

Packaging and artwork management for consumer products

White Paper

Consumer products companies (including consumer packaged goods and food and beverage companies) manage enormous amounts of packaging and artwork change in order to deliver brand value at the shelf and in the home. On top of this, 71 percent of consumer products companies recently surveyed say that sustainability in packaging development will be important to package design in the coming year. Success in these objectives requires collaboration across the extended marketing-development-manufacturing value chain, and argues strongly for a product lifecycle management-based solution that can unite the work of the creative and technical communities.

www.siemens.com/plm

Contents

Packaging and artwork management survey	3
Executive summary	4
Introduction	5
Digital asset management	6
Digital briefing process	7
Virtual package design	8
Collaborative artwork management	9
On-demand visualization	10
Conclusion	11
References	12

Packaging and artwork management survey

Siemens PLM Software and AMR Research recently conducted a quantitative research study of consumer packaged goods and food and beverage companies (referred to in footnotes as Siemens and AMR Research Survey), inquiring about packaging and artwork practices, issues, trends and technologies. The topics included innovation, sustainability, strategy and growth, the new product development process, conversion of ideas from concept to product, commercialization and technology adoption trends.

Findings from this survey are mentioned throughout this white paper and in other Siemens and AMR Research publications. If you are interested in exploring the entire study or comparing your own packaging and artwork management process to the study base, please contact your Siemens PLM Software representative, info.plm@siemens.com.

128 responses were received, with the following characteristics:

What is your company's primary type of business?

Food or beverage	52%
Consumer packaged goods	48%

What is your company's annual revenue?

\$500 million to \$999 million	17%
\$1 billion to \$4.9 billion	27%
\$5 billion to \$9.9 billion	29%
\$10 billion to \$19.9 billion	14%
\$20 billion or more	13%

What is your job area or function?

Marketing	37%
R&D	31%
Manufacturing	32%

Your involvement in packaging/artwork information technology purchase decisions?

Solely responsible	39%
Leader of responsible group	27%
Member of responsible group	34%

Executive summary

The packaging and artwork development process is under pressure to deliver an increasing number of projects in an increasingly compressed time frame. In an environment of reduced consumer spending, increased resource costs and dramatically increased sustainability interests, consumer products companies seem to be diverging in their ability to efficiently manage the complexities of the packaging and artwork management process. A recent research study conducted by Siemens PLM Software and AMR Research indicates a productivity gap that varies by more than 350 percent between the least and most productive respondents, and packaging write-offs that vary from 0.25 percent to more than 3.0 percent of company revenue¹.

When consumer products companies innovate, the package itself often changes, and the artwork on the package always changes. Since packaging and artwork changes engage almost every functional discipline inside the company² – while simultaneously engaging a large network of external partners – packaging and artwork management is a definitive collaboration challenge and can be seen as the aggregation point of innovative change in consumer products company.

Consumers and retailers have become more demanding for products and packaging that meet their expectations for quality, cost and social responsibility³. Revenue and margin may quickly dissipate as new buying patterns emerge and mature more quickly than before. Against this backdrop, packaging and artwork management has become a very high-stakes game.



Consumer products companies need better ways to manage their packaging and artwork development processes if they are to achieve their goals. Yet they face critical barriers to the dynamic capability that is necessary to achieve effective packaging and artwork management, including:

- Insufficient control over brand assets and their deployment across products, variants and markets
- Incomplete or inconsistent technical and creative briefing information
- Delays resulting from reliance on physical prototyping, rather than on virtual models
- Inability of design, development and production teams to work holistically and collaboratively to consistently deliver brand value through the packaging and artwork management process
- Lack of certainty about the appearance of the entire finished 'product' (primary, secondary and tertiary package, plus all artwork) until the end of the project

In order to remove these barriers, many leading consumer products companies have turned to information technology (IT). Systems like enterprise resource planning (ERP), narrowly-focused expert tools and homegrown applications have all been employed. Generally these efforts deliver some localized benefits, but they tend to be limited in their ability to scale to the myriad of factors involved in the packaging and artwork management process. This is especially true in two kinds of companies:

1. Large, global players (above \$5 billion in annual revenue) that are fighting for share in multiple markets and categories
2. Mid-sizes companies (between \$1 billion and \$5 billion) that are attempting to move up to the next level in either global reach or product line diversity

But a few leading companies have implemented product lifecycle management (PLM) technology and have sustained significantly increased performance. Using PLM establishes an environment in which a single source of packaging and artwork information is deployed globally, and then exploited throughout the creative and technical communities. The PLM solution approach is uniquely powerful because of its completeness and its inherent unification of tools and information.

Introduction

To routinely get to the shelf first with innovative, new products that capture the consumer's imagination, consumer products companies must unite their creative capacity – their brand management, marketing and design teams – with their technical strengths in an environment of continuous collaboration. Innovations in packaging and artwork must be linked with other aspects of the product development and manufacturing process to drive brand value in the market. This requires a scalable IT architecture that can protect brand assets while providing secure access to all participants in this important process.

Products, packaging, in-store displays and labeling must all come together on the shelf – that place where 90 percent of purchase decisions are made. Changes in consumer preferences, government regulations, product contents and environmental factors continuously exert influence over packaging projects. Managing these requirements effectively is central to profitable brand growth.

Only 35 percent of survey respondents⁴ have taken information technology steps to address critical gaps in the packaging and artwork process. Varying levels of automation have been adopted within groups such as graphic design. However, literally thousands of individuals within a company and across its extended packaging supply chain are affected by something as simple as a font change or as complex as a new regulatory mandate. Ensuring that such changes are effectively communicated and translated into all brand manifestations while protecting corporate assets is a significant challenge.



The negative consequences today are many:

- Brand assets are stored in incompatible formats and disparate systems
- Coordination between creative and technical teams is cumbersome and error-prone
- Time and expense are wasted on package and artwork iterations that are later found to be unfit for purpose
- Brand equity lapses abound as teams apply obsolete brand assets to new packages, or apply current brand assets incorrectly due to lack of alignment

In order to pull out of this mire and pull away from competitors in the market, consumer products companies must gain control of the package and artwork management process. Only a PLM platform-based solution has the ability to create the required alignment of people, processes and brand assets in a sufficiently scalable way.

Upon such a platform suppliers, package designers, graphic artists, outside agencies and production houses collaborate in real time, all around the world.

Upon such a platform discipline-specific applications are an integrated part of the collaboration process, enabling individuals to do their work using systems they know and trust while sharing seamlessly in the global process.

The PLM platform delivers unprecedented access to accurate information to all participants in the process, whether that information is related to formulations, regulatory notices, images, artwork, claims, marketing copy or customer feedback.

This paper discusses processes that are fundamental to packaging and artwork management and illustrates how the PLM platform helps consumer products companies compress cycle times, reduce costs and win more consistently at the shelf and in the home.

Digital asset management

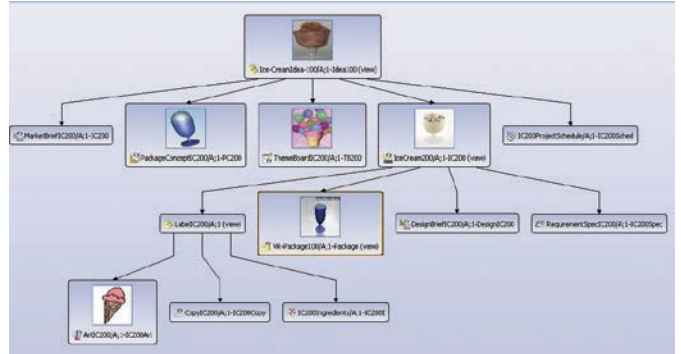
Are the packaging IP assets needed to execute your packaging projects stored in a single, secure system?

As private label competition grows and social awareness concerns increase, brand management executives are challenged to continuously innovate their products and packaging while meeting dynamic health, safety and environmental regulations in the markets where they do business. Creative, marketing and design teams work in locations across the globe, often creating their own databases of information and artwork.

For each new project, brand and marketing managers must ensure that all their suppliers are working with current branding guidelines, labeling and product information as they design and produce the company's products, packaging and artwork. However, coordination and data sharing among teams is difficult, creating inconsistent application of graphic standards across myriad instances of the brand.

Consumer products companies face a number of challenges in their efforts to manage brand assets globally:

- Companies lack visibility into their brand asset portfolio. A company's regional offices and global suppliers typically maintain and control their own asset databases, which are not shared with others. Brand managers are using mostly home-grown tools⁵ to manage a growing number of assets that result from an explosion of SKUs and shorter shelf life
- Brand consistency is difficult to enforce across the supply chain. It is not uncommon for suppliers to drive decisions regarding execution of the brand in order to meet last-minute production constraints. The owner of the brand has no mechanism to manage this process or control brand appearance across products, variants or markets in a way that ensures consistency with corporate guidelines
- Brand assets are stored in isolated, disparate databases across the supply chain. Without a centrally managed repository for capturing brand assets, product information and workflows, it is not possible to document the origination of ideas, artwork or content. This can compromise a company's right to intellectual property ownership in cases of trademark infringements or counterfeiting



Digital asset management – Single global source, intelligent associations and dynamic relationships of all digital assets.

Gain control over all brand assets

Leaders must control their brands by establishing a centrally managed repository of all brand, labeling and packaging information. Built on an open PLM platform, this capability gives business leaders more visibility into their entire portfolio and greater control over its execution.

At the same time, the PLM platform lets authorized users access the materials and information they need for artwork, labeling and package design regardless of the discipline-specific applications they use. This capability makes it possible to consolidate assets and designs that previously were maintained in separate databases. Now, consumer products companies can enforce alignment with corporate guidelines across all manifestations of the brand and protect valuable intellectual property.

Digital briefing process

Is there a comprehensive digital brief that describes the creative and technical intent of each new package and facilitates collaboration? Does this process work holistically to strengthen market-focused execution?

The briefing process is fundamental to achieving the goal of right-first-time implementation of packaging and artwork. Yet this process often is informal and ad hoc. Each team involved in packaging and artwork development manages its own process independently of the others. Multiple briefing documents are created in the form of emails, faxes, phone calls or files that contain varying levels and versions of critical information.

Consumer products companies face significant barriers to streamlining the briefing process. These include:

- Incomplete and inconsistent information. The briefing stage typically focuses on creative elements and often lacks technical details about design issues, cost thresholds or production constraints. Because there often is no standard briefing format or process within a company or across design agencies, the content and detail contained in briefs varies widely. Key information – such as regulatory requirements, labeling requirements and end-of-life guidelines – can easily be overlooked or misidentified
- Insufficient coordination between creative and technical requirements. Those involved in the briefing process lack the ability to readily share information or to visualize the impact of creative decisions on package design and vice versa. This leads to multiple review cycles and unnecessary rework
- Inability to re-use existing briefs, specifications and work product from previous projects. Knowledge often is associated with a particular project; once the project is done, all information created stays with the project files and is stored in a variety of databases that are not easy to find later
- An inefficient and costly process for distributing briefs. Companies typically distribute approved briefs along with the relevant brand assets to those involved in the project via email or CDs that can easily be misplaced. This nonvalue-added activity creates delays and increases the potential that incorrect material will be used in the design stage

Combine all requirements in one product brief

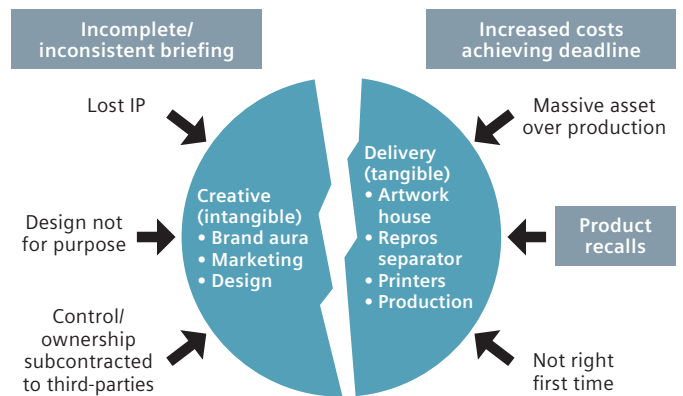
Leading consumer products companies are implementing a PLM platform to optimize the briefing process and connect their creative and technical strengths over the life of a product. PLM solutions designed for the consumer products industry streamline the briefing process through automated wizards that ensure all aspects of artwork, labeling and package design are considered. Once created, these wizards capture the company’s knowledge and experience, and can be re-used to quickly create new packaging components.

Through PLM, companies can include the creative and technical information required for right-first-time execution in a single brief that links to all disciplines involved in packaging and artwork development, including legal, marketing and product development teams. This product brief can be dynamically associated with all existing briefs, brand assets and corporate guidelines to ensure the correct interpretation in design and production.

PLM also provides workflow management, collaboration and 3D visualization tools that make it possible to bring teams together, regardless where they work. Once the brief has been completed, it is routed electronically for review and signature. Since all information generated during the briefing process is captured in the digital asset management system along with the knowledge and experience gained through past projects, it can be re-used to inform future projects.

A comprehensive brief manages the creative-technical disconnect

PLM lets companies create a single product brief that encompasses creative and delivery aspects and dynamically links to other key disciplines involved in packaging and artwork development.



Packaging and artwork process and where value is lost.

Virtual package design

Can you develop a new package design – or new package family – in days?

Package design is an increasingly important component in consumer product innovation. At the same time, it is increasingly difficult to manage all the elements that must come together in a package that will be effective on the shelf and in the home.

Most packaging design projects struggle to meet deadlines and frequently exceed their budgets. They typically are managed in a sequential process that requires input and review from a variety of groups both inside and outside the organization – from marketing and brand management to product development, legal, health and environmental regulatory bodies⁶. This process is further complicated when products are sold in global markets and must comply with local regulations while addressing customer preferences. Multiple iterations are required to arrive at the final package design.

Lean and green: balancing economic and environmental objectives in consumer products packaging

Environmentally sustainable green packaging is something consumers desire and mainstream retailers now require from their branded product manufacturers. In fact, 71 percent of our survey respondents indicated that sustainability in packaging development will be very important to product design in the coming year⁷. And with good reason: green packaging conserves precious resources while reducing waste streams and the total environmental footprint. For most companies, meeting the definition of environmentally sustainable packaging means replacing current package designs with new, green designs with no cost increase to the consumer. This is an enormous undertaking. PLM software helps by providing a product development environment to improve visibility into the global supply chain to find materials and suppliers that best meet requirements, and design in 3D with virtual prototyping, to balance sometimes conflicting requirements. For example, achieving a robust design with recyclable materials, or realizing an eye-catching on-shelf result with a smaller footprint. Knowledge capture and specification management helps you churn through the work load that green requirements demand of the organization, getting the results to market faster.

The disconnect between the creative and delivery aspects of packaging and artwork development is the root cause of needless design iterations, rework and late stage changes that characterize today's production processes. In particular, packaging executives face significant challenges because:

- Briefs contain insufficient information on corporate guidelines, relevant brand assets, labeling requirements, production constraints and product formulations. As a result, designers lack a comprehensive view of the end product. It is difficult to design packaging that is fit for purpose
- A significant amount of time and effort is spent in re-inventing design elements that already exist. There is no mechanism to capture and re-use successful designs or approved legal, regulatory or marketing elements
- Both physical prototypes and hard-copy proofs of conceptual and production packaging must be circulated for approval. The need to create and distribute physical proofs adds significant time and cost to the design process

Streamline and automate key elements of design

Consumer products companies can manage the package development process more efficiently by implementing a PLM platform that makes it possible for everyone involved worldwide to collaborate and share information in real time. Package designers can access comprehensive product briefs that are dynamically linked to the correct brand assets, regulatory and legal notices, product formulations and manufacturing information. Using automated wizards, they can create a master pack structure that specifies all the required elements for any package or package family. These templates simplify the process of creating new packaging while ensuring that all designs are fit for purpose.

With PLM, packaging teams can participate in virtual product reviews regardless of where they are or what application they use. Digital prototypes can be routed for comment and approval using CAD-neutral 3D visualization tools that dramatically reduce design cycle time and cost by eliminating the need for physical prototypes. Project management capabilities give packaging executives the visibility they need to avoid bottlenecks and manage the process to a successful launch.

Collaborative artwork management

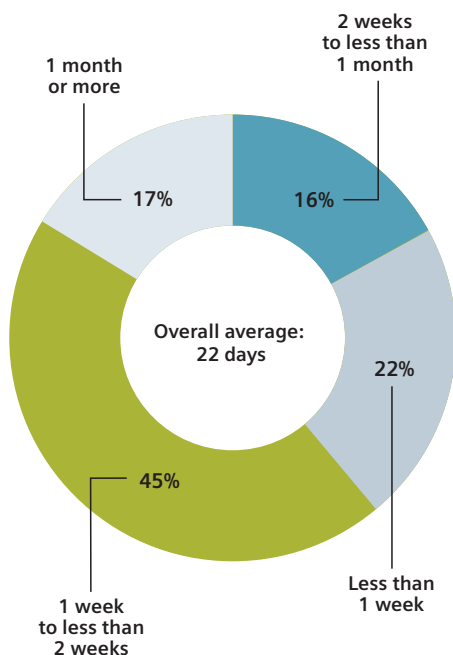
Are you able to digitally join all the structured and unstructured elements of package art so synchronization errors are eliminated and total artwork throughput keeps pace with demand?

For most companies, artwork review and approval is a lengthy process (our study shows that just the artwork approval process can consume more than three weeks⁸) in which hard-copy drafts and proofs are circulated to internal groups and external agencies for review and comment. Individual amendments must be incorporated into revised drafts that are sent out again for review. This cycle may repeat itself more than a dozen times before final approval is achieved. In addition, changes often are made to the final artwork during production to accommodate unforeseen constraints or updated information.

Defects and errors in pack copy and artwork are primary reasons for product recalls, costing consumer products companies millions of dollars in lost revenue. Consumer products companies face significant challenges in managing artwork and ensuring that it delivers on all requirements even as resources become increasingly scarce. In particular, they struggle with:

- A resource-intensive, sequential process that relies on human intervention and inefficient methods for sharing and communicating information

Time to approve artwork



- A lack of visibility into the process. At any given time, pack execution leaders have limited knowledge of where things stand and what the potential bottlenecks might be
- Insufficient coordination among teams involved in artwork, labeling, packaging design and product development. Team members who are distributed across geographies and time zones rely on faxes, phone calls and emails to share information and review their work. This adds significant delays to the process and increases the potential for error
- Time wasted in re-creating copy blocks that already exist and have gone through the approval process. Designers have no mechanism for re-using approved copy when creating new labels for multiple packaging components
- Inability to capture lessons learned and changes made during design, approval and production. There is no way to feed this experience back into the design or production process for continuous improvement

Increase efficiency and effectiveness through technology

Consumer products companies can effectively manage the growing volume and complexity of artwork by establishing a PLM platform that provides collaboration, information management and workflow capabilities. This artwork management solution speeds the development of new artwork while providing the means to manage change at all levels of the pack structure.

PLM electronically links all artwork and labeling to the product brief and pack structure – both of which are dynamically associated with all brand assets, product formulation, regulatory requirements and production constraints. Approved artwork and pack copy can be stored in the digital asset management system along with all other packaging elements and specifications, where they can be readily accessed for re-use.

Desktop collaboration tools and virtual work spaces based on standard technology make it possible to conduct virtual label reviews. Digital workflow streamlines the approval process by alerting reviewers when artwork is ready for review and instructing them on which aspects of the artwork they need to approve. Electronic sign-off and a full audit history ensure transparency and accountability throughout the process. As a result, executives can be sure that a complete and accurate print file is released to production. By leveraging PLM technology, consumer products companies can dramatically reduce costs and decrease pack development time while increasing the quality of the finished product.

On-demand visualization

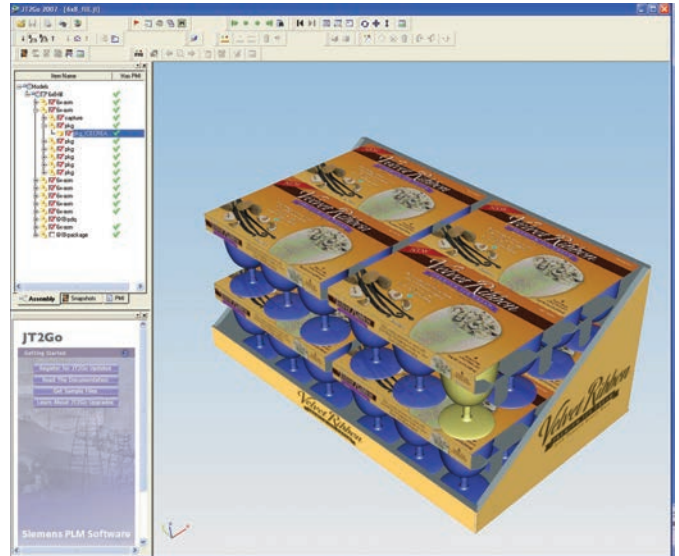
Can everybody working on a packaging project create a real-time view of the primary, secondary and tertiary package, complete with artwork, at the click of a mouse?

On-demand visualization means that any player in the packaging and artwork management process, from a designer to the top executive, can call up a life-like, 3D view of the current project, showing how all of the packaging and artwork elements are fitting together to form a complete offering for the consumer or retailer. And it means they can do this at any point in the process, regardless of where the project stands.

Why is this so important? Consider this real example.

Recently, the creative team for a major consumer packaged goods (CPG) and food and beverage (F&B) company spent a considerable amount of time optimizing the size and position of the brand logo on the front, top and two side panels of a club-sized box. Meanwhile, in another location, the package development team worked on optimizing the strength and cost of the handle that would be affixed to the box in order to provide durability and ease of portability for the consumer. Unfortunately, this siloed execution resulted in a finished package that had a handle rivet piercing the central element of the brand logo on each side of the box. The product went to market with this flaw undetected, and ultimately underwent a redesign that would otherwise have been unnecessary. Money, productivity and some amount of brand equity were sacrificed in the process.

In this case, who was to blame? No individual or team did their work poorly. The carton was surely beautiful in design and the handle was certainly up to its challenge. It was a communication problem, of course. Yet the sheer diversity and quantity of information that needs to be maintained in a real-time-accurate state and communicated continuously across dozens of concurrently active projects in the enterprise makes communication on such issues a significant challenge.



Increase speed to market and accuracy by collaborating globally, on-demand, with 3D visualization at any point in the process.

Reduce errors and speed the process with lifecycle visualization

The Chinese proverb says: A picture's meaning can express 10,000 words. And even 10,000 words might not be sufficient to prevent all the issues that come up when the creative community and the technical community must collaborate on a fast-moving packaging and artwork management project. What can prevent such issues, though, is an on-demand visualization capability that is linked to the virtual package design process and the collaborative artwork management process.

Using a PLM platform enables you to manage and provide concurrent viewing of all the files that make up a packaging and artwork management project. Time zones and functional lines become less of a barrier when everybody is looking at the same picture at the same time, and is able to see issues, markups and suggestions in real time.

Conclusion

Most consumer products companies admit the existence of barriers to effective packaging and artwork management performance, including:

- Insufficient control over brand assets and their manifestation across products, variants and markets
- Incomplete or inconsistent briefing materials
- Delays resulting from inefficient, redundant processes at all stages of design and production
- Inability of design and production teams to work collaboratively across the supply chain and with product development

In our survey, we described a hypothetical solution to this challenge, based upon PLM technology, and incorporating each of the five key solution components that have been outlined in this paper. Eighty-three percent of the survey respondents indicate that they would be “somewhat likely”, “very likely” or “definitely would” when asked if they would purchase such a solution⁹. This tells us that it has a problem that the industry is eager to solve.

The solution, in fact, is not hypothetical. Companies in the industry have employed components of this solution to develop sustainable business performance improvements such as:

- Reduced artwork time by 30 to 50 percent
- Reduced package design time by more than 80 percent
- Increased productivity overall by 30 to 50 percent
- Reduced costs in the packaging and artwork development process by 25 percent

Most importantly, solving this problem enables consumer products companies to drive brand value in the market through better alignment of people, processes and brand assets in a way that readily scales to meet fluctuating demands and increasing complexity. For more information on how leading consumer products companies are transforming the way they manage their packaging and artwork development processes, visit www.siemens.com/plm/consumerproducts.

References

1. Siemens and AMR survey.
2. Siemens and AMR study.
3. Sustainability: Balancing Opportunity and Risk in The Consumer Products Industry, GMA and Deloitte, 2007.
4. Siemens and AMR study.
5. Siemens and AMR survey.
6. The Siemens and AMR survey revealed that each of eight functional disciplines mentioned in the survey were rated as necessary collaborators in every phase of the packaging and artwork management process.
7. Siemens and AMR survey.
8. Siemens and AMR survey.
9. Siemens and AMR survey.

Siemens PLM Software

Headquarters

Granite Park One
5800 Granite Parkway
Suite 600
Plano, TX 75024
USA
+1 972 987 3000

Americas

Granite Park One
5800 Granite Parkway
Suite 600
Plano, TX 75024
USA
+1 314 264 8499

Europe

Stephenson House
Sir William Siemens Square
Frimley, Camberley
Surrey, GU16 8QD
+44 (0) 1276 413200

Asia-Pacific

Suites 4301-4302, 43/F
AIA Kowloon Tower, Landmark East
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong
+852 2230 3308

About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a leading global provider of product lifecycle management (PLM) and manufacturing operations management (MOM) software, systems and services with over nine million licensed seats and more than 77,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software works collaboratively with its customers to provide industry software solutions that help companies everywhere achieve a sustainable competitive advantage by making real the innovations that matter. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

www.siemens.com/plm

© 2015 Siemens Product Lifecycle Management Software Inc. Siemens and the Siemens logo are registered trademarks of Siemens AG. D-Cubed, Femap, Fibersim, Geolus, GO PLM, I-deas, JT, NX, Parasolid, Solid Edge, Syncrofit, Teamcenter and Tecnomatix are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. All other logos, trademarks, registered trademarks or service marks belong to their respective holders.

13792-Y2 5/15 C