

OSMO develops a new acid treatment concept

In close collaboration with a customer from surface engineering, OSMO has developed a new concept for the recovery of depleted acid baths from the production of printing plates.

More than 75% recovery of phosphoric acid with a new nano-filtration process²

The aluminium surfaces of printing plates are treated in a pickling bath during production. This process removes a small quantity of aluminium, which then remains in the acid bath. Since, depending on the desired quality of the product, a certain percentage of metal in the acid bath must not be exceeded, fresh acid needs to be added from time to time or the acid must be replaced. This produces an acid-aluminium mix, with only a small portion of original acid recoverable by traditional processing techniques.

The percentage recovered with OSMO's new method is over 75% and of a quality comparable to that of fresh acid.

Successful pilot test followed by a concrete order

Since process conditions with 20% phosphoric acid and 50°C process temperature are extreme for the membranes used in the described technique, the application was initially tested for its quality in the MEMCELL OSMO laboratory. Following positive preliminary test results, the customer carried out pilot tests lasting several months in order to gain information about expected service life of the membranes. Since no negative changes in membrane retention and flow rate could be measured, an order for the supply of several plants was subsequently awarded to OSMO.

The new acid treatment method reduces waste and also the use of fresh acid.

External disposal no longer required

The new OSMO treatment technology replaces previous external disposal. The current waste quantity is reduced by a factor of 6 with the installation of nanofiltration and re-cycling of recovered acid furthermore reduces the requirement for fresh acid by a factor of 4 – demonstrating the practical economic benefits of the new treatment technology.

The client uses high-quality phosphoric acid in this example of an application. The method developed by OSMO may, however, also be used for the regeneration of other acids: The ELOXAL process likewise removes aluminium ions, generally with the use of sulphuric acid. Initial field trials confirmed that the new technology holds the promise of new approaches or uses in this field as well.

² | The nanofiltration process is purely physical, i.e. no additional chemicals are used. The process of separation by nanofiltration is similar to the generally more familiar reverse osmosis. The separation effect relies on different diffusion rates of metals contained in the acid.