

CASE STUDY

An Automatic Choice

The Challenges faced

- To achieve color uniformity
- To maintain highest quality throughout every print run
- To equip their press operators with effective tools to improve the quality of their work.
- To increase press speeds.
- To shorten turnaround times between jobs.

The Results achieved

- Improved print quality, decreased ink consumption and substrate wastage
- Maintained colour and colour density stability on every print job, with less manpower
- Considerably shortened press set-up times..
- Significantly increased average press speeds, shortening press run times.
- Precise ink viscosity control.

Is automatic viscosity control worth the investment?

How do you differentiate between each type of control?

I asked Mr. Robert Lauzon of Glopak Industries in Montreal, QC Canada.

His records show that over ten years they averaged about 28% on ink savings alone.

Founded in 1929, Glopak now a division within Hood Packaging with a worldwide distribution of packaging products. They offer a system approach to their customer's flexible packaging needs. They are a fully integrated polyethylene film converter of mono layer as well as multi-layer structures primarily for food packaging applications to the Dairy and Bakery industries.

The Whole Story

In the plastic bag industry the profit margins have always been measured in tenths of a penny, it is a very cutthroat and competitive industry. Glopak realized early on that they could gain a competitive advantage by installing a Color Management control systems on their printing presses. At the time their aim was to lower ink consumption, substrate wastage and customer product complaints; variables that have had a direct negative impact on the bottom line.

Ten years ago they chose a mechanical viscosity control system, a state of the art technology at the time. It effectively replaced the ineffectual and often erratic manual viscosity Zahn cup measurements*. A manufacturer of a fixed falling ball/piston technology, was chosen by Glopak because it had already achieved as being reliable and well-designed. They had 5 presses equipped with these in-pail viscosity control systems; they knew the system inside out. They were familiar with its qualities and its inefficiencies, especially the cleaning and maintenance requirements. Since these systems were installed on presses that had very long changeover times - the cleaning and maintenance times were not critical. The range of control was within 1.0 seconds to 1.5 seconds and this was satisfactory for these slower presses.

Glopak recently purchased a state of the art servo-controlled high-speed Fischer & Kreike 10-colour press. This new press had a 10-colour turn-around time of less than 30 minutes. At a minimum of 5 minutes per viscosity probe they were well beyond the changeover time and they now were wasting time.. Mr. Lauzon had several conversations with suppliers and his efforts acted as a catalyst to the completion of a project that had been in the works

The Solution

Unique Color Management control systems providing:

- Real time, continual viscosity control.
- Precise viscosity measurement interface to manage frequent and minute adjuster fluid additions.
- A user-friendly software program and HMI
- components that defy the term 'short-term obsolescence'.
- CSA/UL CE approved,
- Pneumatic fluid injection system.

A Case Study: Automatic Choice

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This system responded to Glopak's needs; it required no maintenance, it was very precise and with an extra benefit it had no moving parts to wear out or break. Based on the very good relationship with his favorite supplier, Glopak accepted an offer from them to become the Beta test site for their new technology. After a few technology improvements, the system was up and running and surpassed its expected performance within days. The operators having been comfortable and satisfied with the IVP-1 system for many years, it should have been very difficult to impress them. But they were amazed; especially with the tightness of control. In many of the other similarities between the two systems such as operator acceptance, ease of operation, and technical support both systems were very comparable. This newer system has not replaced the IVP-1 at Glopak or elsewhere; it is merely a better answer to the demands of the high precision high-speed presses of the 21st century. In subsequent years Glopak added four more Color Management systems including two installed on OEM installed presses.

*A thixotropic fluid can be described as a liquid that will have different viscosities depending whether it is in motion or in a state of rest and this must not be confused with pumping shear. That is a mechanical shortening of the molecule chain that would cause another sort of viscosity change.

The following table is a comparison of several types of Color Management systems, including an in-line system, a torpedo-type viscosity control system and manual control with a Zahn cup or similar measuring device.

	In-line System	In-Pail System	Torpedo In-line System	Manual Control
Operator interface	19" glass touch screen	CRT with touch buttons	CRT with touch buttons	--
Viscometer Location	True inline installed between pump and ink metering system	Ink pail	Recirculated by-pass loop	Ink pail
Measurement frequency	Continuous	Approximately every 2 minutes	Approximately every 2 minutes	Whenever the operator finds the time
Accuracy	+ /- 5 centipoises or about 0.5 seconds Zahn #2	+ /- 2 - 5 seconds	+ /- 2 - 5 seconds	Often more than 5 seconds
Reliability and Repeatability	99.999%	Depends on quality of maintenance	Depends on quality of maintenance, subject to clogged valves caused by detritus in the ink	Poor as compared to one operator, comparison of readings not feasible between operators
Cleaning method	Cleans automatically during wash up	Manual hand washing	Flushing cycle after each measurement	Manual rinse
Cleaning time	0	About 5 minutes for each sensor	15 - 30 seconds	At operator's discretion
Maintenance requirements	Not needed, no moving parts	Ball and cup need to be well kept and not left in ink to dry, some parts will eventually wear out	Regular maintenance to disassemble, clean valves, tubing and torpedo	Replace cup frequently
Down-time frequency	Never	Often for cleaning, repairs, and overhaul	Frequent valve jams requiring technical expertise to repair	Not applicable
Injection amount	Calculated based on deviation from set -point, fine tuneable	Calculated based on deviation from set -point, fine-tuneable	Fixed & prorated	At operator's discretion
Operator acceptance	Once used, adopted forever	Appreciated but cleaning is a hassle.	Accurate when in operation but frequently down due to blockages.	It's simple! But time consuming

It is important to note that Zahn cups (efflux cups) were developed to measure non-thixotropic liquids (like motor oil) for the petroleum industry. They were not developed to measure paints, coatings and printing inks that are thixotropic* and this is specifically stated on the corresponding data sheets. As tighter control of the printing inks was required and since there was no other accurate and easy-to-use viscosity-measuring tool specifically for thixotropic liquids, the Efflux cup was adopted by the general printing industry, even though the accuracy of these cups does not guarantee accurate viscosity measurements for paints, coatings and printing inks. They can be useful when monitoring changes of individual inks. Efflux cup readings should not be compared to different ink colors or formulations.