



Sustainability...Shades of Green

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The idea of producing and selling green products has seen considerable media coverage. Ten to fifteen years ago, other than cotton or wool materials, many of us imagined green materials as either agriculturally based or gathered from farms or woodlands and process-created products, which were inferior or under-performed. One imagined green products as having inadequate properties and only found on the fringes.

However, times change and green product launches are accelerating and on a northeast growth curve. Green products are often called sustainable.

The word sustainable has a number of definitions, but one of the most accepted definition, loosely translated, is reducing or eliminating the environmental footprint, atmospheric pollution, waste and residual materials, which would otherwise endure and cause a negative impact on the environment and society. Sustainability implies a legacy and has been described, by some, as an alternative course to imposing a pollution tax on future generations.

FINDING THE WAY

How can a sustainable or green material, process and/or product be characterized? It's not the easiest of

answers and often depends on your perspective. First, it's fair to say, sustainability does not necessarily involve organic materials or products that totally degrade and absorb harmlessly into the soil or environment. In fact, they generally do not. Examples include: conservation, recycling or alternative choices that leave a small or less of a footprint to contend with than a process or material they replace.

Sustainability has been described as corporate America's commitment to its customers, employees and its social responsibilities to the world and environment now and for future generations. Searching almost any Fortune 500 company website, you will find references to sustainability or green in one form or another. Although sustainability objectives may be somewhat different for each company, it's the common denominator for conducting business in a more responsible manner with regard to the environment.

So what is the real-world definition of sustainability and how does a company become green? To purists, green products come from nature and are converted without being processed into a final form without technologies that would be contrary to the concept of harming the environment, no matter how limited. Although a worthy objective, technically it's almost impossible, when you consider the need for electrical energy to transform raw materials into a product or to transport them to a customer. Energy typically requires coal, oil or gas – all hard to define as green. Therefore, in the strict sense, a green product is the ultimate goal, but is rarely obtainable without some amount of negative impact, no matter how small. Even a dyed-in-the-wool environmentalist would agree solar power requires chemicals, metals, plastics and processing to create solar panels with equipment and infrastructure to convert it into a product that can collect the sun's power to ulti-

mately generate energy. Therefore, businesses who offer sustainable products take the approach that modifying processes and products to reduce the overall impact on the environment compared to current methods can reasonably be called sustainable. In reality, there are various shades of green – from pale chartreuse to emerald with the ultimate goal of forest green as the process negotiates through more than one shade before reaching its final objective.

REALISTIC OBJECTIVES

Examples of progresses leading to greener products include the use of recycled polyethylene in composite outdoor decking compared to PVC or treated wood containing unfriendly preservatives. Recycled plastics not only save resources and minimize waste, but also may be priced at or below virgin materials and may have superior properties, all critical in today's competitive marketplace.

Wellman's Eco-Spun recycled textile fiber, manufactured from used soda bottles is bought by companies like Interface, Nike and Patagonia for processing into upholstery and outerwear.

Another interesting sustainable fiber uses polylactic acid (PLA) polymer, primarily from corn feedstock supplied by NatureWorks, LLC and the poster child for biopolymers for use in fiber, textiles and other end-use industries.

Additional biopolymers entering the market include PHBV from Tianan Biologic with 2,000 metric ton capacity, polyethylene derived from ethanol from Brazchem and polypropylene combined with starch and soy from Cereplast.

Not all polymers possess a perfect sustainable story, but are typically "greener" when compared to 100 percent hydrocarbon based polymer.

Another example of progress toward sustainability is a regulation

requiring diesel cars and trucks to reduce soot emissions by 90 percent in the United States which went into effect in 2007; a worthwhile goal and an important step toward a greener environment, yet in the process requires new products in the form of ceramic fiber filtration media based filters to accomplish the task. Is this solution purely green? Of course not, but the net effect is the reduction of soot and of a major pollutant amounting to a net reduction of pollution. None of these examples are perfect solutions, yet they all lead to a greener world compared to incumbent materials and processes.

There are few perfect solutions when considering the entire environmental lifecycle of a material or process to produce a final product, yet companies focus on incremental improvements over existing processes and products as a core sustainability market entry strategy. For example, hybrid vehicles were developed to extend gasoline use and mileage. Ethanol is an alternative to gasoline; the triple pane window is a replacement for single or double panes. None of which represent utopia, but are beneficial and first steps in the right direction and fully acceptable to many customers who seek sustainable solutions.

Last fall, ExxonMobil Chemical announced new process technology, which enables the company to increase its butyl rubber production capacity from its existing plants. Is this a sustainable advance? Of course it is. The process produces higher yields and reduced energy usage. Continuing with energy savings, recently, Duke Energy Corp. began equipping thousands of customers with smart electric meters that “talk” to a centrally located command computer. In addition to notifying Duke to power outages, the system will cut down time up to 9 percent and monitor lost electricity when power lines overheat. In the U.S.’s North and South Carolina, lost power alone equates to 2,000 megawatts or the equivalent to four medium-sized power plants and an enormous reduction of



Nike Air Jordan XX3 made with sustainability in mind.

CO₂, mercury emissions and other pollutants. Energy savings also serves as an example that process improvements can lead to substantial progress on the path toward sustainability.

Underpinning sustainable products, toward the ultimate goal of green requires wise leadership which supports internal funding and a process for continuous improvement. As a first step, companies can begin with waste reduction, which almost always yields cost savings. Waste reduction isn't only about reprocessing scrap, but to a larger degree can be achieved through alternative product design or manufacturing technology, which yields improved product performance and a more sustainable solution. It begins with a new mindset and navigating alternative pathways. Further, companies need to understand that until independent organizations certify green or sustainable processes and products buyers and users may become skeptical, because of excessive claims or less than full disclosure by some. When green and sustainable claims are over-played, it ultimately will lead to disappointment in the market, when it could have been otherwise. Creating the right solution for customer expectations must always be communicated up-front, honestly with complete disclosure and substantiation of sustainable claims.

PRACTICAL LEADERSHIP

In conclusion, many end-use customers are predisposed toward sus-

tainable developments and will migrate toward ecological solutions, assuming price and performance are justified. Tuned-in CEO's are anxious to position green products as a competitive sales tool. Thus, a well-managed effort likely will generate new ideas with products apt to follow.

In the automotive market, Toyota's hybrid vehicles extended gasoline mileage compared to the traditional combustion engine. The hybrid system not only enhanced Toyota's ethos and reputation compared to competitors, but created an entirely new customer base, an important consideration in a highly competitive market. If Toyota were not first to commercialize, others would have gained the market advantage. So, like forward thinking at Toyota, your company might contemplate whether sustainability should play a role in the near future. If companies do enter the market, with a sustainable product, it's critical to be candid with the shade of green being offered otherwise your companies credibility and that of your product are at stake. Rarely are there perfect forest green solutions, but usually a series of incremental steps, which lead to increased sustainability. 

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