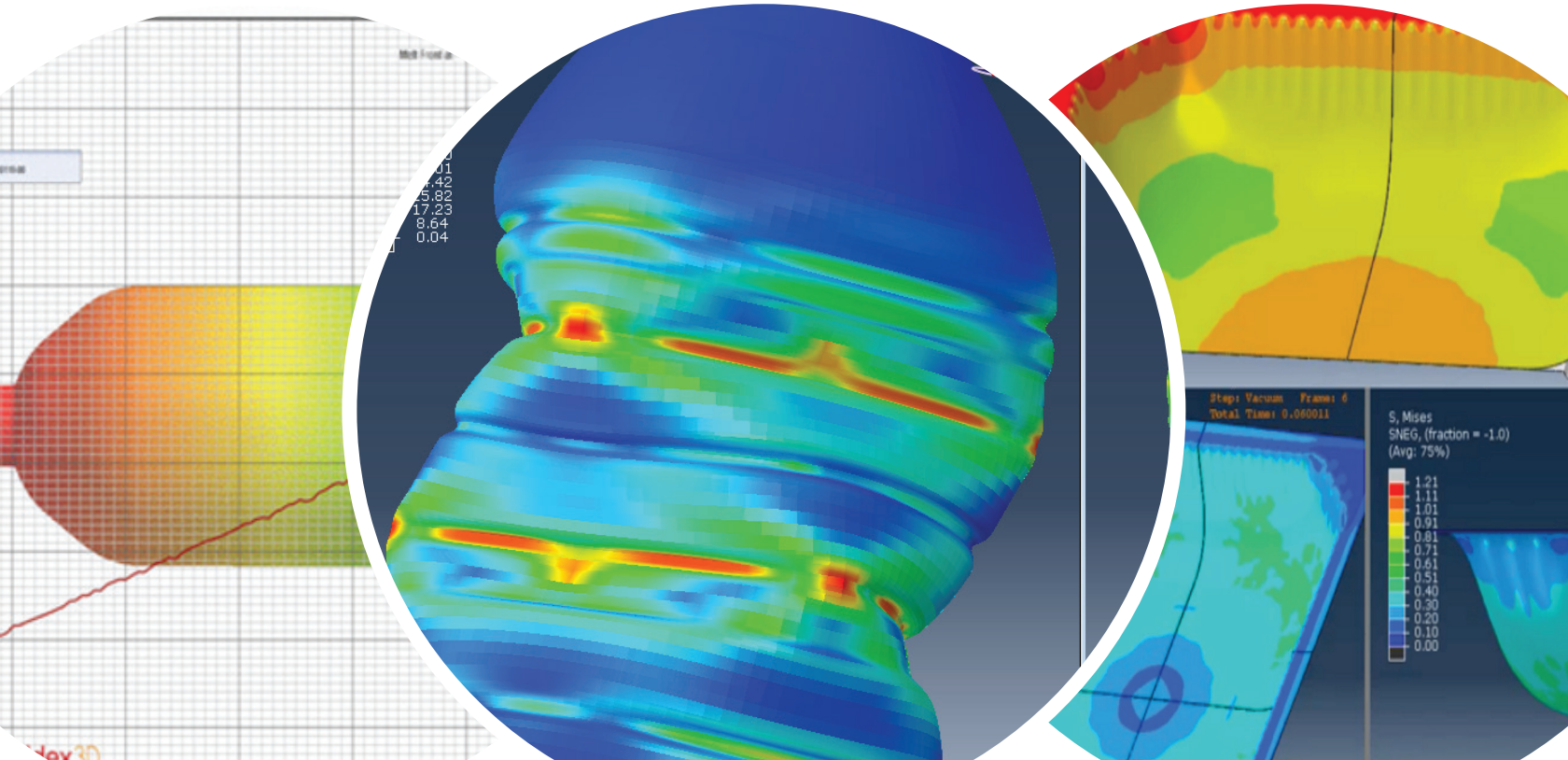
Seven Ways Your Package Can Benefit from Predictive Design Engineering

An ideal read for CPG's and bottle suppliers and converters for beverage, food, household chemicals and personal care applications.



Summary

Slow speed-to-market, high tooling costs due to constant mold changes, poor production performance, customer dissatisfaction with functionality and shelf life, enabling creative design intent to translate to the final package.

Package performance needs to continue to evolve. With equipment pushing productivity boundaries, new filling technologies and changes in the way goods are distributed, are you taking full advantage of the latest primary and secondary packaging options?

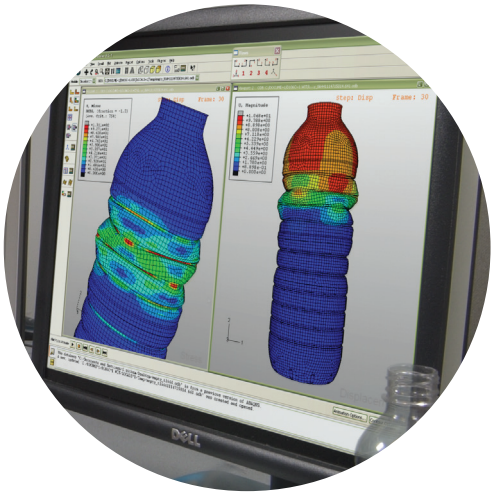
For example, can you quickly figure how to reduce package weight, while improving performance? Fortunately, with new advances in simulation techniques and improvements in material databases, "what if" scenarios can be accurately predicted without building additional molds or consuming valuable machine time.

1. **Optimizing preform design.**
   Are you having difficulty optimizing preform design to meet package performance objectives? The previously popular process of gradually honing into a design sweet spot through multiple mold iterations and prototyping runs is being rapidly replaced by a more efficient process. One that uses simulation tools which enable significant gains in cost and timing.

2. **Improving container performance issues.**
   Have you tried various fixes that have not proven successful? Design software can rapidly optimize shapes by using parametric CAD models. A proven computer simulation model can determine the optimum geometric features needed to meet package performance requirements.

3. **Highlighting process deficiencies.**
   Virtual modeling can point out deficiencies in current production processes. Manufacturing adjustments can be made to ensure the preform can be properly blow molded at correct target weights and thickness. It's important that the design also takes the manufacturing platform into consideration. Both injection and blow molding equipment platforms need to be considered as part of this process. This combined approach, where both the manufacturing process and the performance parameters are evaluated, will ensure the final part meets specifications.

4. **Avoiding the lightweighting pitfalls driven by economic pressures.**
   If you are looking to reduce material usage in your package and are not sure which path can provide the optimized solution, then virtual modeling can provide the right guidance. Often, the most obvious change, such as removing material, potentially accomplished with a core change, may not be the best foot forward. With virtual modeling you can test the options such as removing material without compromising performance, changing design and increasing structure. This reduces valuable production downtime by eliminating trial and error. Often a different preform choice or a redesigned preform can outperform a current heavier part by optimizing thickness distribution and stretch ratios.



5. **Adding design elements to help trigger desired market impact.**
Virtual design engineering can add attributes or innovative features to your package that will enhance the consumer experience. Does the package have good hand feel, will it be stable on a shelf, does the label enhance the package and/or will consumers perceive value in the new features? Once you have virtually modeled the optimum package, you can then make 3D prototypes. You can take the design, print water clear (or add color) prototypes, fill with product, label and cap it. Now you can use these samples to realistically validate these new features with consumer focus groups.

6. **Minimize launch cycles and minimize test cycles.**
If you are experiencing delays in production and escalating costs due to extensive shelf life performance evaluation, you should consider barrier modeling techniques. These can curtail the need for extensive testing of each prototype design change. Testing packages for their ability to withstand different humidity and temperature variations is time consuming and can negatively impact your product commercialization timeline. A smarter approach is determining the right package material and thickness upfront. Virtual design engineering allows you to evaluate the material choices using a variety of blends, multilayer and coating options which will help prevent surprises down the road.

7. **Virtually modeling can aid you in being more competitive.**
If your existing process turnaround is not allowing you to be as fast or nimble as your competitor, then virtual modeling can help. Reducing the time from concept to final production product can be accelerated. Costs can be reduced and the entire design process becomes more efficient. So your competitive advantage improves. You can now improve speed--to--market at lower cost and with better designs. Even when small changes are made, virtual modeling can quickly show how these seemingly minor changes can impact the final performance.

While predictive modeling is not the perfect solution for all of your packaging problems, it can definitely help you address multiple challenges simultaneously. Implementing virtual modeling recommendations will reduce project frustration, minimize delays, produce superior results and help better manage costs. Advances in virtual modeling tools are being continuously developed which will enable you to better understand and simulate your processing, packaging and testing.

If you currently are not using predictive modeling, you should consider adding it to your package development process before your competition begins offering it.

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