ECO-INDUSTRIAL SOLUTIONS LTD

HAPPY PLANET FOODS INC, ECO-EFFICIENCY AUDIT

VANCOUVER, BRITISH COLUMBIA

Project Goal

An eco-efficiency audit was completed at Happy Planet Foods, a juice and smoothie manufacturer. The audit included process monitoring, site inspections, interviews with staff from various departments, and a detailed review of operating and quality control data. We were able to identify several potential areas for improving materials and water use efficiencies, resulting in financial benefits and a reduced environmental impact.

Image courtesy of Happy Planet Foods, Inc

Work Completed To Date

We identified two overall strategies that would improve both production efficiency and environmental performance: Increase juice yields and reduce water consumption.

Increase Juice Yields

The study found that current juice yields could be further optimized. We investigated different technologies and determined that a different type of apple press could:

- Improve yields by about 15%
- Operate at double the speed of the existing press, which could reduce the labour costs associated with this part of the operation
- Save raw materials costs by reducing the tonnes of apples needed to produce a given quantity of juice
- Significantly decrease solid waste for disposal or transfer offsite, saving several thousand dollars per year;
- Decrease the amount of water in apple pulp, reducing the energy required to dry it should that be needed to make a more saleable or usable product (several potential by-product synergies for this material were identified)

A simple payback analysis indicated payback of 2.4 years at current production levels. If production increased as anticipated, then the payback would drop to only 2.0 years.

Additional savings or income could result from:
- sale of existing press
- easier sale of lower moisture pomace
- higher utilization rates of more costly organic apples

SNAPSHOT

PROJECT SCALE

Corporate facility - food processing centre

CLIENT

Happy Planet Foods Inc., founded in 1994 in Vancouver BC, produces 100% natural juices and smoothies with no additives, concentrates, flavors or preservatives. 70% of their product line is made with 100% BC certified organic fruits, veggies, and micronutrients.

PARTNERS

- Eco-Efficiency Partnership (Science Council of British Columbia, Canada)
- Grant Thornton, LLP

TECHNIQUE / TECHNOLOGY

- Multi-stakeholder process
- Strategic opportunity assessment
- Eco-efficiency studies
- Interdepartmental EIN

Reduce Water Consumption

There was a significant discrepancy between the consumption reported on Happy Planet Foods' water bill and their weekly estimated water use. Following a preliminary water audit, we were commissioned a second time to do a more detailed water balance and to present water conservation opportunities that would reduce Happy Planet's water bill.

Process water consumption was measured during the pressing, batching & filling, and sanitation shifts. Shift staff, including the Operations Manager and Quality Control Supervisor were also interviewed to determine which activities consumed water, and to help estimate water consumption where it could not be easily measured.

We identified a number of potential opportunities for reducing water use (and improving wastewater quality by reducing biological oxygen demand and total suspended solids at the same time):

- Add controls to the apple rinse stream so that it can be easily shut off when conveyor is not in use. This would greatly reduce apple rinse water.

- Change operating practices to reduce apple pulp spillage and associated cleaning requirements. This will decrease water consumption, wastewater discharge, and levels of biological oxygen demand and total suspended solids in the wastewater discharge.

- Reduce water used for cleaning the apple press and press area by reordering cleaning practices. Working with the press and sanitation operations staff could, for example, minimize the number of cases where workspaces are unnecessarily cleaned twice.

- Promote conservation and preventative maintenance. Promoting a conservation ethic, in keeping with Happy Planet's environmental policies, would contribute to reduced water consumption and, therefore, reduced wastewater discharge.

- Explore opportunities for recycling. While these opportunities may be limited given food safety and quality standards, a creative discussion with quality control and operations staff could yield some suggestions worth exploring.

- Explore constraint optimization and elimination of post-pasteurization area, as recommended by Grant Thornton. This was estimated to reduce labour costs by several thousand dollars per year and, based on the water balance, this would also reduce water use by tens of thousands of litres per week.

Image courtesy of Happy PlanetFoods, Inc

Image courtesy of Happy PlanetFoods, Inc

WHAT IS ECO-INDUSTRIAL NETWORKING (EIN)?

EIN embraces a systems approach and lessons from nature. In practice, EIN creates collaborative relationships (networks) between businesses, governments, and communities to more efficiently and effectively use resources, such as materials and energy, but also including land, infrastructure, and people.

In practice, this results in:

- "Waste = food" synergies
- Multi-objective infrastructure systems (utilities / services)
- Sustainable economic development;
- More efficient land use planning
- Green buildings, technologies & practices
- Greater returns for capital investment
- Leveraged partnerships between public and private organizations; and
- Integral consideration of ecological, social, and economic impacts

318 Homer St, Suite 506 Vancouver, B.C. Canada, V6B 2V2 ◆ 604-737-8506 ◆ info@ecoindustrial.ca
#200, 2825 Saskatchewan Dr Regina, SK. Canada, S4T 1H3 ◆ 306-789-9799 ◆ jc@ecoindustrial.ca

eco industrial solutions

www.ecoindustrial.ca