



Lean & Environment Case Study: Canyon Creek Cabinet Company Executive Summary



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Lean and Environment Pilot Project Case Study: Canyon Creek Cabinet Company

Project Activities Conducted: May through August 2006

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Project Conducted by:

Washington State Department of Ecology, Hazardous Waste and Toxics Reduction
Program (www.ecy.wa.gov/programs/hwtr)

Washington Manufacturing Services (www.wamfg.org)

Pilot Facility Participant:

Canyon Creek Cabinet Company, Monroe, Washington (www.canyoncreek.com)

Case Study Prepared by:

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The Washington State Department of Ecology’s Hazardous Waste and Toxics Reduction Program (Ecology) and Washington Manufacturing Services (WMS) partnered in a lean and environment pilot project to provide technical assistance to Canyon Creek Cabinet Company (Canyon Creek), a large manufacturer of custom frameless and framed style cabinetry in Monroe, Washington. Ecology provided environmental expertise, while WMS provided lean expertise and management of on-site activities at Canyon Creek from May through August 2006.

The primary objectives of the pilot project were to:

- Evaluate the benefits and synergies of deliberately integrating environmental considerations into on-the-ground lean practices.
- Identify and reduce material wastes, risks, and costs.
- Gain experience to offer and promote lean and environment projects to manufacturers statewide.

Project Activities and Results

Pilot project participants formed teams to address two targeted areas: (1) Canyon Creek’s “Millennia” cabinet line, along with plant-wide milling and cutting operations (addressed by the “Woodchuckers Team”), and (2) the finishing department, where products are stained and coated (addressed by the “Toxics Team”). The teams included cross-functional staff from Canyon Creek and Ecology. Each team used the lean value stream mapping (VSM) method to identify improvement activities, and participated in three, week-long kaizen events to implement lean and environment improvements. During the lean events the teams conducted additional analysis of the sources and costs of environmental wastes.

The collective efforts of Canyon Creek, Ecology, and WMS produced considerable operational, financial, and environmental benefits. Process improvements at Canyon Creek resulted in reductions in lead times, work-in-process (WIP), defects, overproduction, downtime, operator travel time, and material loss and damage. These improvements also reduced the company’s hazardous wastes, solid wastes, wastewater discharges, energy consumption, and volatile organic compound (VOC) emissions. With the decrease in VOCs, Canyon Creek will avoid the need to address additional regulatory requirements.

As a result of the project, Canyon Creek has realized \$1.19 million per year in cost savings through November 2007. The cost, time, material, and environmental savings are shown in Table ES-1.

Table ES - 1 – Annual Cost, Time, Material, and Environmental Savings

| Reductions | Woodchuckers Team | | Toxics Team | |
|-------------------------------|-----------------------------|---|------------------------|---|
| | Annual Cost Savings | Time, Material, & Environmental Savings | Annual Cost Savings | Time, Material, & Environmental Savings |
| Raw Material | \$110,000 | ~1,820 wood sheets | | |
| Hazardous Substance and Use | | | \$128,450 | 68,720 lbs |
| Air Emissions | | | | 55,130 lbs (net reduction in VOCs) |
| Hazardous Waste | | | \$37,100 | 84,400 lbs |
| Energy | | | \$24,000 | 20,680 therms |
| Solid Waste | \$58,000 | 508,000 lbs | | |
| Rejects | | | \$208,000 | 10,400 parts |
| Labor | | | \$624,000 ¹ | 39,000 hours ¹ |
| <i>Cost Savings Sub-Total</i> | <i>\$168,000</i> | | <i>\$1,021,550</i> | |
| Total Cost Savings: | \$1,189,550 per year | | | |

¹ This is a conservative estimate. The additional labor hours were used to fill open positions.

Canyon Creek expects to save an additional \$194,000 in raw material and waste reductions and 2,600 labor hours from the pending investment of three cross-cut saws. The saws are expected to increase the efficiency of wood ripping and reduce the equivalent of up to 37,000 wood sheets per year.

The project also resulted in numerous other benefits, including improvements in product quality, customer service, worker health and safety, and staff morale. Highlights of these benefits include the following:

- Increased production from about 900 cabinets per day on average to about 1,000 cabinets per day.
- Allowed for up to 70 percent additional production capacity before reaching the Clean Air Act Title V permit threshold for VOCs.
- Greatly reduced the number of defective doors that are scrapped and sent for hog fuel.
- Increased the first-pass quality yield rates in two milling departments by 3 and 12 percentage points respectively.
- Reduced lead time in the Millennia product line by 24 percent.
- Reduced floor space needed for work in process in the Millennia line by 590 square feet.
- Improved general workplace organization, ergonomics, and exposure levels.
- Eliminated one shift, reassigning all third shift employees to the first and second shifts.
- Freed first and second shift staff time to assist with other tasks such as continuous improvement activities and equipment audits.

Post-Pilot Project Activities

Canyon Creek successfully sustained the pilot-project results in the year following the pilot project activities. Furthermore, facility management and staff have embraced and supported new lean and environmental continuous improvement activities. These collective improvement activities have improved product quality, increased the production line speed and uptime, and led to cost, time, and material savings.

Conclusions

The close examination of environmental pollution and wastes during lean implementation at Canyon Creek led to the identification of new opportunities to eliminate wastes, improve processes, and reduce costs. WMS and Ecology worked effectively together in providing technical assistance on lean and pollution prevention methods through this pilot project. These combined efforts yielded powerful results for Canyon Creek's bottom line, its environmental performance, and the health and safety of its workers.

This case study summary was prepared for the Washington State Department of Ecology by the Pacific Northwest Pollution Prevention Resource Center and Ross & Associates Environmental Consulting, Ltd. For more information about this pilot project please contact Rob Reuter at rreu461@ecy.wa.gov or 425-649-7086.