NX for Package Design

Benefits

- Delivers significant package design advantages to product development projects where style, aesthetic appearance or quality of form is a key market differentiator
- Eliminates traditional disconnect between design/styling teams and the rest of the product development organization, thereby maintaining cross-discipline design intent
- Reduces concept development time by supporting reverse engineering processes
- Places traditional engineering tools in the hands of package designers and stylists
- Reduces the package design cycle by enabling review teams to rapidly evaluate design concepts through the use of photorealistic images and virtual prototypes
- Enables package designers to quickly refine their design concepts with powerful freeform shape modeling

Summary

The NX™ package design solution delivers a comprehensive set of tools that enable manufacturers to accelerate the concept, styling and design processes required for producing packages that will be judged by the marketplace on the basis of their aesthetic appeal and quality of form. NX provides tools for freeform shape modeling, surface continuity and analysis, advanced rendering and rapid concept evaluation. By leveraging these tools in the complete NX digital product development environment, package designers have an ideal solution for creating innovative packaging for crowded and competitive markets, as well as for supporting today's reverse engineering and "green" initiatives.

Providing a powerful, flexible toolset for your entire package design process

NX enables companies to deliver distinctive package designs that are both visually compelling and functionally superior in terms of their manufacturability, affordability and maintainability. NX enables you to create, capture, iterate and manage package designs by providing leading-edge tools for:

- Package design and styling, which enables packaging designers to perform freeform shape modeling, surface continuity and analysis, advanced rendering and concept evaluation in a comprehensive NX digital product development environment
- Reverse engineering, which enables packaging designers to build a CAD model from a design concept created in a physical medium and analyze it from various perspectives
- "Green" compliance, which enables package designers to continuously monitor their packaging designs and related CAD data to ensure that they adhere to industry, environmental and/or customer standards

NX provides a complete set of fast concept design and modeling tools for developing curves and surfaces.

NX

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NX for Package Design

Benefits *continued*

- Increases productivity by enabling designers to design what they want and how they want it without the constraints imposed by standalone, nonintegrated design tools
- Maximizes re-usability by enabling designers to quickly develop concept models that yield high quality surfaces which are totally usable throughout the complete product development cycle
- Enables package designers to address environmental/green concerns by automating the process used to ensure compliance
- Facilitates a fully integrated development environment that enables package designers to consider styling, functionality, manufacturability and affordability issues throughout an evolving and highly iterative package design process

Today's packaging design challenges

The need to gain competitive advantage in increasingly competitive markets is motivating companies to continually look for ways to create innovative packaging – while minimizing cycle time from product/package design to manufacturing. This process is further complicated by the never-ending challenge to reduce cost, comply with environmental and regulatory standards and deal with increased levels of package complexity. If that isn't enough, the bottom line for most companies continues to be the drive to be first to market.

Packaging innovation is not just about "look" and styling improvements. Today's manufacturers also need to improve product functionality. For example, product makers have to deal with complex issues such as adhering to varying national and marketplace standards for size, format and environmental compliance.

Increasingly, packaging innovation requires companies to manage multiple contradictions. Today's packaging often needs to be:

- Strong but lightweight
- Easy to open but leak proof
- Compliant with environmental and other regulations but cost effective

NX state-of-the-art package design capabilities

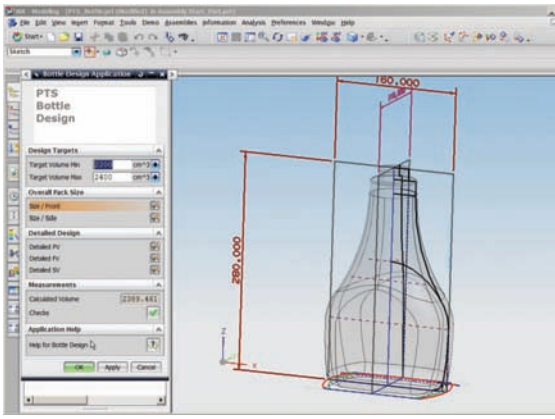
Distinctive package design and styling (e.g., for a product's bottles, tottles, boxes and canisters) gives today's companies a competitive advantage. But visual appeal is not the only factor that determines the success of a package design. Successful products also require packaging that is functional, manufacturable and affordable.

NX enables companies to deliver market-winning packaging designs that are more visually innovative, as well as fit for manufacture, fit for the customer's budget and fit for the market.

NX delivers state-of-the art design solutions that transform the entire product development cycle. NX represents a radical departure from conventional CAD systems. NX extends package design with unique technologies and methodologies that improve process efficiency, by eliminating wasted work, including:

Knowledge-enabled design NX automates and simplifies package design by enabling you to leverage the product and process knowledge that your company has gained from its experiences, as well as from industry best practices. NX tools enable designers to capture knowledge in the form of high-level product structures, templates, frequently used design features, engineering rules, formulae and validation checks. Knowledge-enabled design helps your company reduce design costs, compress the design cycle and improve design quality.

Process innovation NX enables you to establish an interactive environment where everyday design work can be streamlined through the implementation of task-oriented workflows that improve designer productivity. NX design environments let you remove the barriers between your package design/styling teams and other product development groups while allowing you to retain control over your entire product development cycle.



You can use NX to embed knowledge into your processes, creating templates that preserve specific features or target values while allowing design flexibility.

NX dynamically integrates your package design process with a full set of product engineering, simulation and manufacturing processes. You can take advantage of NX wizards and templates, common design features and a re-use library to standardize, automate and streamline your entire design process.

At a more specific level, NX addresses the package design process directly through its capabilities for:

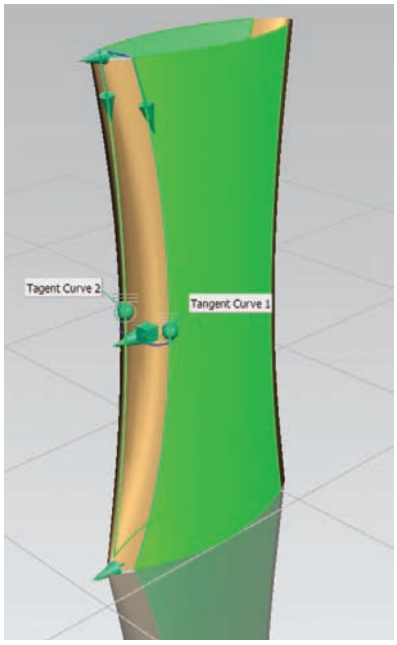
- Package design and styling
- Reverse engineering
- "Green" compliance

Features

- Comprehensive toolset for production surfacing and full design completion
- Design and styling tools for freeform shape modeling, surface continuity and analysis, advanced rendering and visualization
- Curve-based design tools for creating styled shapes via splines and sketching
- Flexible shape editing and manipulation tools for curve and surface display, logo mapping, geometry shaping, dynamic feature creation/manipulation, styled blend and styled corners
- Knowledge capture/re-use functionality and knowledge wizards to rapidly perform numerous package design tasks, including enforcing packaging logic, sizing and placing labels, accounting for local packaging issues, calculating bottle volume, resizing bottles and calculating tip angles
- Surface-based design tools for creating and modifying surface geometry
- Visualization and rendering tools for rapid concept evaluation, including tools for generating photorealistic images and virtual prototypes

Package design and styling
NX delivers a complete toolset for package design and styling that includes powerful creation tools, flexible shape editing and production surfacing capabilities – all of which combine to facilitate full design completion.

Freeform shape modeling NX provides all of the tools that package designers and stylists need to explore shape and style. Designers can use NX curve-based design capabilities to create styles and shapes via splines and sketches. NX provides sophisticated modeling and visualization tools so that the designer can quickly refine the design concept, including tools for applying color, materials, textures and lighting. NX facilitates the freedom and control that designers need to evaluate and manipulate shapes in real time.



You can leverage combined powers of NX creation and editing tools to easily create the most complex shapes and quickly change them whenever they need to be adapted.

Surface continuity and analysis
Designers can use NX surface-based design capabilities to create slab surfaces, as well as to modify them. NX fast modeling techniques yield high quality surfaces that are totally re-usable throughout the complete product development process.

Advanced rendering and rapid concept evaluation NX real-time rendering provides package designers access to "real" material within NX while enabling them to generate advanced photorealistic images that can be used to accelerate the packaging review cycle. NX can also be leveraged to create virtual prototypes, which can be used for rapid concept evaluation and iterative design validation across the product lifecycle.

Reverse engineering support
To enable package designers to reduce the time required to initially develop the packaging concept, NX supports a highly flexible approach to reverse engineering.

Physical model scanning NX tools enable designers to scan in physical objects (i.e., design concepts created in a physical medium such as clay or foam) and then generate a CAD model by mapping surfaces and curves to the polygon mesh.

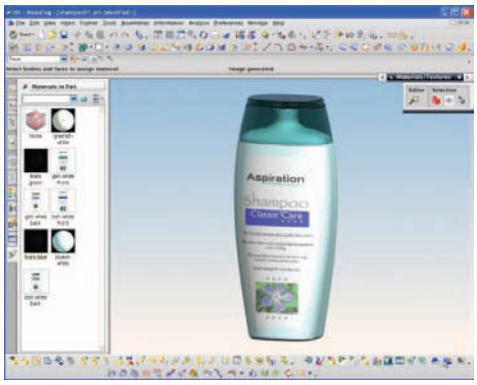
Rapid concept evaluation NX visualization and rendering tools can be applied to the polygon mesh to rapidly evaluate the imported scan data.

CAD model analysis Designers can use NX tools to analyze the scanned model for stress/crush, mold-fill, manufacturability and virtual consumer testing.

Features *continued*

- Reverse engineering tools for building a CAD model from a physical concept model
- Tools for scanning physical objects and mapping surfaces or curves to a polygon mesh
- Tools for analyzing scanned models for stress/crush, mold fill, manufacturability and virtual consumer testing
- Inspection tools for reflecting manufacturing process variations (deviation analysis)
- Visualization and rendering tools for rapidly evaluating the polygon mesh
- Intuitive, roles-based designer interface with common look/feel dialogs that make it easier for package designers to work with powerful NX engineering tools
- Product validation functionality to automatically and continuously monitor the package design and its related CAD data to ensure environmental, industry or customer-defined compliance

Deviation analysis Designers can inspect the model to reflect manufacturing process variations.



NX is adept at taking your products from initial concept design to detail design to manufacturing, including enabling you to employ virtual prototypes to expedite your review/approval processes.

"Green" compliance

NX validation checking capabilities enable design teams to initiate an automatic process that ensures their CAD data and package designs comply with environmental, industry and customer standards. Designers can use these capabilities to continuously monitor these designs as they evolve across the entire product lifecycle.

These capabilities are especially useful in the consumer packaged goods and food-and-beverage industries where "green" design is valued as a best practice for cost effectively meeting today's ever-growing national and local regulatory requirements – as well as for its ability to establish a marketing advantage.

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