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Tosca, Ltd. – Paint Reformulation

Challenge

Tosca, Ltd. is a reusable packaging company based in Green Bay. It manages and services pools of returnable containers for the dairy, produce, meat, and brewing industries.

During the reconditioning process of the cheese containers, Tosca strips and repaints them. They need the paint to last long enough to do the job, including preventing rust during shipping and storage, but they also need the paint to be able to come off easily. The company looked to reformulate the paint so as to minimize the environmental impacts.

Strategy

Tosca wanted a paint that could be removed using a less caustic stripping solution. They also wanted to see if it would be possible to reduce the amount of volatile organic compounds (VOCs) in the paint. With these goals in mind, the company sat down with the paint vendor to discuss the reformulation possibilities.

They ended up carrying out two major reformulations. The first reformulation resulted in a paint that was more easily stripped off. Tosca's paint vendor modified the formulation to an "EZ Strip" formula that worked well to protect the steel components and could be removed in an easy, safe, and more environmentally friendly manner.

This brought them to the second part of their plan. In order to reduce the VOC content in their paint, Tosca worked with the paint vendor to figure out what purpose the VOCs were serving in the first place, and to see if that part of the formulation could be modified while still maintaining all the paint qualities that they needed. They discovered that a large part of the VOCs came from glycol ether, an antifreeze agent. With only slight modifications in paint storage practices, Tosca determined that they could eliminate the need for antifreeze properties in their paint,

Results

Both reformulations ended up providing significant positive results.

The first reformulation resulted in a paint that could be stripped away using a much less caustic solution, going from 30% caustic (sodium hydroxide) solution to 0.66%. This represented a huge reduction in the use of caustic chemicals, which eliminated waste, improved the characteristics of wastewater discharge, and reduced safety hazards on Tosca's work floor.

The second reformulation produced paint with much lower VOC content, from .479 lbs/gallon to .21 lbs/gallon in one formula and from .769 lbs/gallon to .18 lbs/gallon in another formula. This reformulation has resulted in avoiding the release of thousands of pounds of VOCs each year.



The key to the paint reformulation success was to step back and ask the questions that had not been previously asked. Another key was working with the involved stakeholders (the paint vendor in this case) to come up with solutions. Tosca could have just as easily continued to buy the normal paint, assuming that it was the paint vendor's job to formulate paint that best met their requirements. But by sitting down with the vendor, they were able to make known their specific needs and desires for the paint they were purchasing and to significantly improve the product and its environmental performance.

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