

Case Study

Ink cooling reduces solvent consumption and provides excellent savings on a flexographic printing press

Industry: Print and Packaging

Application: 8-colour CI flexographic press

Background

A leading Mumbai based converter, manufacturing flexible packaging laminates, has an 8 colour European CI flexographic printing press. Jobs include both surface and reverse printing on films that run at a maximum speed of 300 metres per minute; the maximum web width is 1350 mm. Solvent based inks with a viscosity of 18-20 secs (B4 cup) are used. The customer sought to reduce ink and solvent consumption to improve operating margins.

Process

On each print station, an ink circulating pump delivers ink from the tank to the chamber. As the print run progresses, temperature of the ink rises. It stabilises at a high temperature over time. This high ink temperature results in higher solvent evaporation, which in turn increases the top-up solvent consumption.

Solution

A heat exchanger was needed to reduce ink temperature to a level that reduces solvent consumed, without hindering the process. Critical design parameters included temperature and flow rate of the ink, permissible pressure drop of the application and quantity of heat to be transferred through the heat exchanger. We evaluated the application data through heat exchange and CFD modelling to arrive at a compact design with optimal performance.

The Valflow Ink Temperature Stabiliser (ITS) uses water as the medium of heat transfer. It has a dependable (leak proof) construction and has a low pressure drop. It is sleek, easy to clean and simple to retrofit.

Result

Without the ITS, ink temperature in the tank (and chamber) stabilised at 32°C. Productivity was at optimum level. On introducing the Valflow ITS, ink temperature was brought down to 28°C. Lowering ink temperature by 4°C saw a reduction in top-up solvent consumption by 33%, while maintaining the same printing performance.

Conclusion

Annualised savings after installation of a Valflow ITS, with associated accessories, water chilling plant, etc. is significant and translates into a pay back period of less than 11 months!

