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Eliminating the bottleneck

New solvent distillation equipment became a matter of extreme urgency for flexo tradeshop Chespa Flexosysteme

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The German subsidiary of the Chespa Group makes continual investment in modern equipment and environmental technology. This includes investment in modern distillation equipment for printing plate solvents. Chespa Flexosysteme is a young and ambitious company with its headquarters in the city of Leipzig/D. The company offers printing plate production, printing inks and cutting dies from a single source. The German subsidiary was set-up in 2002 alongside the main plant in Krapkowitz/PL, a strategically important manufacturing site for flexo polymer plate production. The group has a workforce of more than 300 employees in six sites. Printing plates and photopolymer sleeves are manufactured at its headquarters in Poland, in addition to the production of printing inks and cutting dies. In Leipzig, photopolymer flexo printing and varnishing plates are produced. As is the case with other companies, Chespa focuses on well-established international suppliers. The printing plates are supplied by DuPont, Flint Group and MacDermid in thicknesses from 0.76–6 mm (0.03”–0.24”). The group supplies customers in Germany, Switzerland and Eastern Europe collectively, including Belarus, the Ukraine and all of Russia.

Left: Chespa team in Leipzig.

Centre: Distilling FlexoSol at Chespa with the ASC-150 24 kW.

Right: Cross-section of the distillation vessel.



Chespa has extensive experience in distilling solvent-based washout solutions. By 2009 the old distillation equipment no longer had sufficient capacity, so a new one was required capable for plate production of 3000 sqm (32,292 sqft) per annum. The aim was to achieve a continuous distillation rate of 50–60 litres/h for distilling and recovering FlexoSol washout solution. In the meantime the temporary bottleneck in the supply of solvent was resolved externally by Biesterfeld Chemiedistribution based in Frankfurt/D who recovered 12–15 barrels of FlexoSol per month for Chespa in Leipzig. Consequently, the search for a suitable supplier of a new solvent distillation plant became a matter of extreme urgency.

In 2009 the European Union promoted investment to support projects in Saxony, the state where Chespa is based. Chespa Flexosysteme naturally wanted to make optimum use of the funding as part of its modernisation. The new distillation equipment for the washout solution should have a good price-performance ratio, and in best case scenario some funding money left over for other purchases.

In order to make a purchasing decision, the products of three distillation equipment manufacturers were investigated. Ofru Recycling was chosen for three reasons: the good price-performance ratio, the

design with its steam heating technology in particular and, finally, the steep conical distillation vessel with its easy cleaning potential.

Integration into the printing plate production

Integration of the distillation unit meant incorporating it into the production process. Printing plate production is carried out using an EskoArtwork CDI Advance 5080. After imaging, the photopolymer flexo printing or varnishing plates are exposed in a DuPont exposure unit/finisher and subsequently washed out in one of two DuPont processing units.

Flat brushes oscillate and round brushes rotate in the opposite direction inside the processing unit, washing out any parts of the plate which have not been exposed to light during the exposure stage. FlexoSol from DuPont is used to dissolve the unexposed polymer. Fresh solvent is stored in a tank which is connected to two washout units, and several pumps supply the processing units and the solvent tanks during the process. The former tanks from the old distillation device, each with a volume of 1000 litres, were connected to the Ofru distillation device without any problems.

The ASC-150 distillation equipment

An Ofru ASC-150 24 kW was selected and installed to recover and distil the FlexoSol. The solvent re-

Managing Director Ofru Recycling, Babenhausen/D.





Emptying the ASC-150 of photopolymer residue.

covery system is the smallest unit within the professional ASC series which has an integrated steam heating generator. The double jacket steam heating had already been developed by *Ofru* in 1997, replacing conventional thermo-oil heating, and has been used very successfully since. The principle of steam heating is implemented in an intelligent manner. A small amount of water is heated and saturated steam is produced at a maximum pressure of 10 bar (145 psi). At the start of the day the heating phase takes approx. 1 hour. High output rates of *FlexoSol* can be achieved over the course of a day with a relatively small distillation vessel due to the high energy density of the steam within the heating jacket.

The distillation equipment is filled with solvent using a fully automated process with the fill level being about 80 litres and is always kept at a constant level. The equipment only stops the filling process at the end of the continuous distillation period (approx. 6 hours) and concentrates the *FlexoSol* solvent at a predetermined viscosity and residual solvent content. Scrapers which are in intimate contact on the inner walls of the vessel guarantee optimum distillation with simultaneous cleaning.

The steep walls of the cone are scraped and not the bottom of the unit. The energy yield is extremely high and the steep angle enhances the removal of polymer residue.

At the end of the sump distillation period the equipment automatically drains from the

bottom of the unit into 200 litre drums. A roller conveyor facilitates the loading of drums onto Euro-pallets for disposal of the residual waste at a later date. The drums and their contents are incinerated when disposing of the residual waste.

Chespa Flexosysteme currently operates the ASC-150 with 24 kW steam heating for a few hours each day in an 8-hour operation. The constant output rate is around 50–65 litres per hour, with approx. 78 litres at peak times. At the end of the day 400 litres of clean *FlexoSol* are available for the processing operation.

Positive effect

The *Chespa* group placed itself in a strategic position within Germany and Eastern Europe at an excellent time and invested in modern production and environmental technology. The company made the right decision with regards to the future. Recovering *FlexoSol* inhouse with an *Ofru* ASC-150 brought many advantages. Currently only approx. one tonne of fresh solvent is bought in each month whereas a few years ago this figure was three times higher. Furthermore, a large percentage of the solvent had to be distilled using an external recovery source. The purchase of the ASC-150 distillation unit paid for itself very quickly. The business is continually expanding, thus guaranteeing that the distillation equipment can soon be fully utilised in a 24 hour operation.

Chespa is proud of its environmental activities and is a member of several flexo printing associations and provides customers with excellent service. A mission statement which is carried forward each year within the market in an exemplary manner.

→ www.chespa.eu

→ www.ofru.com