A CASE STUDY

Print-on demand for rubber belt marking achieves lean manufacturing initiatives

COMPUTYPE®

Contents

CUSTOMER BACKGROUND

Computype was first introduced to a large rubber manufacturer in the mid-nineties at an executive seminar. Impressed by Computype's portfolio, executives from the rubber company told them about the challenges they were facing in their rubber belt manufacturing facilities with screen printing. This initial meeting lead to a very long relationship between Computype and the rubber manufacturer where they worked together to not only create a better solution, but ultimately a leaner, more efficient manufacturing process.

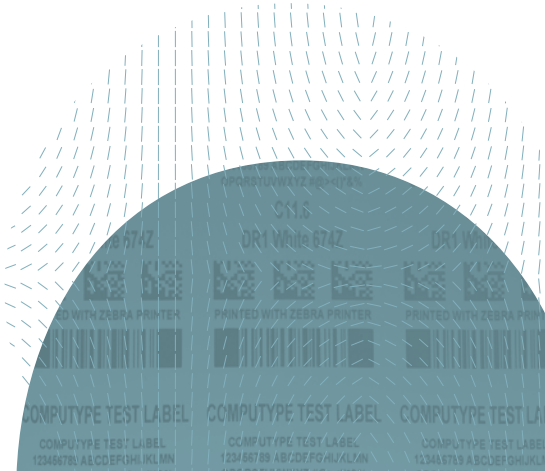
THE CHALLENGE

This particular rubber manufacturer, like many other rubber belt manufacturing companies, was utilizing screen printing to brand rubber slabs at the time they were introduced to Computype. The main alternative to screen printing is pre-printed transfer films, but those didn't fulfill the needs of this particular company either. The main challenge the rubber company was facing in their search for a rubber marking strategy was finding an efficient way to mark variable data on rubber on-demand.

Screen printing involves large equipment, hazardous chemicals and frequent stoppages to print variable information. Most companies that utilize screen printing contain the printing process to a specified print center since most of the equipment isn't mobile and the chemicals used require ventilation. This process required employees to travel between work stations and the print center to mark the rubber slabs. Additionally, to accommodate variable information multiple screens need to be made. The screens are expensive and need to be prepared ahead of time, often taking several weeks to procure. This made printing important information like date codes, lot codes and barcodes very time consuming and costly.

Pre-printing is typically viewed as more efficient than screen printing but it has its downsides as well. Turnaround times for orders are typically around six weeks and variable information is difficult to incorporate since the information is being recorded ahead of time. Incorporating dates often results in waste since orders are made based on production volume predictions, so, if production was lower than expected excess films would be disposed of. Another issue that arises with pre-printed transfer films is increased potential for error. When employees need to trust pre-printed films are properly sorted and prepared for use there is room for potential human error. If an inaccurate film were accidentally picked up and applied to a slab, the entire slab would need to be disposed of.

It's now been over two decades since Computype developed a solution for the problems the rubber manufacturer was facing at the time they met, and over the many years they have been working together, they have found that solutions to one problem often introduce new opportunities for improvement. As a dedicated business partner Computype kept in constant communication with this customer to ensure their solutions were working as planned and to aid in further supporting other continuous improvement efforts.



OUR SOLUTION

When the rubber manufacturer first approached Computype with their screen printing challenge they began working with engineers to develop a transfer film that could be used to transfer ink from a thermal transfer printer onto rubber. The resulting solution was Computype transfer film, which was specially designed for use in thermal transfer printers. Computype transfer film allowed changes to be made to brand designs instantly, eliminating lead times for new screens or pre-printed films. The film was able to be loaded into a standard thermal transfer printer that could be connected to a computer where data could be updated prior to printing. The film was engineered to withstand the vulcanization process so operators could apply the film prior to vulcanization, vulcanize the rubber belts, peel off the strip and the ink will have transferred onto the rubber.

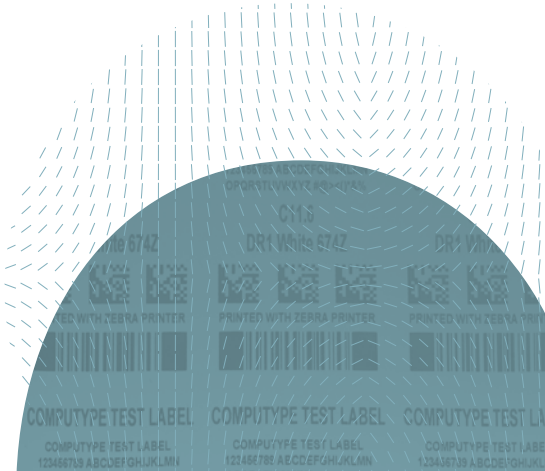
For nearly two decades Computype assisted the rubber manufacturing facility by providing them with transfer film which dramatically improved the efficiency and accuracy of their processes by reducing the amount of screen printing required and allowing for variable information to be recorded while simplifying the printing and application processes.

After all those years, during a routine service visit, a new challenge was brought to light. It was noted that the print quality wasn't quite optimal, and this was for a number of reasons. The root of the problem was that thermal transfer printers are intended to print on paper or synthetic paper-like materials, not transfer film. Printer settings can be adjusted to better suit the transfer film surface, however when this is done improperly it can cause irreversible damage to the printer and reduce print quality over time. These printers weren't designed specifically for industrial environments either, leading to damage from unavoidable environmental factors like dust build up.

In response to this new challenge was a modified thermal transfer printing system designed specifically to provide high quality print on transfer films in an industrial environment. Settings were standardized and pre-programmed into the printer to ensure print quality without harming the printer itself. This also removed the headache of guessing what the optimal settings are for operators struggling to get the quality they want to see.

The setting toggles can also be locked in place so accidental bumps won't affect the print quality. In addition to programming improvements some adjustments were made to the moving parts themselves. Adjustments were made to the tension control reducing the likelihood of creases and misprints in an effort to improve print quality and reduce waste. A sensor was also added to the lid of the printer preventing it from running unless the lid was fully closed, blocking dust from building up within the printer.

It was shortly after the printer was introduced that another challenge was identified. The rubber manufacturer had introduced a secondary color to their rubber marking. With their new strategy their branding information was in color on one side and variable data was in white on the other side. They did this by attaching a single color film to the slab with masking tape, applying the brand, and repeating the process with the variable data in white. Once Computype was made aware of the process behind their multi-colored branding, they were able to work with the rubber manufacturer to develop a more convenient and less wasteful way to achieve the same result utilizing the modified printer.



Prior to intervening, their process required operators to complete the same process twice, so in an attempt to save time and expense, Computype developed a dual-color ribbon that consolidated the process into a single step, ultimately saving over $5,000 annually just in the way of masking tape expense.

As the rubber manufacturing company grew used to the convenience of their improved processes they became aware of even more areas for potential improvement, and another area where Computype was able to help was the print center. The rubber belt manufacturing facility was still utilizing this space for screen printing when it was required, but also housed the modified thermal transfer printers in this area. This meant employees were travelling to the print center to obtain their transfer film sheets prior to applying them at their work stations. Together Computype assisted them in creating a plan to bring individual print stations to each pre-cure work station to eliminate unnecessary movement and potential for human error.

HOW COMPUTYPE HELPED

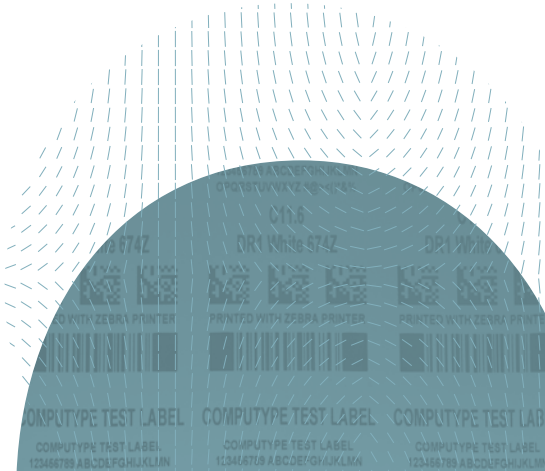
Through developing a single solution to a challenge a large rubber manufacturing company was facing, Computype was able to uncover areas they didn't even realize could be improved and stuck by their side to help them make their processes as efficient as possible. Through assisting them in creating an on-demand print system, developing dual-colored ribbon and bringing their printers to their work stations, Computype helped them to practice leaner manufacturing while improving quality and accuracy.

Lean manufacturing is all about eliminating waste, not just trash, but waste of all kinds. Computype helped the rubber manufacturing company lean up operations by reducing wasted time, physical waste, employee movement and inventory.

When Computype introduced their transfer film to the rubber manufacturing company their employees no longer had to perform the physically stressful, repetitive and time consuming task of screen printing on the levels they once did, saving time and reducing employee movement. They built on the efficiency of the film by introducing the modified thermal transfer printer which improved print quality and increased accuracy, reducing physical waste.

By following up the introduction of on-demand printing with dual-colored ribbon they were able to further boost efficiency and reduce physical waste. The rubber manufacturer's two color process prior to the special ribbon involved performing the same process twice, doubling the amount of time and materials used. The rubber manufacturer estimated they were able to reduce labor time and masking tape use by 50%.

Once the printing stations were integrated waste was reduced even further. Excess movement was removed from the workflow by allowing items to be delivered directly from the warehouse to individual work stations when necessary, rather than taking daily trips to the warehouse and additional trips to the print center. The option for employees to print immediately before marking the rubber also reduced the potential for human error, decreasing opportunities for physical waste.



Computype continues to visit the rubber manufacturer's facility on a quarterly basis for routine printer maintenance. These regular visits have opened up communication between the two companies allowing Computype to not only maintain prior solutions, but continue to uncover and address new needs.

It may have taken several steps, but in the case of this rubber belt manufacturing company, Computype was able to lead them in the direction of lean manufacturing, saving valuable time and money with a single comprehensive solution. Computype continues to listen to and assess the needs of their customers in an effort to form mutually beneficial partnerships.