

A Successful CMS Program in a Small Manufacturing Operation

Thomas J. Bierma, MBA, Ph.D. and Frank L. Waterstraat, MBA, Ph.D.

Illinois State University

This case illustrates how a CMS supplier implemented a profitable CMS account in a small facility. Two factors were instrumental to the financial success of this program. First, the CMS fee was *significantly* in excess of the previous chemical purchase for the plant (under \$50,000/year). Second, the supplier was able to implement new chemical technologies and process improvements that dramatically reduced chemical usage as well as other chemical-related costs.

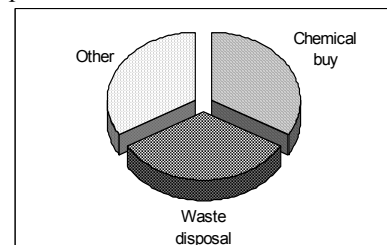
The manufacturer produces a product that is housed in an aluminum canister. Canisters are produced in a process called “can drawing.” Aluminum discs are pressed into the shape of a cup, and then pass through a series of drawing and ironing steps to stretch and form the aluminum into a canister.

Table 1: Example process improvements and benefits from the CMS program.

Improvements	Benefits
<ul style="list-style-type: none"> • Developed custom drawing fluid. • Made cupping and drawing fluids compatible. • Fixed hydraulic fluid leaks. • Improved spray nozzles. • Improved employee training and system maintenance. 	<ul style="list-style-type: none"> • Waste haulage reduced 80% • Process shut-down for fluid change out cut from 13 to 2-times per year. • Odors eliminated. • Dermatitis eliminated. • Product quality at all-time high. • Die re-tooling rates at all-time low.

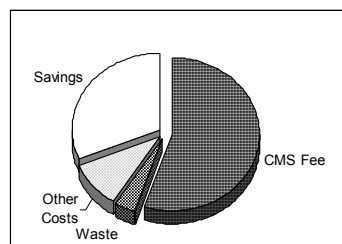
Prior to the CMS contract, operations were plagued with production “headaches” and quality problems. Fluids became rancid every four weeks and more frequently in summer. A “dump and fill” strategy was used to address this problem. Foul odor and contact dermatitis were common complaints from the employees. Additives were used to control bacterial growth and prevent the water and concentrate from separating. Changing out the fluid required shutting down production for an entire shift. The waste by-product was legally hazardous. It included spent cupping and drawing fluid, but also hydraulic fluid that leaked from equipment. In addition all of the rinse water used for cleaning out the equipment was deemed hazardous. Though the annual spend on cupping and drawing fluid was under \$50,000, the plant was spending approximately the same amount of money on waste haulage. In addition, as fluid became rancid, scratches appeared on canisters, producing high scrap costs.

Figure 1. The total cost of chemicals prior to CMS.



To address the problems and reduce costs, the plant entered into a fixed-fee contract with a CMS provider. The provider assured on-site visits at least once per week and shared responsibility for chemical performance. One of the first improvements was the result of incompatibilities found between the cupping and drawing fluids. The provider was able to engineer new fluids specifically for the process. Together, the plant and CMS provider made a number of other improvements. Leaking hydraulic fluid had caused many of the drawing problems. The team tracked down the source of the leaks and more rigid maintenance procedures were implemented to correct them. Fluid spray nozzles were also replaced. The new nozzles applied fluid directly to critical areas of the canisters in appropriate quantities.

Figure 2. The total cost of chemicals after CMS.



These and other changes had a profound effect on process performance (see Table 1). Fluid life was extended six-fold, so fluid is now changed-out only twice per year. Even though the plant doubled the number of drawing machines during this period, the amount of fluid required and the amount of waste generated was cut by 80%. Because the re-engineered fluid lasted longer and fluid change-outs were reduced the production process no longer had to be shut down every four weeks for change-outs. The improved fluid quality resulted in the highest product quality and the lowest die re-tooling rates that the plant had experienced. Odors and dermatitis were eliminated. Chemical additives were eliminated as well.

Figure 1 illustrates the approximate total cost of chemicals prior to CMS. The costs included not only of the chemical purchase, but also waste disposal and other production costs, including scrap and die re-tooling. Plant management recognized that paying a CMS fee in excess of the chemical purchase would be profitable if these “hidden” costs could be identified and reduced by an even greater amount. This is illustrated in Figure 2, where the savings resulted from dramatic reductions in waste and other chemical-related costs, even though the CMS fee exceeds the prior chemical purchase.