

FeCl₃ Regeneration

Closed-loop regeneration of FeCl₃ during etching of steel



How does it work?

During the etching process, the FeCl₃ becomes exhausted, since FeCl₂ enriches.

The Fe-regeneration-system continuously reoxidizes FeCl₂ electrolytically to the higher valency and recirculates it to the etching machine.

With regeneration and two-stage-filtering, the etching agent retains a constant quality.

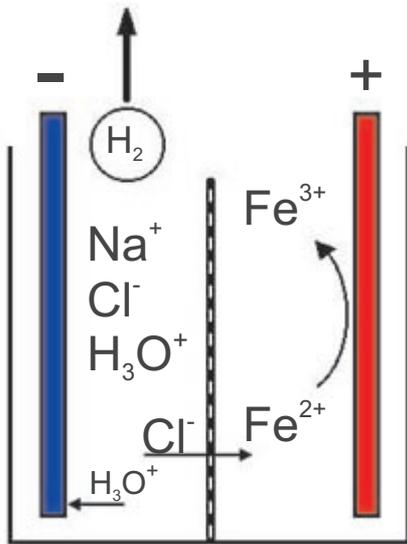
Your benefits offered by the Fe-regeneration

- increase in production capacity up to 50%
- Constant etching rate
- Reduced refinishing costs
- Reduced personnel and operating costs
- Reduced disposal costs
- Modular design, can be configured to any capacity
- Can be retrofitted to all etching machines easily, economical even for small systems
- Process fluid regeneration according to German Water Management Act

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Regeneration principle



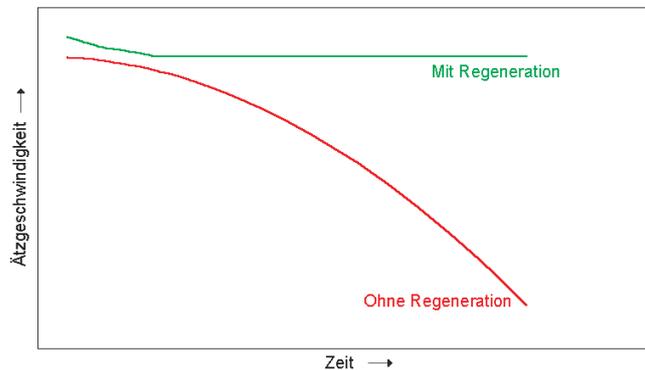
The electrolyzer is designed as a two-part chamber whereby an ionselective membrane separates the anolyte and catholyte chambers from one another.

The exhausted etching agent (Fe^{2+} -ions) flows along the the anode and is reoxidized to a higher valency (Fe^{3+} -ions) by the electric current. The chloride ion “missing” in the Fe^{3+} passes through the membrane from the catholyte chamber into the anolyte chamber, thus producing the charge.

The regeneration is controlled by a redox measurement, so that overregeneration is prevented. The etching rate drops with decreasing redox potential (Proportion of $\text{Fe}^{3+} / \text{Fe}^{2+}$).

Thanks to the regeneration, the redox potential is maintained at an optimal value to prevent the etching rate from dropping.

Ätzgeschwindigkeit über der Zeit



Connection of a regeneration plant to an etching machine

