



# AWT Labels & Packaging



**Joshua Kirk**

Environmental Engineering  
University of Minnesota, Twin Cities

## Company Background

AWT Labels & Packaging is a flexographic printing company based out of Minneapolis, MN. The company came about as a result of a merger between Web Label and Advanced Web, founded in 1991 and 1976. Facilities were combined in May of 2006 and now employ 164 people. A second facility in South Elgin, Illinois was acquired in the fall of 2011. AWT produces high quality labels and flexible packaging for some of the largest consumer goods manufacturers in the nation.



*"This experience has been invaluable to me. It has been a welcome departure from school, where I only interact with my peers. Through this program, I have had the opportunity to learn from press operators, maintenance staff, plant managers, supervisors, technicians, executives, all who have diverse experiences much different from my own. I have made connections with mentors and professionals who know how to operate effectively in a professional work environment." ~ JK*

## Project Background

The project at AWT Labels & Packaging this summer was focused around two major aspects of the printing process: process waste and cleaning solvents. AWT had previously examined waste created while preparing for a printing job, as well as after a printing job in the rewind process, but waste generated during the actual run of the printing presses had yet to be explored. Cleaning solvents are used at work stations throughout the facility to clean printing press components. These solvents contain volatile organic compounds (VOCs) that are a hazard to the environmental and human health. A better understanding of run waste and exploring safer solvents was desired.

## Incentives To Change

In the first six months of 2018, AWT produced nearly 3,400,000 feet of run waste on their four Mark Andy P-Series presses. This adds up to more than \$500,000 annually, not including disposal fees, energy, and production time. Run waste on the four P-series presses is a complex category of waste that was a good fit for an intern to use analysis and lean manufacturing tools to gain insight on what reduction might be possible. In 2017, AWT used more than 16,000 lbs of solvents that are among the safest in the industry. While solvents are necessary for production, examining cleaning effectiveness and creating standard work would reduce VOCs and keeps costs low.



*"The MnTAP Intern Program provided us a resource with a fresh set of eyes, to focus attention on one area of our business in an effort to reduce our impact on the environment. The intern was given the scope of the project and ran with it with minimal supervision, while providing clear, concise updates to the team throughout the project."*

*~ Ann Warzecha*

*AWT Continuous Improvement Project Manager*

# Solutions

## Create Standard Procedure for Roll Change

Currently there is no standard operating procedure for roll changes; even though they occur nearly 300 times a week on the P-series presses and involve both downtime and material waste. The roll change standard work procedure outlines the efficient practices that can be integrated to make roll changes quicker and wastes less material. In addition, the roll change standard work procedure helps bridge the gap between the performance of experienced versus inexperienced operators by providing a format that can be followed and executed effectively at all levels. In total, if the roll change standard work procedure is fully implemented on these presses, a full minute could be saved on every roll change; compounding to more than 240 hours of press runtime gained annually.

## Manually Stop Press at End of Material Roll

Currently, the P-series presses use ultrasonic sensors to determine when base stock cores are expended. The operators will set a minimum outside diameter that corresponds to approximately the diameter of the cardboard core in the interior of the roll. However, the sensors are not infallible and often the cores are not perfect cylinders. Therefore, the operators will tend to set the minimum outside diameters liberally to prevent the roll from being completely exhausted before the sensor trips. This is critical because if the web were to be drawn into the press, the operators would be required to re-web the entire system, which is a time-consuming and arduous process. Concern over this situation causes the amount of material left on the core to be 63 feet on average. Instead, the operators could use the sensors more as a backup rather than a frontline by manually stopping the press at the end of rolls. This would require the operators to

be more attentive when changing rolls, but also has the potential to significantly reduce the quantity of material left on the expended cores.

## Engage Helper for Multiple Roll Changes

Currently operators on the P-series presses must perform roll changes independently, no matter the complexity. However, about 25% of roll changes where a base stock is changed also involve at least two other rolls. A press helper could intervene, and assist the primary operator during these multi-roll changes by focusing on changing simple components such as a waste-wrap-up or a laminate roll. This would divert a press helper from other tasks, but overall the savings from getting the press back online faster would justify the diversion.

## Standardize Current Cleaning Product Use

Currently, AWT uses six cleaning solvents at the press for cleaning components. Use of these chemicals is inconsistent between operators and jobs. Often, a VOC-intensive solution is used when a more benign solvent could be used with similar efficacy and result. Glycol Ether PM and N-Propyl Alcohol are two of these VOC-intensive solvents that have potential to produce significant quantities of ozone when released into the atmosphere. For UV and solvent-based inks, isopropyl alcohol has proven just as effective in cleaning up jobs as both Glycol Ether PM or NP Alcohol. This substitution would result in addition savings.

Recommendation	Annual Reduction	Annual Savings	Status
Create standard procedure for roll change	9,300 kWh 3,000 lbs 240 hours in downtime	\$130,000	Implementing
Manually stop press at end of material roll	20,000 lbs	\$66,000	Implementing
Engage helper for multiple roll changes	2,400 kWh 62 hours in downtime	\$25,000	Recommended
Standardize current cleaning product use	16,000 lbs hazardous solvents replaced	\$14,000	Recommended

**MnTAP Advisor:** Michelle Gage, Engineer