

# Why UV?

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Ultraviolet (UV) activated curing technologies continue to revolutionize the industries where they are introduced. New capabilities unique to UV materials have been developed. Fergesen Systems LLC is proud to specialize in minimal solvent chemical technologies for inks, coatings and adhesives, and in engineering the equipment to apply and cure them. We have found that UV curable inks and coatings can increase profitability in the printing and converting sector by doing everything conventional materials can, but cheaper, faster and in less space. Let's look at how these materials make it possible for a printing business to achieve these benefits.

## UV Inks, Coatings and Adhesives Have Better MPG

Although gallon for gallon UV products tend to be more expensive than oil- and water-based products, they also produce comparable results with a smaller amount of material. For materials that rely on drying to finish the process, the carrier material commonly consists of the majority of the product, and the drying process drives off the carrier. Or, as we like to say, UV products get better mileage. Alternately, UV products are used in similar quantities as carrier based ones to produce a thicker ink or coating on the final product with superior results in look, color intensity, and gloss.

## Savings in Materials and Labor

UV inks and coatings can save 5-20% of raw materials costs by reducing material loss at changeover, startup, blockages, and inconsistent results during the course of the print run. Much of these benefits are due to the unique nature of UV materials. They are solids that remain in a liquid state until the exposure to UV light initiates the curing reaction, rather than drying and changing in consistency over time. This means cleanouts mid process are seldom required and the cleanout process at changeover is simplified.

## Safety and Lower Ecological Impacts Translate into Dollars

When UV materials replace materials containing solvents, the workspace is a safer and more pleasant place to be. They are cheaper to handle because safety and handling procedures are simpler, and require less training and costly equipment:

- In comparison to materials that contain solvents, UV curable materials as formulated for the printing industry do not release volatile organic compounds (VOCs) or other Hazardous Air Pollutants. The facility is spared the expense of elaborate ventilation equipment to mitigate these hazards for its indoor air and for air released outside.
- UV materials are also safer because they are much less flammable and have lower flashpoints than solvent-based materials. These qualities may be reflected in reduced requirements for hazard insurance and explosion-proof equipment.
- UV inks and coatings are not classed as hazardous materials. Thus they are not regulated as hazardous waste as defined in EPA's Resource Conservation and Recovery Act and do not appear on Community Right to Know lists. It is therefore less expensive to dispose of unused materials and empty containers.



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- Workers handling the materials are not exposed to the health risks of many alternative products. Tests conducted thus far with UV materials have found very low systemic toxicity. They are not carcinogenic, nor fetal or reproductive toxins.

### Productivity (Speed & Space)

A key reason that selecting a UV curing option pays off is that it can deliver increases in productivity per hour and per square foot. Thus it will make possible more jobs in the same time frame and more processes in same area. First, since UV curing takes place as the conveyor passes by the UV lamp in a matter of seconds, it can cure more product more quickly than oven-based drying systems. Not only is this process much faster, it typically is completed with less power consumption. Higher hourly productivity usually also means savings in labor dollars.

Second, UV curing systems can be quite compact. Replacing a drying oven with a UV curing system, for example, can free up room to add a second press or a coating system. When small to mid-size printing operations can add coating capacity in-house, they can capture the dollars previously spent to send out coating jobs. Shipping costs to a finishing shop are eliminated. Completed product can be cut, packed and shipped right off the line. The printer can offer the customer a shorter timeline.

### Versatility

UV formulations for inks and coatings have been developed and tested for offset, silk screen, and digital systems printing sheet-fed and web stocks. Conversion possibilities include both replacement or conversion of existing equipment. Some presses can be converted to apply some UV curable inks and coatings with merely a good cleanout and adjustments plus the addition of a unit with an ultraviolet lamp chamber and a conveyor. Roller coaters can also be converted.

Digital technologies have made it possible for printed content to be changed for each imprint. Inkjet systems capable of such printing require many, many inkheads with ink that doesn't dry out. Alternately, the printer may wish to print generic content, add a coating and then overprint customized data with a toner-based system. UV inks, coatings, and systems are compatible with these new modes of printing technology. Fergesen Systems LLC offers UV ink and coating formulations compatible with oil-based, water-based, and toner-based underprinting.

In addition to coatings to overlay offset inks and coatings to overlay digital inks, Fergesen Systems LLC offers a coating suitable to overlay either type of ink. This means that coating equipment can be switched between jobs with either type of ink without any downtime for cleaning and refilling. Whenever this is the case, there are always savings in materials costs, as the remaining product in the machine at changeover would have been wasted. Additionally, only one product instead of two must be kept in stock.

### Looking Forward

New generations of UV curing products continue to emerge. As more of the industry adopts UV products, costs are likely to decrease as volume production and competition will bring prices down.

### About Fergesen Systems LLC

Fergesen Systems LLC was created by Robert Fergesen to meet the needs of the printing industry for reliable and innovative coating and curing equipment. Fergesen Systems LLC grew out of Fergesen Design Company, Inc. (founded in 1981) a business that supports applications for solvent free, environmentally safe, worker friendly coatings, inks, and adhesives. The Fergesen companies together deliver powerful solutions for the printing and manufacturing industries, specializing in water based, hot melt, and ultraviolet (UV) and other radiation (IR, EB) curing technologies.