



Kansas' Best of the Best Precision Pattern, Inc.

Kansas State University Pollution Prevention Institute (PPI) was established in 1995 as a confidential, non-regulatory agency, with a mission to help Kansas businesses identify pollution prevention opportunities and provide compliance assistance. PPI has worked with hundreds of businesses over the past decade, but through an EPA Region 7-sponsored Best of the Best project, PPI identified three notable Kansas businesses that have taken steps to change the process, change the material, and/or change the technology in the name of pollution prevention and increasing their bottom line. The following case study details the successes of one such Kansas business.

Precision Pattern, Inc. case study

Precision Pattern, Inc. is a division of Decrane Aircraft that fabricates world-class aircraft interiors. The company uses exotic hardwoods, veneers, and state-of-the-art materials to craft interiors that are lightweight, durable, and meet or exceed industry standards. Their manufacturing process includes milling and cutting of lumber, veneering, gluing, machining, coating, assembly, and finishing. This detailed, highly specialized manufacturing process uses industrial chemicals and processes like painting, coatings, solvents, and adhesives.

"We have worked with the Kansas State University Pollution Prevention Institute periodically since 1996," explains Bryan Urban, facilities manager. Over the past several years, Precision Pattern, Inc. (Precision Pattern) has changed material, technology,

and their processes to implement pollution prevention (P2) opportunities that have resulted in drastic waste reductions, emissions prevention, cost savings, and decreased regulatory burden. In addition to changes to their coating, solvent, and adhesive processes, Precision Pattern has also increased energy efficiency and documented financial savings and solid waste reductions related to their air handling and sanding room filter systems. Read on to see that the numbers really demonstrate environmental improvements and significant financial savings to make Precision Pattern one of Kansas' Best of the Best!

Contact adhesives: Change the process

Many of the products Precision Pattern manufactures require use of contact adhesive. Prior to 2004, the facility used a little more than 1300 gallons of contact adhesive each year at a total raw material cost of about \$12,500. Precision Pattern had been using constant agitation and heat in order to keep the adhesive fluid enough to flow from their guns. The heat and agitation released volatile organic compounds (VOCs) and caused the adhesive to dry out before it could be used up. This cost Precision Pattern an estimated \$8800 per year in lost raw material and disposal fees.

Precision Pattern has now made changes that cut this annual expense and loss to only \$550, a 94% reduction! As simple as it may seem, Precision Pattern first talked to the vendor and then successfully changed the process, eliminating the heat and minimizing the agitation of the adhesive. According to Urban, *"The material is now mixed once a day for*

Case study: Best of the best

10 minutes only, and we upgraded our spray gun nozzles to achieve the needed pattern,” reducing overspray, again saving raw material. This change in process has resulted in an annual savings of \$8227, a reduction in raw materials of 880 gallons, a decrease in hazardous waste of 15 drums or 6000 pounds, and a decrease in VOC emissions of 2.5 tons.

Process change benefits (annual)

880 gallons of raw material saved
6000 pounds of hazardous waste reduced
2.5 tons of VOCs reduced
\$8227 dollars saved

Coatings: Change the technology and process

Precision Pattern made two major changes within their coatings operations that have resulted in big savings and employee satisfaction. They recently upgraded their coatings application equipment—a change in technology, and now use a dedicated paint booth for their chrome-coating application—a change in process.

“They spend a lot less time each day cleaning their equipment and now have more time to get their coating work done,” explains Urban, when discussing the benefits of changing to their new coatings systems. For years Precision Pattern used a system that mixed coatings at the pump and then used long, 25-foot spray lines to deliver the coating to the gun and then the part. One of the two new systems now mixes the coatings and solvent at the gun, not at the pump like the old system. The second system uses an air siphon-fed system that pulls the paint from a cup located just below the gun. It provides a better seal, slowing hardening time and extending the life of the paint. It is used for projects that require a solid color. This siphon-fed system requires technicians clean only the spray nozzles between color changes. Startup costs of the new systems were about \$17,500 and \$6000, respectively.

Both of the new systems eliminate the need to clean the 25 feet of spray lines, reducing solvent and pre-mixed raw material waste—significantly reducing solvent use and raw material loss. Urban estimates this change in technology has reduced their solvent use for gun cleaning from 12 gallons per day to five gallons per day, a 58% decrease in solvent use just within the last year. During the first five months of 2004, Precision Pattern saw a 38% increase in production but still experienced a 43% decrease in hazardous waste generated from the paint department. In addition, coating technicians state the new systems reduce their total time spent cleaning and refilling coatings by as much as three hours per day. Maintenance manager, Chuck Harold, adds, *“We used to be called out at least weekly to fix a problem related to the old paint system. This new system has saved maintenance several hours a month.”* This brings total labor savings due to this change in technology to more than \$15,000 annually.



Facilities manager, Bryan Urban, displays new siphon-fed coatings gun system.

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The other coatings change Precision Pattern recently made was to move all of the chrome primer coating to a dedicated booth. *"We call it the green booth, because it is dedicated for the use of chromium primer,"* explains Urban. Changing their process to use of a dedicated booth for their chromium primer allows them to segregate and limit their chromium-contaminated hazardous wastes. This results in decreasing hazardous waste costs and liabilities related to handling a regulated metal (chromium) waste stream.

Inventory Control: Change the process

Urban also instituted tight inventory tracking and control methods as some of his first P2 measures. Inventory control measures instituted include the following:

- Developed a detailed database that tracks material purchases and uses. This helps with inventory control, and waste and air emissions reports.
- All chemical purchases must be reviewed and approved by environmental staff. Weekly inventory dictates purchases, not just requests from individual workers. This has prevented duplicate and excessive material from being ordered.
- Reviewed processes and purchases so that job-specific purchases are made, preventing storage of large quantities of material and their possible expiration before use. Do not always "buy the good deal."
- Receiving staff inspects all new arrivals for proper order and quantities, then dates and labels containers for tracking purposes.

"Our main objectives are to reduce the amount of hazardous materials we use, reduce the amount of hazardous wastes we generate, and reduce the amount of air emissions we put into our environment," Urban stated in a presentation to an audience in 2002.

Lighting: Change the process

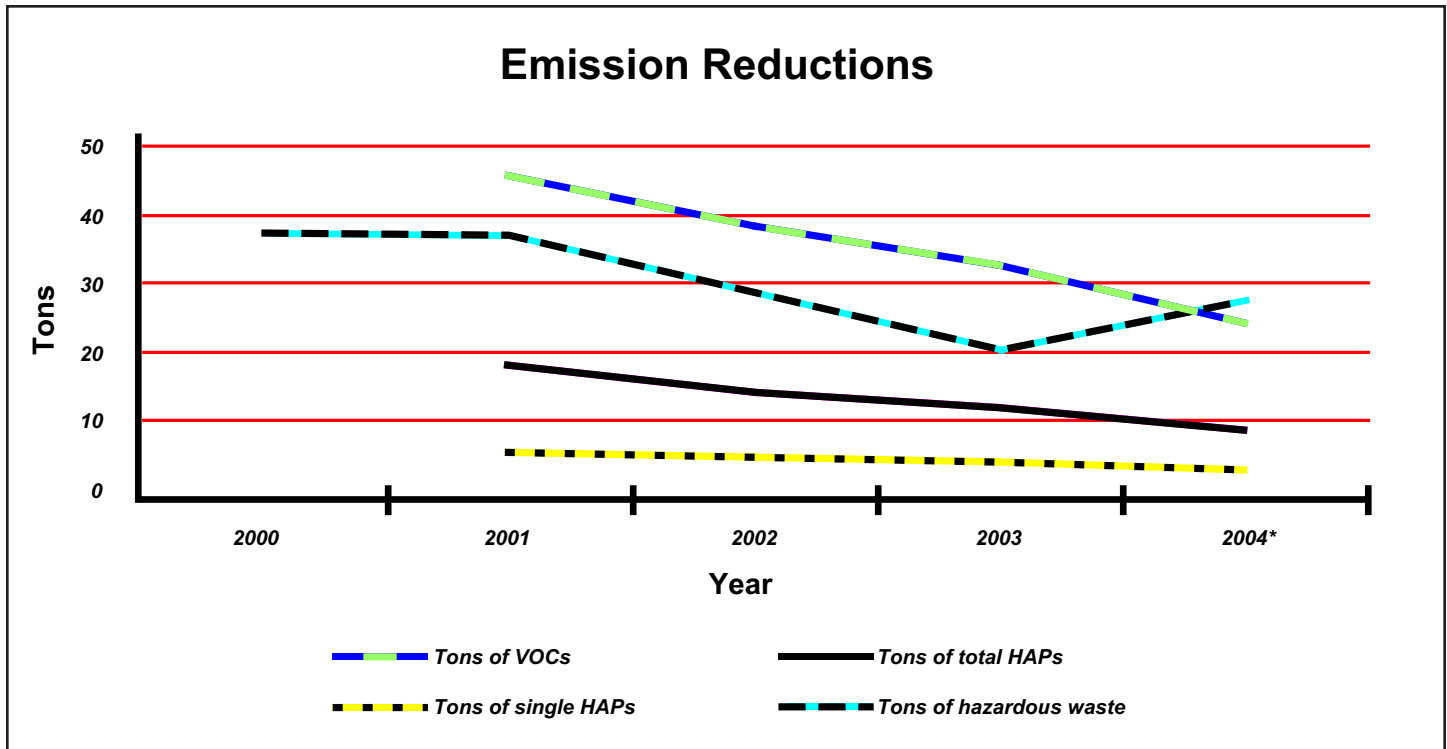
Other simple changes Precision Pattern has made that have added up financially include changing their shop lighting positioning and lamps. *"By adjusting the height and distance between fixtures, we doubled the foot candles at the shop benches using the same number of lights,"* explains Harold. Their lighting vendor used a computer-aided program to provide shop-specific recommendations, including increasing the lighting voltage and decreasing the amperage to cut power use by 30%. These changes, along with use of high-efficiency lights and lamps, have saved Harold and his maintenance staff about one hour per day in time they used to dedicate to changing out lamps. That's a labor savings of about \$4680 annually.

Filter systems: Change the material

Precision Pattern has also switched to using reusable washable filters at their seven wood sanding tables and in their air handlers or HVAC systems. Initial cost for the sanding table filters was about \$10,400. The filters have been in place now for more than three years. The savings over purchasing new disposable filters at \$120 per table each month is an annual savings of about \$10,080. Capital expenses for the new system are just slightly higher than annual expenses for the disposable system. Accounting for the added labor expenses of \$5824 annually to wash the filters, Precision Pattern has already saved about \$12,768, or an annual savings of \$4256. This change in the process has also reduced solid waste volumes going to the landfill.

The changeout to reusable washable filters for the 22 air handlers is not yet complete, but Harold estimates the capital cost for supplying reusable filters to all units will be \$7,360. Annual cost of the current system using disposable filters is \$25,168. With the payback on the filters less than four months, and an average life of five to eight years, this change in technology will equate to a minimum savings of \$118,000 over the next five years.

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*2004 data is projected

Through continual improvement, Precision Pattern has documented VOCs, and total and single HAP reductions of 21.5, 9.6, and 2.3 tons, respectively, from 2001 through mid 2004. They decreased their hazardous waste generation by 17 tons between 2000 and 2003 and are saving about \$70,000 annually in avoided costs and labor. The numbers make it easy to see that embracing simple P2 methods means savings to the environment and the bottom line for Precision Pattern, Inc.—making them one of Kansas' Best of the Best.

This publication was created by Kansas State University's Pollution Prevention Institute (PPI) through a grant from the Environmental Protection Agency (EPA). PPI's mission is to help Kansas small businesses comply with environmental regulations and identify pollution prevention opportunities. PPI services are free and confidential. For more information, call 800-578-8898, send an e-mail to SBEAP@ksu.edu, or visit our Web site at <http://www.sbeap.org>. Kansas State University is an EEO/AA provider.

Where can I get more information?

PPI also operates the Small Business Environmental Assistance Program (SBEAP) for the state of Kansas. SBEAP maintains a toll-free technical hotline, and can visit your facility to review compliance issues and identify pollution prevention opportunities. Call SBEAP at 800-578-8898 or visit our Web site at www.sbeap.org for free, confidential technical assistance. Bryan Urban of Precision Pattern can be contacted at 316-721-3100.



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