

# **Kimberly-Clark Experimental Mill**

## **Annual Report for 2014**

### **X-Mill Background**

Kimberly-Clark Experimental Mill (X-Mill) applied for the Green Tier program on February 3, 2006 and was formally accepted into the program as a Tier 1 participant on September 6, 2006. The X-Mill submitted application materials for participation as a Tier 2 participant in June 2009 and a public notice of intent to participate in Tier 2 was issued on January 20, 2010. Tier 2 contract negotiations began in April 2010 and the final Green Tier 2 contract was signed on January 18, 2012.

The X-Mill is located in Neenah, WI and currently employs approximately 35 people. The facility's primary function is to develop and deliver a continuous stream of innovative product and process solutions for primarily the Family Care business sector but also for other business sectors as well. Research projects piloted at the X-Mill have led to and continue to lead to realization of energy savings, waste minimization and other environmental initiatives at other Kimberly-Clark facilities throughout the United States.

### **Green Tier Superior Environmental Performance:**

#### **Environmental Management System**

Implementation of an EMS consistent with the “functional equivalency” requirements of Wisconsin Statute §299.83(1)(dg):

- A written site-specific EMS has been prepared and implemented. An external audit of all elements of the X-Mill EMS in October 2014 to measure compliance with the “functional equivalency” requirements of Wisconsin Statute §299.83(1)(dg). Specific improvement opportunities are addressed through a continuous action plan process.
- EMS program elements are reviewed on a monthly basis (at a minimum) by the facility Environmental Department. An annual meeting is held to review the EMS with facility management.

#### **2014 Projects**

- Replaced a 22-year old compressor with a more efficient variable speed drive compressor. The energy efficiency of the new compressor will save approximately 154,000 kilowatt hours of electricity annually.
- Installed flow meters on the four of the most used vacuum pumps and controlled flow to pump specifications (versus leaving valve completely open). This change reduces water consumption by 8.7 million gallons per year.
- Established a process to reclaim and reuse fabric shower water from the #1 fabric run on the tissue machine, reducing water consumption by 4 million gallons per year.

- Rerouted cooling water from an HVAC unit from the third floor conference room for reuse in process.
- 100% of scrap metal is recycled (a total of approximately 11.73 tons during 2014).
- Upon identifying a leak in the X-Mill's process effluent line during 2013, effluent was immediately diverted to an alternate discharge point. Divers were hired to investigate the scope of the leak and a 16 inch long, half inch wide crack was discovered in the 12 inch diameter effluent pipe, which had released untreated tissue fiber to the canal bed. The divers used vacuum equipment to remove the tissue fiber and it was disposed via the Neenah Paper water treatment system. Once the spill was contained and cleaned up, the X-Mill took action to replace a 40 foot section of the effluent line and added additional ballast to reduce the risk of future issues. In 2014, additional concerns with the effluent line were discovered and piping was redesigned and replaced.
- Groundwater Remediation:
  - Developed an extraction well maintenance program in order to optimize system extraction efficiency.
  - Evaluated the potential ability to shut down a few shallow ground water recovery wells without affecting system performance, which would have saved energy and reduced maintenance and overall operating costs by reviewing and revising the Conceptual Site Model (CSM). However, was determined not feasible at this time.
  - As a result of the extraction well maintenance, increased the rate of VOC recovery.

## **2015 Initiatives**

- Continue to reduce utility consumption. Future energy saving projects may include exploring options for carbon footprint reduction;; replacing fans with more energy efficient models; turning off HVAC systems at night and on weekends; and installing motion sensors/timers in lower use areas of mill (e.g., maintenance mezzanine).
- Continue to reduce water consumption with a goal of 25-35%. Future water saving projects may include additional reduction of EFU seal water consumption, additional reduction in fabric shower water consumption; and replacement of remaining non-closed loop HVAC systems to closed loop systems or modification such that cooling water may be reused in processes.
- Other future projects for recycling or reduction of additional non-hazardous wastes may include removing company name from bulk mailing lists.
- Continuing commitment to advancing groundwater remediation:

- Update the CSM to evaluate potential active remediation enhancements for soil and groundwater contaminant reduction, which would allow the cessation of operation of the pump and treat system in approximately 2 to 3 years.
- Evaluate natural attenuation as a final remedy by reviewing the CSM with the DNR.
- Monitor performance of GWRS-9 and RW-2 which may need replacement in 2015.
- Continue the extraction well maintenance program and evaluate the need for active pumping from RW-2 and RW-5.

## **History (2013 – 2006)**

### Waste

- An outlet for waste plastic pails was established so that 90% of plastic pails are recycled.
- Implemented mill-wide consumer products recycling during 4Q 2012 (e.g., plastic drink bottles, aluminum cans, waste food containers, etc.), resulting in approximately 80% of consumer wastes being recycled versus landfilling.
- Double-sided, non-color printing is utilized throughout the Mill as a default setting for all document printing.
- An outlet for office waste was established in 2006 so that 100% of office waste is recycled. The same vendor is used for office waste and broke.
- 100% of wood pallets are recycled (a total of approximately 2,750 pallets since 2007). Reusable plastic pallets were purchased in 2009 and are now utilized in place of wood pallets in areas where there is high potential for damage to the pallets due to high traffic/movement of material.
- Through a chemical approval process, chemical inventory has been reduced by 75% since 2004. The chemical management process allows the X-Mill to control chemical waste volume. In addition, when possible, chemicals are ordered in smaller quantities to minimize the amount of waste.
- The X-Mill participates in a supervised destruct program for proprietary material generated as part of the paper making process. This material is sent to a waste to energy facility to be made into fuel pellets, thereby reducing landfill waste (approximately 1,300 tons since 2005).
- Since 2010, reduced trash compactor pickups from approximately 4 per year to 1 per year due to recycling efforts.

## Utilities

- An air leak audit was completed in 2013 and 18 air leaks were discovered. All air leaks have been fixed with an estimated 39.0 cfm savings.
- HVAC digital controls were adjusted to allow for valves and dampers to be configured so the air compressor does not run at night when the building is unoccupied.
- Replaced air activated valves with electric ones throughout the mill to either reduce or eliminate air compressor usage in the evenings and on weekends.
- An energy audit was conducted in December 2012. Potential energy saving projects identified as the result of the audit are being explored (dependent on resources available).
- Steam trap and ultrasonic air leak audits were conducted during 2012. Three steam traps were replaced and all air leaks were repaired (35 were identified). The identification and correction of the leaks has reduced the amount of electricity used to run the equipment to meet the operational needs of the X-Mill. Additional receiver tanks were added to the air compressor system in 2011 to reduce the number of times to compressor cycles on/off. In addition, an air dryer was replaced with a more efficient refrigerated dryer and one 125 hp motor was removed.
- Replaced a total of 192 400-watt metal halide fixtures with high efficiency fluorescent fixtures since 2006 (a total reduction of 115,316 kilowatt hours). Replaced 151 250-watt metal halide fixtures with high efficiency fluorescent fixtures since 2008 (a total reduction of 52,405 kilowatt hours). Replaced 175 175-watt metal halide fixtures with high efficiency fluorescent fixtures during 2009 (total reduction of 13,195 kilowatt hours). The total reduction of electricity consumption since 2006 is 180,916 kilowatt hours.
- Programmable thermostats are utilized at the X-Mill facility (programmed based upon a 10 hour day, five days per week) to reduce energy usage when the facility is not in operation (e.g., nights, weekends, holidays, etc.). Additionally, interior facility lighting is programmed to turn off each weekday at 4:30 pm and lights remain off during weekend (unoccupied) periods.
- The X-Mill continues to employ a fork truck usage reduction program, implemented during 2007, by utilizing battery operated power workers. This practice thereby reduces the amount of propane fuel utilized and carbon dioxide emissions into the atmosphere.
- An ultrasonic air leak audit was conducted in November 2008 to identify leaks within the X-Mill compressed air equipment. All leaks identified were corrected during the first quarter of 2009.

## Water

- Two water-cooled air conditioners were replaced during 2012 with one self-contained, closed loop system, thereby reducing water consumption.
- Replaced the open loop cooling system on the large air compressor with a closed loop system in December 2011, thereby reducing water consumption by approximately 65,000 gallons per day.
- Reduced operating pressure for equipment wash up hoses from 160 psi to 60 psi during 2008, thereby reducing water used for machine washing by approximately 50%.

## Groundwater remediation (2008 through 2013)

- Hired an outside contractor, AECOM, in 2008 to review historical and current site data to develop and maintain a CSM for the property which describes historical site usage and potential sources of on-site and off-site sources of contamination. The CSM was completed in May 2009. Recommendations were made to reduce the potential contaminate sources which were contributing to the groundwater contaminant plume and to modify the configuration of the existing ground water extraction wells.
- As a result of the investigations performed to upgrade the CSM, additional contaminated soils were excavated from beneath the parking lot in August and September 2009. AECOM was also contracted to upgrade the existing operating groundwater extraction remediation system. These upgrades were completed in December 2009 into 2010 based upon the results of the prior modifications.
- During 2010, AECOM continued to collect data regarding the effect of the remedial actions performed in 2009. Other actions included mothballing the onsite remediation system and re-routing collected ground water to the municipal WWTP, as well as the replacement of pumps in the deep ground water extraction wells KC-1 and KC-2.
- During 2011, rerouted several of the submersible pump shallow well discharge points from the equalization basin to the sanitary manhole which reduces the system downtime during high groundwater water levels and reduces operating costs.
- Based on one year of data following system upgrades, the pump was removed from K-C No.1, which was subsequently converted to a monitoring well. In addition, the pump in P-9C was replaced. These steps have reduced energy consumption and system maintenance costs.
- During 2012, the following groundwater remediation activities occurred:
  - Monitored levels of DNAPL and determined that the current treatment methods are sufficient to move toward closure.
  - A pump saver was added to K-C No. 2 in October which will save energy.

- The Operations manual for the remediation system was updated to reflect recent changes to the system.
- The CSM was updated to evaluate if additional potential system upgrades were needed and/or if there are additional contaminant sources that need to be addressed. The evaluation indicated that there are no immediate actions which can be taken to enhance the systems performance.
- A vapor intrusion investigation was performed which indicated that the plume beneath the building does not pose a threat to indoor air quality.
- Soil samples collected in the basement of the building were not impacted to a depth of about 18 feet below grade. Dense clays were encountered which are restricting migration of the plume.
- During 2013, the following groundwater remediation activities occurred:
  - Rehabilitated extraction wells BW-2 and P-9C by rehabbing the pumps and cleaning the screens in each well.
  - Evaluation of shutting down some of the shallow extraction wells indicated that the existing system needs to operate as is for the time being due to the fluctuations in free product and groundwater contaminant concentrations observed in the shallow wells. The more in depth analysis undertaken during the CSM revision may provide justification for modifications to the extraction system or other actions which may accelerate site closure.
  - Reduced the groundwater level monitoring program from monthly to quarterly monitoring.
  - Added flow meters to P-9C and BW-2 to better assess system performance on a real time basis and aid in evaluation of system performance and scheduling of well maintenance activities.

#### Other projects

- In April 2009, the X-Mill sold a portion of a parking lot area on the west side of the property (approximately 1 acre) to the City of Neenah for re-development into a permanent green space.
- As a result of City of Neenah re-development activities, the X-Mill has negotiated with the local utility provider to remove and relocate power lines located on supports within Little Lake Butte des Morts. The relocation process began in September 2009, with installation of temporary power lines in November 2009. Removal of supports occurred during the fall of 2010.

#### **Training**

Commitment to training employees on their roles to assist in maintaining a facility that is environmentally compliant:

- Annual Hazard Communication refresher training is required of all employees and researchers/customers.
- Annual General Environmental Awareness training (which includes EMS awareness training) is required for all employees. Additional focused Waste Management and Spill Prevention Control and Countermeasure refresher training is provided annually to employees with roles in waste management or spill control activities.
- All contractors are provided orientation training on environmental and EMS requirements.
- Recycling program elements and significant environmental aspects discussions were added to the X-Mill orientation program for visitors/new employees during 2010.

### **Commitment to X-Mill Environmental Policy Statement**

It is the policy of the X-Mill to promote, support, and continuously improve Environmental, Health & Safety programs. We will aggressively manage these programs in a manner that drives towards elimination of loss to People, Equipment, Material, and Environment.

The X-Mill is committed to this policy by:

- Complying with relevant EH&S laws, regulations, and corporate policies.
- Providing a safe, healthy work environment which focuses on personal injury and illness prevention.
- Establishing a culture that ensures we aggressively manage any potential negative impact to the environment.
- Continuous improvement of EH&S performance by actively identifying and reducing hazards, risks, and variability.
- Educating employees on EH&S principles including how to identify and reduce job-associated hazards, risks, and variability.

### **Economic and other benefits of participating in Green Tier**

Participation in Green Tier has accelerated the environmental cost reduction and loss control initiatives at our facility. Other initiatives include:

- Participation in the annual Scott Get Up & Ride Wisconsin Bike Challenge (co-sponsored by Scott® Brands and Bicycle Federation of Wisconsin) in which employees used bicycles as alternative transportation to work (totaling approximately 15,300 miles in 2014).
- Bi-monthly local blood drives through the Community Blood Center.

- Participation in the Adopt-a-Family and United Way campaigns.
- Shared environmental initiatives and Green Tier participation with the Green Manufacturing class at Fox Valley Technical College in Appleton.
- Introduced the Green Tier program to three other Kimberly Clark “sister” facilities located in Neenah and Marinette.
- Distributed toilet water displacement devices to all employees for use in their home bathrooms for water savings.