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14009 · Volume 23 · December · **4-2018**

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# New solvent recovery unit at Bischof + Klein in Konzell

**David Roth**

*In March 2018 package print shop Bischof + Klein (B + K) began operating the ASC-300 solvent recovery unit from Ofru at its production plant in Konzell, Germany. This unit removes residues of flexo inks from the contaminated cleaning solvents and recovers it on-site at the customer facility to a high degree of quality.*

With regards to solvent recycling Bischof + Klein is a “repeat offender”, as the first ASC-300 device was ordered and put into service already at the end of 2009. This system collects contaminated solvents via a piping system covering the entire printing site at Konzell. These solvents are then distilled in a highly automated operation and the recycled or clean solvent is distributed to the flexo printing machines to serve their integrated (online) cleaning systems. This not only avoids the handling of potential harmful solvents, but also reduces the in-house transportation of dangerous goods.

### Expansion of distillation capacities

Because of the positive business development and the related expansion of the Konzell site, the demand for solvents has steadily increased. This triggered B + K from mid-2015 on to consider increasing their distillation capacity. In the course of the evaluation process the solution became apparent which was to continue operating the ASC-300, which is installed in the ink kitchen and to increase the throughput with a second such distillation unit. The order was placed in late summer 2017 based on the

experience with the first distillation unit from Ofru.

### High safety standards and automation

Nitrocellulose (NC) inks as frequently used in flexo printing can cause exothermic reactions (fire hazard) if handled incorrectly. Therefore, the ASC-300, like its older “sister-model”, has been equipped with a safety package for the safe distillation of NC-containing solvents. In addition, extensive equipment options have been installed that allow highly automated operation with virtually no manual intervention.

### Continuous solvent distillation

After the automated run of the continuous solvent distillation (controlled by a Siemens S7 process control system), the remaining solvents are evaporated and the ink residues are concentrated. At the end of the sump distillation, the remaining paste-like ink residues are disposed of in a level-controlled container. After the distillation vessel has been drained of the ink residues, the distillation vessel is



The production site of  
Bischof+Klein at Konzell

Source: Bischof+Klein



## A medium-sized manufacturer of distillation technology

Ofru Recycling GmbH & Co. KG is a medium-sized family-owned company founded in 1978 and located in Alzenau, Germany, on the edge of the Rhine-Main area operating as a manufacturer of recovering units for solvents.

As a technology leader, today the company is one of the worldwide leading manufacturers in the industry. The product range includes modern distillation units or vacuum distillation units for flammable and aqueous solvents or cleaning agents. In addition to

small systems of up to 50 litres daily volume, fully automatic evaporators are available with a capacity of up to 2000 litres/hour.

The recycling units prepare a variety of solvents: Almost all of which are combustible solvents. Examples of alcohols are ethanol, isopropyl alcohol, n-butanol. In the ketones: acetone, methyl ethyl ketone, methyl isobutyl ketone. In the esters: ethyl acetate. In the aromatics: toluene, xylene just to name the most significant. Typical solvents in packaging printing are

ethyl acetate and ethanol in flexographic printing, toluene in gravure printing and all known organic solvents for washing out the flexographic printing plates or sleeves in the analogue pre-press.

The company's success features include extensive process engineering know-how from many industries and a modern development department. Target customer segments are packaging converters, printing ink manufacturers and the chemical industry.

evacuated, filled with dirty solvent and a new process cycle of distillation begins. This mode of operation allows the Ofu units to recycle volumes of up to 1000 litres of contaminated solvent per shift.

### The distillation process

The solvent to be distilled is held in a conical vessel enclosed by a heating jacket with internal electrical steam generation for best heat transfer. The process starts very quick after switching on the unit.

Self-adjusting conductive PTFE scrapers, which agitate the feed to be distilled, rotate within the vessel. In doing so, they remove solids from the vessel walls as soon as they form, in order to maintain a permanently high heat transfer. The solvent distillation within a vacuum environment keeps the evaporation temperature and the heat losses low. Thus, not only is the contaminated solvent recov-

ered, but also the costly cleaning of the distillation unit is eliminated.

### Summary

For Bischof + Klein, in-house solvent recovery with Ofu units represents a real benefit, as the contaminated solvents from the print-

ing process are automatically collected, recovered and reused. This significantly reduces the costs for purchase and storage of fresh solvents. In addition, not only do the cost of logistics and external treatment cease to apply, but also the volume of waste to be disposed is significantly minimized.

View of the installed ASC-300 distillation units



Source: Bischof+Klein

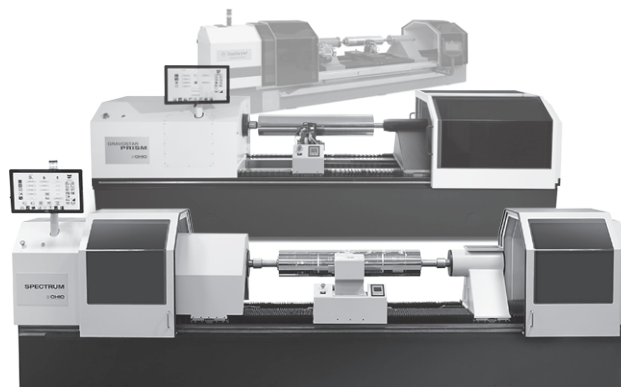
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