

WATER RECYCLING SOLUTIONS FOR THE AUTOMOTIVE INDUSTRY

Against the backdrop of ever-greater water scarcity, there is a growing awareness within manufacturing of the need to conserve and recycle this precious resource. The automotive industry is one of the largest consumers of water, and therefore one of the key target groups for waste water recycling.

Before car bodies can be painted, they need to be cleaned. This occurs during pretreatment. Following the activating baths (degreasing and zinc phosphating), the car bodies enter the rinse tanks, which generate the lion's share of waste water. To reduce consumption, the rinse water is cascaded back to prior rinse tanks, in the opposite direction to the movement of the car bodies.

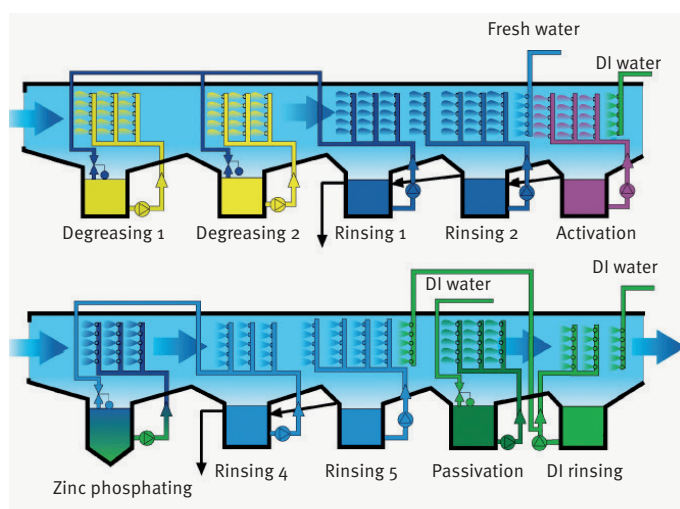


Fig. 1: conventional pretreatment in the automotive industry.

The automotive industry stands to benefit from the implementation of water conservation measures in many ways.

- Lower consumption of fresh water
- Less waste water and therefore reduced consumption of chemicals for cleaning
- Lower waste water discharge fee
- Reduced investment costs

The most common water saving methods are bath treatment systems that extend the service life of the baths (ultrafiltration at the degreasing bath stage, filter presses at the zinc phosphating stage), water recirculation via ion exchangers, and combined membrane processes or evaporators (for small volumes of waste water).



Fig. 2: ultrafiltration in the degreasing bath.



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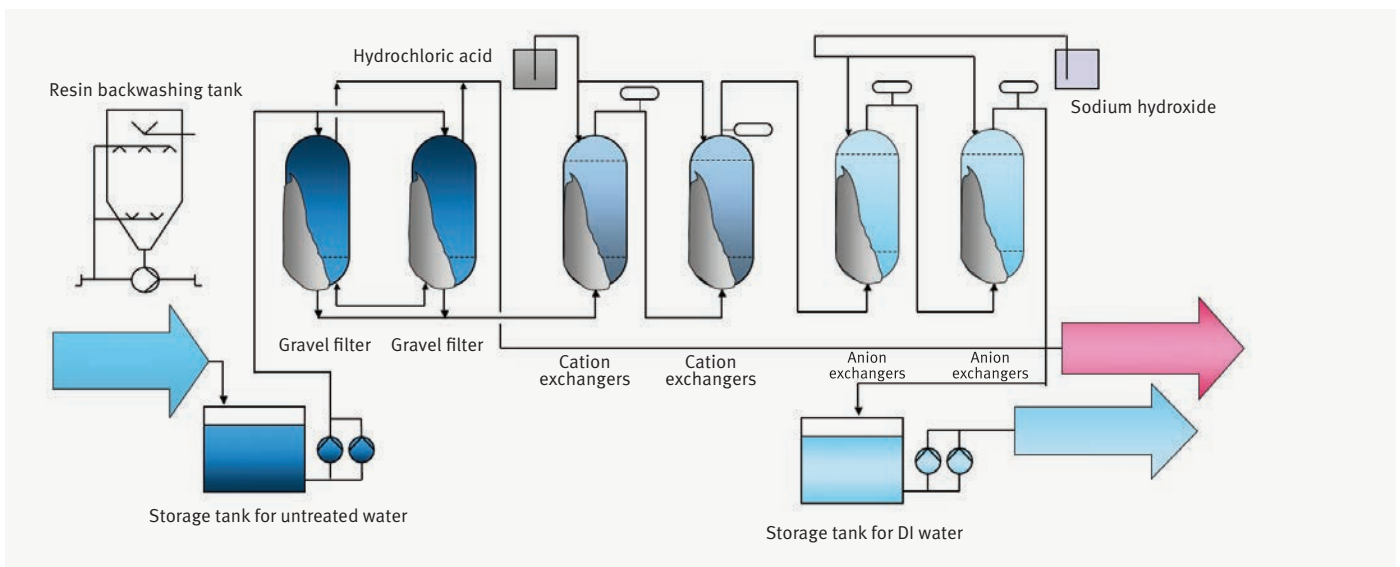


Fig. 3: continuous fluidized bed process based on ion exchangers

The remaining waste water is generally cleaned using a chemical/physical treatment. Precipitation technology is employed, primarily to remove heavy metals.

Waste water from the acid and alkaline rinsing systems is collected separately from the waste water from the degreasing bath. It is then transferred for continuous neutralization (cf. fig. 4). Depending on the consent limits, further treatment steps may be necessary.

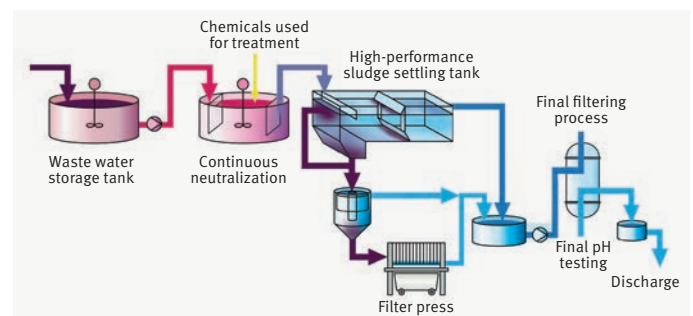


Fig. 4: continuous neutralization.

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