CONDIAS
CONDUCTIVE DIAMOND PRODUCTS

reuse & recycling

In order to save the resource water the recycling of water in industrial applications gets more and more important.

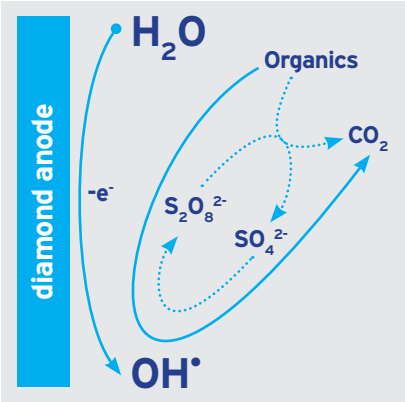
Reusing and recycling water is a key part of reducing the pressure on our water resources. To reuse industrial water in a safe and sustainable way is one of the biggest challenges for many companies. The product portfolio of DIACHEM® electrodes provide water recycling and treatment solutions for different industrial processes.

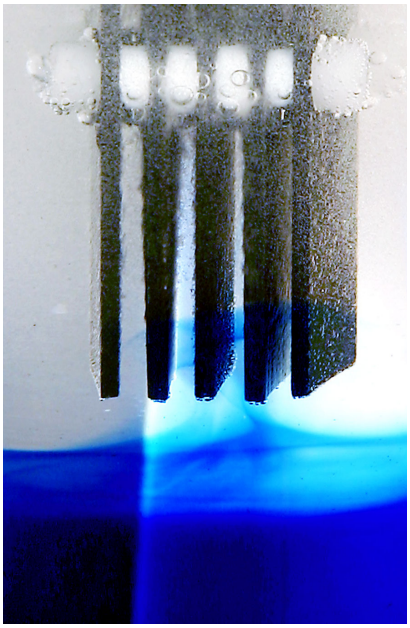
One highlight is the use of DIACHEM® electrodes in the semiconductor industry. The biggest goals in the mass production of the semiconductor industry are cost reduction and increasing process stability. DIACHEM® electrodes are the main components of our partners' innovative technology which is used for resist removal in the semiconductor industry. Traditionally a mixed solution of sulfuric acid and hydrogen peroxide is used for the wet etching process. With this new technology high oxidative Caro's acid is directly generated from the sulfuric acid by electrolysis. The Caro's acid reacts to sulfuric acid, which can be recycled into Caro's acid again. This technology minimizes the environmental impact and reduces costs by recycling the wet etching solution. Our partner Kurita America Inc. uses this innovative technology to enter the semiconductor market.

Another success story regarding this topic is related to the use of DIACHEM® electrodes in the printed circuit board industry. This technology provides the opportunity to reuse the copper of the printed circuit boards. The peroxomonosulfuric acid is directly generated from the sulfuric acid and solves the copper from the printed circuit boards and deposits it at the cathodes. Approximately 95 % of the solved copper can be used again for different applications. The Eilenburger Elektrolyse & Umwelttechnik GmbH is our partner and distributor for this innovative technology.

Technology

For water treatment diamond electrodes offer the possibility to form hydroxyl radicals simply by water electrolysis with highest current efficiencies.
The organic can be directly destroyed by the hydroxyl radicals or by the generated peroxodisulphates. The result of the oxidized organic is always gaseous, that means that there is no need for other treatment methods like filtration and separation.





DIACHEM® electrodes while operating the Electrochemical Advances Oxidation Process EAOP®

Benefits of EAOP® using DIACHEM® electrodes:

- Formation of peroxodisulphates leads to a reaction in the whole volume
- Opportunity to build systems for electrolysis without metal electrodes
- Substrate material can be silicon or graphite
- Reduction of chemicals
- Removal of organic and microbiological parts

Potential

The innovative DIACHEM® technology provides solutions for applications, which need a high oxidative power and require low maintenance. An interesting business field could be the cleaning of different water cycles or rinsing baths in the optical or electrical industry from organic or microbiological parts. This technology is very energy efficient and can be combined with solar power to feed the electrodes.

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