Green Business Practices Make Good Business Sense

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In a shortgrass prairie not far from the Cache la Poudre River, in the greater Platte River Basin of EPA Region 8, sits a brewery. On 50 acres of abandoned land once used for sugar beet processing, New Belgium Brewing Company has turned a brownfield into a veritable gold mine of environmental exploration and success. From treating brewing process wastewater on-site to the suntubes that line the packaging hall, New Belgium has made a commitment to the environment every bit as strong as the Belgian style Tripple Ale it brews.

When the brewery first started in 1991 out of a basement in old town Fort Collins, co-founding husband and wife team Kim Jordan and Jeff Lebesch had every intention of making sure they went about their business with the environment in mind. With a small staff and an entrepreneurial spirit, they were able to create a corporate culture where "green" practices were as much a part of doing business as brewing beer. As the brewery grew, so did New Belgium's approach to being an environmental steward. In 2000, the first Core Values and Beliefs were put into print, with two of the ten speaking to an environmental ethic: "Kindling social, environmental and cultural change as a business role model," and "Environmental Stewardship: minimizing resource consumption, maximizing energy efficiency and recycling." It is by living up to these Core Values and Beliefs that New Belgium has been able to continue the journey of running a profitable and environmentally responsible business.

Words and statements are wonderful tools, but most useful when they inspire action. In 2001 the engineering department was inspired by the numbers before them: New Belgium's brewing wastewater was going to cost millions of dollars a year if it was continually discharged to the city of Fort Collins. It was overloading their system, and in return New Belgium faced a hefty Plant Investment Fee. This prompted a discussion that has always been at the heart of what New Belgium does: how can we be more efficient in this situation? With a desire to save the company money, lessen the impact on the city's overloaded water treatment system, reduce the brewery's water consumption and be innovative in their environmental approach, New Belgium decided to implement on-site brewing process wastewater treatment (PWTP).

Completed in 2001, this plant not only treats the process water to below the required effluent levels, but also enables recovery of a significant amount of energy and reduces overall water usage. The layout of this system is essentially: a screen to remove debris, a three stage anaerobic digester, an aerobic lagoon, a bio-filter, and finally an aeration pond. Relying on the power of gravity to move the water from one step to the next, this process requires very little energy to run. The energy recovery, however, is enormous. The brewery process wastewater

has a biochemical oxygen demand (BOD) of approximately 7,500 mg/l, which is typical for the industry (compared to normal household wastewater having a BOD of approximately 200 mg/l). This nutrient rich water is ideal for a bio-digester, where microbes in the anaerobic environment thrive on this food source. As they eat, they produce a very clean biogas for New Belgium, approximately 85% methane, which is captured using a flexible hood that sits atop the anaerobic ponds. The gas is then pumped back to the brewery and used to run a co-generation engine. The engine is tied into the brewery's automated system, turning on to offset peak loads for roughly 5 hours a day. While it's running, the co-gen produces about 50% of the energy supply to the brewery, and in 2003 produced an overall 10% of the brewery's energy for the year, even though it had only been on-line for three months.

Once the wastewater is treated, it has a BOD of 30 mg/l or less. This makes it reusable for tasks like landscaping, evaporative cooling and cleaning. The idea of reusing wastewater in a semi-arid climate where rainfall averages 15" annually just makes sense, and done well, it makes financial sense, too. With an overall investment of about 5 million dollars into the PWTP, New Belgium is already seeing a payback in less than 3 years. These savings are realized as they stop paying all charges associated with discharging large volumes of water, lessen the amount of water being sent to the brewery (as reuse increases), and reduce the amount of energy purchased.

Previously this wastewater was sent to the nearby City of Fort Collins Wastewater Treatment Plant, adding a significant load to the community treatment requirements, and considerable cost to the brewery. Avoiding these extra costs, generating electricity and reusing water all contribute to a payback considered successful by any business standards. And while saving money makes this all worthwhile to most, the non-tangibles seal the deal for the rest. New Belgium saw an opportunity to close a loop and an opportunity to exemplify environmental stewardship. They took advantage of that, and the paybacks on all fronts have been substantial.

It is this underlying principle of *closing loops* that is at the heart of New Belgium's environmental stewardship. You've heard those words said in other ways, like "P2" (pollution prevention), "resource reduction," and "environmental management system." For New Belgium, it is a matter of closing loops that surround the business of brewing beer. These loops come in the form of everything from the packaging materials that protect ingredients as they arrive at the brewery to the energy it takes to make the beer and the administrative resources used to run the show. By looking at the brewery in a process flow sense, it becomes clearer what loops can be closed. In other words, what can New Belgium do to reduce, reuse and recycle?

In 2003, a few brave souls embarked on a journey to compile the environmental efforts at New Belgium using the process flow idea into a document called the

Environmental State of the Brewery. A new, shiny version for 2003 should be available by mid-2004. By focusing on what loops surround the brewery, the document will be used to highlight which of those loops can be closed, thus resources reused and reduced. Financial savings will almost always be realized, and the ecological footprint of the brewery will shrink. Co-workers will continue to have peace of mind that their place of work is also a place of environmental stewardship and innovation.

The Process Water Treatment Plant (PWTP) was a huge step with even bigger paybacks. However it's important to realize there have been a multitude of smaller steps taken along the way. Each success and each failure offers itself as a learning experience and motivation to move on to the next level of running a sustainable business. Certain things cost more, such as subscribing 100% of the brewery's energy use (that is tied to the grid) to wind power. At $0.025 more per kilowatt-hour (kWh), the price begins to add up.

Certain things cost less, like the PWTP and the use of suntubes to capture daylight in our packaging hall and warehouse. No matter what the choice in today's neoclassical economic terms, if environmental savings over the next seven generations can become a factor, something like $0.025/kWh may not seem so large. That being said, a business will get nowhere as an environmental steward if all decisions aren't sound business decisions. Businesses that embrace the stance of environmental steward often see financial gains other businesses miss. It is a solid understanding that what is good for the planet is good for business that makes all the difference for a company like New Belgium Brewing.

For more information about New Belgium Brewing Company and their efforts or to schedule a tour, please call Hillary Mizia at 303-279-0702, or hmizia@newbelgium.com. Please visit www.newbelgium.com.