

Sustainable new product innovation with PLM software

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white paper



- ▶ Today's consumers are more aware than ever before of how the products they purchase will impact the environment. Consumer packaged goods and food & beverage manufacturers are increasingly looking for ways to create more environmentally friendly products and production methods. Retailers and manufacturers are searching for ways to reduce packaging materials, offer more sustainable formulated products and bring them to market with a smaller carbon footprint.

PLM Software

Answers for industry.

SIEMENS

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▶ Executive summary

Environmental sustainability is an increasingly important issue for consumers. It drives consumer packaged goods and food & beverage manufacturers to embrace measurable business objectives for creating and producing more environmentally friendly products. For example, in a recent research study completed by Siemens PLM Software and AMR Research, 71 percent of the surveyed manufacturers said sustainability for package development will be very important to product design in the coming year.¹

Embracing sustainability business objectives also is good for business. A recent PricewaterhouseCoopers study draws a correlation between sustainability practices and corporate performance. When comparing companies that report through a sustainability index against those that do not, "...the facts show that sustainable companies outperform non-sustainable companies on a number of key financial measures."²

In addition to the consumer demand for "green" products, other pressures are driving today's business sustainability objectives, including:

- **Government regulations.** There has been a 300 percent increase in climate change regulation in the last 5 years.³
- **Retailer influence.** Safeway is going solar. Tesco is testing the use of "carbon labels" on its own label products and Wal-Mart is pushing 60,000 global suppliers to find more efficient packaging methods.⁴
- **Raw material shortages.** Industry is dependent on rapidly depleting feed stocks such as oil and gas. Validating and sourcing substitutes has taken on increasing importance.

Siemens PLM Software's product lifecycle management (PLM) platform helps transform the process of innovation that enables you to turn more ideas into successful and sustainable products. You can incorporate, execute and measure sustainability objectives on a single innovation platform and transform your company into the kind of business that delights consumers and out-performs your non-sustainable competitors.

¹ Packaging and Artwork Development Process, Siemens PLM Software and AMR Research quantitative research study, May 2009.

² Financial Performance Report: Results for Food Beverage and Consumer Products Industry, 2009. Grocery Manufacturers Association (GMA) and PricewaterhouseCoopers research study, 2009.

³ More Than a Buzz Word, CGT, July 2008.

⁴ In '08 Wal-Mart began a 5 year program with its suppliers to cut packaging by 5 percent. It will save the retailer \$3.4 billion in its own costs. It will push its 60,000 global suppliers to find more efficient packaging methods. It estimates supplier savings of \$11 billion. AP Business Wire, 9/22/06.

► At the front end of the product lifecycle

Establishing sustainability in your product portfolio

Getting the right mix of sustainable projects incorporated into your product portfolio is an important first step to achieving sustainability objectives for your company. Brand and portfolio owners must incorporate analytical criteria that will enable them to select the best possible sustainable product initiatives, balanced with cost saving and brand alignment objectives that reflect an acceptable level of business risk.

To facilitate this strategy, your company can manage these initiatives with portfolio management capabilities that are integrated into a PLM platform. This approach provides several key business advantages, including:

- Aligning business criteria with your corporate sustainability objectives to achieve the right balance of risk and reward.
- Improving your new product concepts by tying cost estimates from your supply chain into your development process instead of strictly relying on historical costs. To facilitate sustainability, new materials and ingredients may need to be reflected in your cost structures.

Sustainability requirements – capture and manage sustainability in formal requirements

Eighty percent of the product's lifecycle impact, as well as eighty percent of its cost, is determined in the design phases⁵. Companies that recognize sustainability as a truly holistic initiative from idea-to-shelf realize that sustainable product design begins early in the innovation process – when requirements are released and a project starts. Sustainability requirements come from various sources, including consumers, regulatory agencies and retailers. Sometimes, requirements appear to be in conflict, as in the following instances.

“Make it lightweight but stronger.”

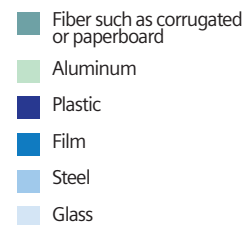
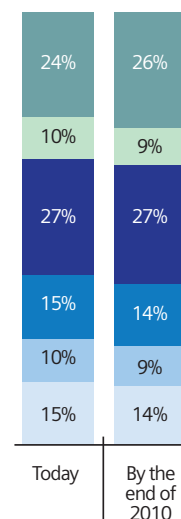
“Make it a smaller package footprint but capture the consumer's attention on shelf.”

“Use green ingredients, materials and suppliers – but don't increase cost.”

Requirements must be rationalized and optimized to meet cost, quality and now sustainability metrics. This is no small feat. But PLM helps to ensure that requirements are captured digitally, changes are documented digitally and that all requirements are fully visible to your technical, creative and supply chain teams to facilitate collaboration and enable your company to meet its sustainability objectives. Visibility helps to ensure that sustainability is built into your new product development initiatives.

In a recent study conducted by Siemens PLM Software and AMR Research, 128 respondents were asked: *Considering all the materials used for packaging your products today (within your realm of knowledge), approximately what percentage is composed of each material below? What will this allocation look like by the end of 2010?*

While more than 70 percent of respondents sighted sustainability as important to package design, most are addressing this need by reducing packaging waste. So far, there is little movement to change materials, with plastic still the most used material.



⁵ “Cradle to Cradle”, *AT Kearney Analysis*. Authors William McDonough and Michael Braungart indicate that 80 percent of a product's lifecycle impact is determined during its design. 80 percent of product cost is locked in the early conceptual phases.

► Design and build green

PLM enables you to establish and leverage a single source of product and production information across your entire enterprise. The scope of the green product development lifecycle is from idea to shelf. Solid PLM capabilities are available to support your sustainability initiatives at each step of the way, including:



Simulation software helped a well known CPG manufacturer design efficient factories around the globe. Plant simulation optimized material flow, resource utilization and logistics. Users created computer models of production systems, then ran experiments and what-if scenarios to optimize them – quickly and without disturbing on-going operations.

“Plant Simulation is very fast in how it does the calculations,” the project’s technical section head said. “There are a lot of benefits in how easy it is to implement and how models can be built and re-used.”

Sustainability claims. You might be working with a non-governmental organization (NGO) and using their certification logo or creating eco-labels to support a sustainability brand position. Both new products and packaging refreshes that involve green packaging or advertising claims require you to support that claim with up-to-date certificates, proper testing and documentation. Otherwise, you risk consumer backlash over “green-washing.” PLM enables you to track and manage these tests and retain the histories associated with its documentation.

Environmentally friendly formulas. Formulators may be called upon to reformulate your products using more environmentally friendly ingredients. Full visibility into the latest regulations and requirements, including rapidly changing food safety requirements and chemical restrictions for REACH compliancy, can be held and applied from a PLM platform.

Green packaging. Package designers need full visibility into green requirements for new projects, as well as the ability to rapidly iterate and prove out light-weighted and reconfigured designs. Virtual prototyping and validation not only saves a great deal of time, but prevents excessive models and mock ups from going to the landfill.

Source local. Supply chain managers may be asked to source more locally to achieve a better carbon footprint while adhering to specification and quality standards. PLM’s ability to track supplier capabilities with up-to-date certifications helps ensure you are optimizing your current supply base and its costs, while still meeting your local sourcing requirement.

Factory simulation. PLM’s ability to quickly generate what-if scenarios that optimize factory productivity ultimately enables you to reduce energy consumption.

► Comparative measures

Ultimately you can only improve what you measure. Understanding and establishing measurements upfront for sustainability is a key first step for success. For example, you may have corporate objectives to measure, such as *“in the next 3 years we want at least 20 percent of our raw material portfolio to be purchased from certifiably sustainable farms.”*

Many of today’s retailer scorecards include sustainability measurements, such as cube utilization, the percentage of recycled content and the percentage of recovery value. With increasing regulation, at a moment’s notice, manufacturers must be able to put their hands on the physical and chemical makeup of their products, down to the constituent level. Tracking and reporting comparative measures and showing improvement is critical to making sustainability progress. PLM enables detailed reporting and appropriate compliance management and makes their results dynamically visible to all stakeholders.

More consumer packaged goods and food & beverage manufacturers are partnering with NGOs to help them establish processes and meaningful measurements to bring more sustainable products to market. Third-party product certifications can appeal to consumers and further strengthen a sustainable brand position. PLM enables you to track certifications to make sure they are accurate and up to date, as well as the tests, process documentation, best practices and other data that support your regulatory compliance and sustainability claims.

You should not ignore the impact of scrap on your green footprint. Sometimes when a shipment of bottles, cartons or labels comes in with a mistake, the packaging can be reworked so the products can be sold; but often they go to the scrap bin. A recent study shows that, on average, companies are scraping 1.4 percent of annual revenues in packaging waste. When you add chemical disposal and their associated fees to that, you suddenly realize how sustainability objectives and key sustainability performance indicators translate into real savings. The study further shows companies that employ technology like PLM reduced their scrap by up to 50 percent in the past year.⁶



The Rainforest Alliance is one example of an NGO that works with businesses in the interest of promoting sustainability:

The Rainforest Alliance is an international conservation organization with over 20 years experience in the development and promotion of sustainable standards in farming, forestry and tourism. These standards protect the environment and promote the well-being of workers, their families and their communities. By shopping for products bearing the Rainforest Alliance Certified™ seal, consumers can support a healthy environment and help to improve the quality of life for farm families. To learn more about the Rainforest Alliance, visit www.rainforest-alliance.org

Lipton Tea, for example, states on their web site that they intend to source all tea in Lipton tea bags from Rainforest Alliance Certified™ tea estates by 2015.

⁶ *Packaging and Artwork Development Process*, Siemens PLM Software and AMR Research quantitative research study, May 2009.

▶ Conclusion

Companies that pursue sustainability have the ability to generate very real cost savings as well as delight consumers, leading to increased market share. Companies that report to a sustainability index outperform non-sustainable companies on a number of key financial measures.

Idea-to-shelf innovation with PLM technology helps you to incorporate sustainability early in the design phase, validate your design to requirements and measure progress against corporate sustainability objectives. Siemens PLM Software's platform provides a single source of product and process knowledge, which enables you to implement, manage and measure sustainability objectives.

About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Industry Automation Division, is a leading global provider of product lifecycle management (PLM) software and services with nearly six million licensed seats and 56,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software works collaboratively with companies to deliver open solutions that help them turn more ideas into successful products. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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