prices...

At the same time management & owners may expect a share of those same savings to be used to maintain and grow profitability of operation, finance acquisitions, R&D, and to redistribute to shareholders.

• ROAD 2 : I buy more, make it cheaper

Call it economies of scale, purchasing power, or synergies of supply... This is the lower cost solution of companies who are managing to grow over time through increase in sales of their own products, or through acquisitions strategy on the market.

Here again, the expectations of savings mainly lie on industrial

performance of the supplier who – through bigger order size coming from one single customer – is expected to optimize its fixed costs to service that customer, and to find ways to increase its industrial efficiency in manufacturing a product that would keep the same properties but would come at a lower price.

• ROAD 3 : Use less to make the same, and make it for less

Another way to look at minimizing the constraints and yet benefiting from lower prices is usually the downgauging strategy.

The idea behind may seem quite weird, as the target would be to make it slimmer yet fit in the same clothes.

In an industrial world, this means:

- same chemicals in the formula, delivering the same seal & peel performance, but with less grammage
- lower substance of the base web, but with the same composition & similar mechanical performances, to be able to demonstrate equivalence

The key assumption behind is that the « downgauging » of the materials used happens without negative impact to the industrial efficiencies of the supplier, hence with the ability to give back all or part of the raw material saving. Overall, the 3 strategies are mainly looking at economies of scales & decreasing the use of raw material to offset inflation of prices.

Yet there is another route, traveled by the most enlightened ones, aware that packaging requalification has a cost, but also that the savings it brings are in for the long term.

Bargaining prices for higher purchase volumes or putting pressure on supplier to lower prices without change in product properties are common practices, but often unlikely to bring significant savings while disrupting on market.

> « INFLATION VS COST SAVING »



Without change in material, the gap in expectation for MDM customer between price he pays & price he would like to get is likely to increase.

> SOME LEVERS THAT CAN OFFSET INFLATION IMPACT ON PRICES



Based on the target that product does not change, but cost performance must improve.



« THINK AHEAD »: SHORT TERM COST, LONG TERM BENEFIT

• Do these words scare you?

- Risk-taker?
- First adopter?
- Not qualified yet?

• If you don't like them, what about

- Follower?
- Proven safe?
- Losing market share due to higher product costs
- Over-designed packaging

• Why « innovation in packaging » can make a difference?

This introductory white paper will not cover in details all the ideas that may exist and which have helped some medical device manufacturers make a difference. Our aim is just to increase awareness of the reader on some axis of cost improvements that companies have considered implementing over time to generate savings that matter:

- Significant from year one
- Sustainable in the long run
- Pursuing different technologies outside of the packaging norms found today

• Does one have to pay for it? Does it take time and resources?

Yes, but:

- are you really expecting the savings of your « Don't touch my product » to be sustainable over time?
- do you really believe packaging manufacturers are able to constantly generate cost savings on existing products without changing anything that can impact your materials?
- can everlasting growth in quantity mean everlasting price decrease?

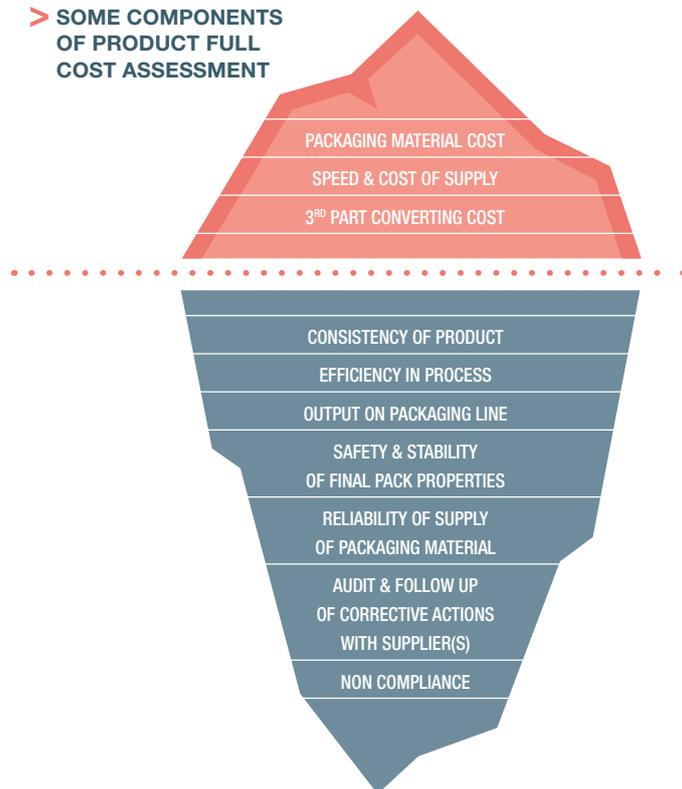
Let's make a short assessment of types of constraints that can impact the cost of use of packaging materials

- The price of the packaging material itself
- The cost of running the packaging material on your production lines (output, scrap, quality reject)
- The cost of your « processing time » for the material
 - Speed of access & warehousing of goods
 - Time to pack the goods in boxes after production
 - Time to sterilize goods once manufactured
- The cost of your « final packaging performance »
 - Integrity of packaging to maintain sterility, with high enough seal strength to avoid pack opening during transportation, storage and temperature variation



- Ability to withstand warehousing conditions, including humidity and heat... For example, some solvent coatings are known to start melting when exposed to high temperatures during transport by container
- Seal defect & recall
- Other packaging related costs
 - Time between order & delivery of goods
 - Unreliable supply
 - Multiple step converting, which potentially add to the supply lead time and surely adds to the final cost
 - Initial qualification of material, management of maintenance of compliance & troubleshooting support
 - Order processing & replenishment organization

> SOME COMPONENTS OF PRODUCT FULL COST ASSESSMENT





MANY MORE HAVE PROBABLY BEEN FORGOTTEN, AND YOU SURELY HAVE A LIST OF YOUR OWN...

What is sure is that « full cost » is not a « fact or fiction » concept developed by suppliers with higher price for packaging materials, or a « Plant Manufacturing VS Central Purchase » endless debate.

Assessing what is the « real » value of the product is quite a job, but no consideration about « new material qualification » can be made without having some idea of what is the exact performance of the « entry good » in the global manufacturing process of the medical device manufacturer.

A significant amount of savings certainly has to be expected to justify exploring new packaging options.

Nevertheless, once the assessment is made of where costs saving can be generated, « breakthrough » solutions are likely to bring far more value than « small steps incremental changes ».

To optimize the return on project, it is highly recommended to work closely with the suppliers on product design & specifications, including prior to investment step in packaging lines.



SOME EXAMPLES OF WHAT « INNOVATIVE » COMPANIES HAVE DONE

Over the last 10 years, there has been several examples of « packaging innovation driven » cost saving strategies.

They have been driven by

- Availability of new materials and manufacturing technologies
- Ability to invest in new packaging line equipment's to open the door to new material options being used
- New product line launches, allowing to select packaging lines, packaging material & packaging design from scratch, input taking into account very early in process the cost impact of:
 - Packaging material prices
 - Target quantity to produce & target industrial output
 - Cost of labor resources versus Industrial output through high speed machinery & potentially higher costs packaging materials

The results have seen development of:

- Reinforced materials solutions developing as alternatives to Tyvek®* or HDPE-based grades in the field of catheters, drapes, gowns & other bulky devices
- Surface treated materials replacing coated products for products such as pipettes, syringes & needles
- Zone coated & lightweight coated solutions being considered for faster sterilization, faster packaging in cardboard at the end of packaging lines
- New film, surface treatment, or coating formulas to be able to run packaging lines at higher speed than today



There is no « universal solution » to medical device packaging needs, but we see the trend as going more and more towards « reliable partnerships for optimal cost to market design » in the early stages of a project.

* Tyvek®: DuPont™ and Tyvek® are registered trademarks of E. I. du Pont de Nemours and Company or its affiliates.



CONCLUDING THOUGHTS: TIME, CONFIDENCE & COLLABORATION

The most successful cases of cost optimization in packaging are probably the ones where a team has been set working together to design the solution that will optimize the « cost to market ».

It involves opening the discussions beyond the scope of just the medical device manufacturer, to include industrial players than can help assess different options and balance the benefits & costs of each route, having in mind the same target: get the product to market at the best possible cost.

Such a target is not the « ideal business case »:

- It is in the interest of all parts to succeed in getting the product to market
- It is probably not less realistic than a scenario where costs savings would be asked through « cheaper but without change » request that has hardly any chance to happen

For such projects, the selection of partners is also critical

- They should have a wide view on existing products on market and enough flexibility to propose solutions that are not only standard catalogue, yet feasible without doubling costs

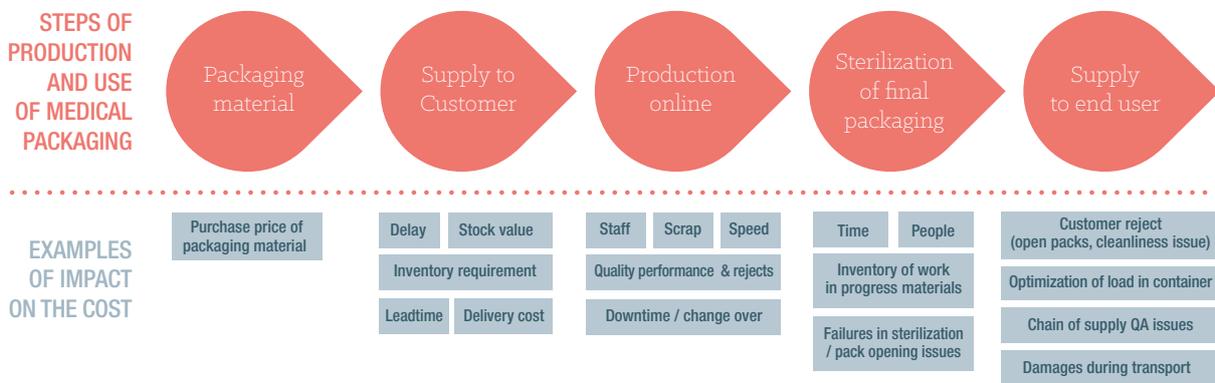
- They should be knowledgeable of the requirement of the healthcare packaging sector and the new technologies available
- They should have the resources & culture that will allow them to work easily with the Medical Device company staff, on the initial hypotheses as well as through the factory implementation afterwards

Of course, energy & cost to be invested, as well as savings to expect in the long term must be assessed at the very early stages:

- how much energy and cost must be put at the start,
- which expected savings in the end

Nevertheless, challenging your packaging suppliers on new packaging materials now available is more likely to help you save the big savings than running a yearly price review for existing product.

> EXAMPLES OF PACKAGING MATERIAL IMPACT ON FULL PRODUCT COSTS



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