



The diamond electrode by Schunk

Modern wastewater treatment has never been
this economical and efficient





The substrate makes the (cost) difference

The previous technology for diamond electrodes for wastewater treatment relies on niobium as substrate. The disadvantage is the high, material-related manufacturing costs.

Schunk replaces the niobium with highly conductive silicon as a substrate, which reduces material costs. Our substrate as an electrically conductive volume body opens up a maximum of freedom in electrode design and in application-specific adaptation.

Technological competence for a clean result

Our core competencies in carbon and ceramic materials, their application-specific flexibility as well as our machining and coating processes, are the basis for excellent results.

For this, know-how in diamond coating plays a central role. In production, we combine all steps from engineering to substrate pretreatment all the way to coating to create an efficient, high-quality process.

A real jewel in industrial wastewater treatment

Schunk's innovative coating technology enables the production of diamond electrodes based on a particularly economical substrate. The result: a highly efficient cleaning process with significantly reduced acquisition costs.

Diamond electrodes set technological benchmarks in the treatment of wastewaters and many other contaminated fluids. Compared to conventional purification processes and electrodes, diamond electrodes offer a much broader range of applications, are very corrosion-resistant and additional oxidizing chemicals become superfluous.

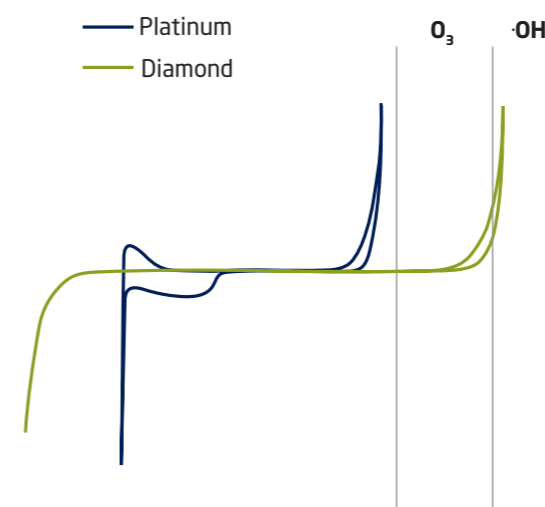
A new level of quality in wastewater treatment

This new technology is predestined for application areas in industrial wastewater treatment where, based on the level of pollution, conventional methods cannot be used or only at a very high cost. At the same time, the purification process should be as non-hazardous as possible for the people and the environment. This also holds true for the disinfection and hygienization of process waters – from cooling water circuits to ultra-pure water systems.

In addition to industrial wastewater treatment, diamond electrodes also open up potentials in the synthesis of oxidants or analytical processes.

Diamond electrode for waterwaste treatment

Largest known overvoltage for oxygen and hydrogen evolution



Schunk has the advantages of diamond electrodes ...

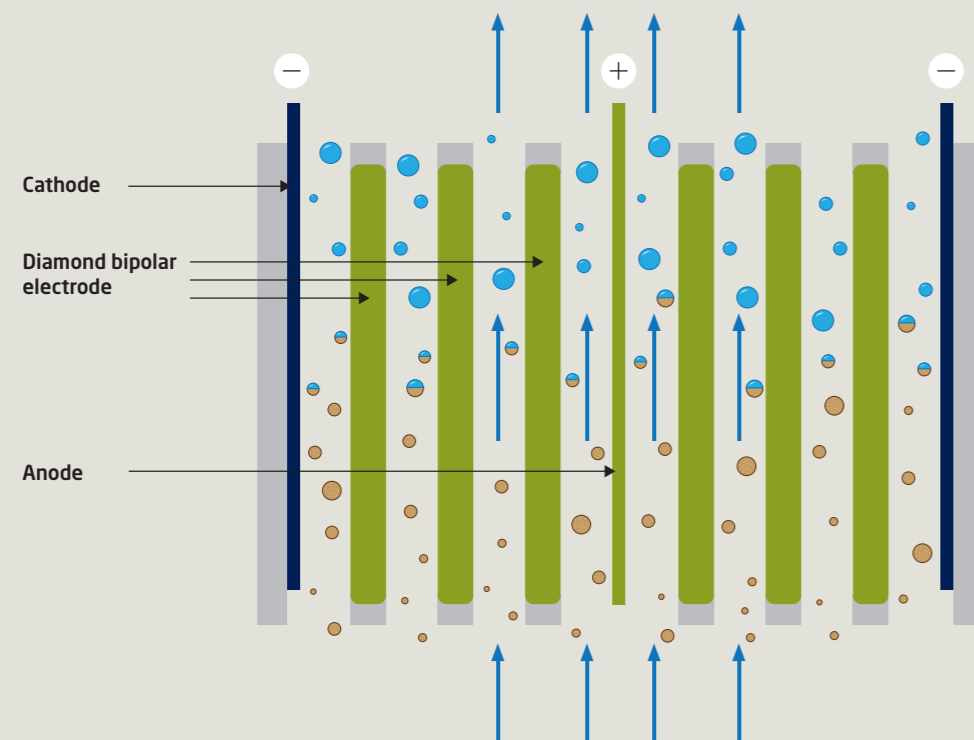
- ▮ Largest known overvoltage for oxygen and hydrogen development
- ▮ Close to 100% electrical efficiency for the production of OH radicals in water
- ▮ High corrosion resistance of the diamond coating
- ▮ No chemicals need to be used or stored
- ▮ Safe decomposition of hazardous materials at any time, even at varying waste water compositions
- ▮ Simple and convenient technical handling
- ▮ Cathode material made of solid and porous carbon material possible
- ▮ Suitable for batch and continuous in-line processes

... reduced to an economic denominator.

- ▮ Low cost: replacement of the commercially available niobium substrate with monocrystalline or polycrystalline silicon
- ▮ High material availability: silicon substrates can be produced in higher volumes
- ▮ More flexible design: individual electrode and cell design through mechanical substrate processing



Set-up of a flow-through cell for electro-chemical wastewater treatment or synthesis



Schunk – A worldwide success. Always at your side.

Schunk is the world leader in the development, production, and application of carbon, ceramic, quartz and sintered metals solutions. Like no other, Schunk combines innovative strength and technological know-how with an extraordinary service orientation to supply a range of performances unique to the market. Schunk is a partner who offers you all the technological possibilities of a globally active company and can implement your ideas pragmatically and tailor-made to your requirements - whether these are for industrial large-volume markets or highly specialized niche markets.

The Schunk Group

The Schunk Group is a globally operating technology company. The company is a leading supplier of products made of high-tech materials - such as carbon, technical ceramics and sintered metal - as well as machines and systems - from environmental simulation and air conditioning to ultrasonic welding and optical machines. The Schunk Group has more than 9,000 employees in 29 countries and achieved sales of €1.2 billion in 2020.

Schunk Kohlenstofftechnik GmbH

Rodheimer Strasse 59-61

35452 Heuchelheim \square Germany

Phone +49 (0) 641 6080

Fax +49 (0) 641 608 1223

E-Mail division-carbontechnology@schunk-group.com

schunk-carbontechnology.com

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