

ArtiosCAD: Designing the shape of products to come

There should be no surprise that brand managers at consumer package companies (CPC) have a greater desire to micromanage the product development supply chain. Phil Lempert reported in “Inside the Battle for your Supermarket’s Shelves” that roughly 22,000 products are available in the typical supermarket. While more than 21,000 new products are typically introduced in the US each year, less than 1,500 actually make it to the store shelves.

All of this is occurring at a time when the cost of introducing new products has skyrocketed. For a major brand, the figure can exceed \$10 million just in development, packaging and retailer introductory allowances to get the product on the shelf. The Aberdeen Group concluded that almost 59% of total product development time is spent on market assessment, design concept and design iterations, but more than half of companies find it very challenging or extremely challenging to manage this process.

As an experienced solution supplier to the packaging industry, Esko looks closely at the structural design, graphic design, prepress and production requirements of its customers. But increasingly, our role has become that of a consulting partner supporting the entire packaging design process, from idea to finished product on the store shelf. This involves a thorough understanding of the requirements of the packaging buyer, the Consumer Product Company and/or Retailer, inspired by trends in consumer behavior and in distribution of consumable goods.

The brand owner has a number of critical concerns during product development, but there’s one facet where the converter faces his biggest challenge of pleasing the brand owner: getting the package right the first time. Realizing that structural, computer-aided design (CAD) has its hooks into every single step in the supply chain, using the right CAD product is a prerequisite to manufacturing the right package. At its simplest, graphics cannot be correct if the art director cannot design to the shape of the package. And, the integral safety and delivery logistics of the product cannot be promised without a structural design that meets these supply chain requirements.

Packaging standards cannot be ignored: the lack could easily break the flow of information. Generic CAD applications don’t speak the language of packaging and are difficult to integrate. An application like Esko’s ArtiosCAD, however, is designed with supply chain optimization in mind, making a significant impact on packaging design and development efficiency and speed-to-market.

ArtiosCAD: Complete structural design in one package

ArtiosCAD is the world’s most popular structural design software for packaging. With dedicated tools specifically designed for packaging professionals for structural design, product development, virtual prototyping and manufacturing, ArtiosCAD increases productivity



throughout the supply chain. It is the ideal product for all packaging designers.

The design and drafting tools of ArtiosCAD include functions that help structural designers get their jobs done efficiently, with tool alignment and snapping features that provide graphical feedback. Complete 3D integration allows for quick prototyping of designs and presentations, eliminating communication errors and reducing design review cycles.

ArtiosCAD's layout and tooling design features can be used to create plate layouts and die tooling – optimized for the production equipment that will be used in manufacturing. The integrated database and reporting features enhance communication within a company as well as with external suppliers and partners.

How does integration with ArtiosCAD help optimize the packaging supply chain, helping cut days out of the time it requires to bring a product to market? There are a number of ways:

3D Designer: Think in 3D, design in 3D

Packaging designers often think in three dimensions but draw a structural design on a two-dimensional “drawing board”. With ArtiosCAD 3D Designer, a package is created around a 3D solid model of a product that doesn't exist yet, the graphics are applied, and it is all placed in context: on a shelf between its competitors, on a pallet ready to go on the truck, on a POP display on an end cap: true virtual design. Users can import a wide variety of industry standard 3D formats, including SolidWorks, IGES, STEP, CATIA, Pro Engineer, Inventor and VRML. 3D Designer also creates a variety of 3D models of common packaging products like cans, bottles, glasses and bags. These product models support parametric design, allowing users to resize a single model to create a wide variety of shapes and sizes.

One of the more interesting new innovative features of ArtiosCAD is the ability to import a 3D image as a background for a 3D design model. For example, a three-dimensional supermarket shelf can be imported to demonstrate how a package may look next to other products. A 3D supermarket aisle can be imported to reveal how an end-aisle display will look in the store. Or, for corporate presentations, a background can contain a corporate logo to reinforce the brand.

3D Animation: Presentations in 3D

ArtiosCAD allows customers to view new designs as 3D models, with 3D Animation. Designers can easily create assembly drawings: fold a base, drop in a header, fill with cartons and show the artwork. Even graphics can be added to the animated model. They can be sent to customers for review, speeding the time to market because it's faster and easier for customers to visualize the design. With 3D Animation, you can even create 3D models that demonstrate how the packaging is folded or assembled, recording the steps required to construct the display, rather than printing an assembly manual for a POP display. The retailer



uses a common browser to download the animated VRML file to learn about the assembly using his favorite browser.

ArtiosCAD provides a simple way to export static 3D animation frames in specific file formats. Each frame can be exported to an individual image in either JPEG or PNG file formats. These images can then be used in other programs to create various types of documents, such as more effective e-display instructions, shelf plan-o-grams, or PowerPoint presentations. The frames can be also be automatically combined into a complete document in PDF, Word, and PowerPoint file formats.

Smart Standards: save time and eliminate errors

Using **Builder**, users can create designs in seconds from a catalog of **Standards**. A single Standard can be automatically resized to create thousands of basic parametric designs. **StyleMaker** saves hours of design work by turning custom designs into new reusable standards. Only ArtiosCAD can build a corporate library of Standards that improves quality and consistency, while freeing designers for new creative work. **Advanced StyleMaker** lets designers build new Standards that include intelligent defaults, on-screen documentation, style alternatives and built-in error-checking to ensure everyone uses each Standard correctly.

Cost-effective sheet layouts for production

Layout quickly and graphically builds sheet layouts, tracking and displaying the various graphics used on each design on the sheet. Users can examine the estimated production cost at each machine in the plant with **Cost/Estimating** and use **Intelligent Layout** to automatically suggest optimum layouts with the lowest cost – even matched to printing presses being used. The proposed solutions can be sorted by variables such as sheet, waste, and number of designs on the sheet. ‘Near miss’ solutions that require a small reduction in the design are also available, allowing designers to make minor adjustments to achieve the most efficient layout.

Database Reports

Previous design work must be accessible to be useful. It’s why every ArtiosCAD system uses a relational database for easy and flexible searches. Integrated database browsers help designers quickly locate and share design files and information. Users can create reports, and 3D thumbnails can be added to help others throughout the company visualize all pieces of any packaging project. ArtiosCAD’s Database Reports can be saved in XML, HTML and Excel formats, providing a wide variety of connectivity options for communications with other users and systems.

WebCenter: web-enabling your structural design capabilities

CAD must be able to reliably link different functions across the supply chain like structure and graphics, structure and solid models, structure and logistics, structure and ERP. The internet is the enabling technology, connecting remote sites in a collaborative workflow. Esko WebCenter is the internet-enabled communication and collaboration tool that extends the CAD functionality to remote operations.

WebCenter's unique view, markup and approval tools allow internal personnel and external customers and suppliers to communicate in real time, anytime.

Work with other logistics software

Integrating ArtiosCAD with other software, users can improve their logistics planning based on structural information. For example, using palletization software can help make intelligent design decisions about how the product is packaged, how the package is contained in a shipping box, how these boxes are stacked on a pallet and how these pallets fit on the truck. These decisions have major impact on the cost-efficiency and timeliness of the distribution process. An interface with shelf planning systems could also provide valuable information about the product's behavior when placed on its side or upside-down on the shelf – extremely important when shop shelves are sold at a premium.

Coordination with SolidWorks

It makes sense that the leading 3D CAD software for product development should work with the leading CAD application for structural package design. Product designers and engineers use SolidWorks to create a wide variety of consumer products, as well as primary packaging elements like bottles, cans, tubes and blister packs. Esko customers had expressed a desire to work directly with these SolidWorks models to efficiently and accurately create packaging, displays, and shipping containers associated with such products.

ArtiosCAD is able to draw on SolidWorks technology to import and export native SolidWorks files, creating a seamless workflow between SolidWorks and ArtiosCAD. To illustrate the workflow possibilities, consider a consumer product, like a mobile phone, that is created using SolidWorks. The SolidWorks 3D model of the phone can be imported directly into ArtiosCAD's 3D environment. In ArtiosCAD, users can use a variety of tools to "automagically" create packaging that uniquely fits the product. Internal fitments, protection, and supports can be created using cross-sections of the phone model. And, that entire assembly can then be directly inserted into a folding carton that is automatically sized to fit. Operating directly with the 3D model not only dramatically speeds up the packaging development process; it also removes much of the manual trial-and-error process to get packaging to fit correctly.

Plugins: 'Round trip' workflows for designers

Structural design files are useless if they can't provide graphic designers a platform on which to create their artwork. Two ArtiosCAD Adobe® Illustrator® plugins enhance productivity and communication between structural and graphic designers. The first plugin imports native ArtiosCAD files into Adobe Illustrator, maintaining the ArtiosCAD layers and information and providing dedicated tools to preserve CAD data within Adobe Illustrator. The second plugin can export graphic information from Illustrator directly back to ArtiosCAD. This helps structural designers create CAD files that follow graphic outlines – particularly important for displays and folding cartons, where the final package die cut must often follow graphic features, like illustrations, photos, or headline type. Both plugins are free for graphic designers and can be downloaded from the Esko website.

Extended support for materials

ArtiosCAD provides support for an extended number of materials beyond corrugated, such as foam and plastics—and they are defined in a flexible and user-accessible way. For example, these new material 'boards' can be assigned advanced attributes such as color, texture, sheen and transparency. Boards are also hierarchical and can be arranged by users to match the materials and structure they typically work with in their organizations.

With this feature, converters can provide virtual samples based on their own, customized and exclusive materials. The weight and cost per square foot, as board elements, can be utilized to calculate packaging weight and unit costs. These features are also used in the 3D module of ArtiosCAD to provide even more realistic rendering of many packaging materials. Support for specialty boards like honeycomb, plastics and foam will display accurately in 3D.

ArtiosCAD: Providing structure for the packaging workflow

Structural design continues to be important to converters around the world for its original goals of design and manufacturing. However its role has been extended in many ways. Without the basic structure and the information and discipline it provides for the graphics, logistics, stacking and shelving, there would be no control over the supply chain, essential in the CPCs quest to "Bring the right new products – and the right packaging – to the market faster".

For more information, visit www.esko.com