

# INNOVATIVE ELECTROCHEMICAL REACTOR FOR ECONOMICAL AND EFFICIENT REGENERATION OF SPENT ACTIVATED CARBON

 PATENTED TECHNOLOGY

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## ABSTRACT

The *University Institute of Materials of the University of Alicante* has developed an ingenious electrochemical reactor that allows the regeneration of spent activated carbon from different industries with an efficiency between 90-100% quickly, selectively, very economically and in the same facilities where the spent activated carbon is located. Moreover, it is an environmentally friendly technology.

This new reactor has two possible configurations and is very versatile, since it allows the regeneration of more than 100 kg. of activated carbon saturated with pollutants from different industries, such as: wastewater treatment, water purification, gas and liquid purification, metal recovery, food and beverage production, chemical and pharmaceutical industry, etc.

It is looking for companies interested in acquiring this technology for its commercial exploitation through patent license agreements.

## ADVANTAGES AND INNOVATIVE ASPECTS

### ADVANTAGES OF THE TECHNOLOGY

The electrochemical regeneration of spent activated carbon is characterized by the following **advantages** over current methods:

- 1) One of the reagents used are electrons, so it can be easily **supplied by a direct current source**.
- 2) The process **can be immediately interrupted**.
- 3) It can be applied in the **same facilities** where the material to be regenerated is located (in-situ).
- 4) It has a **high selectivity**.
- 5) **Less carbon dioxide (CO<sub>2</sub>) emissions** are emitted.
- 6) It has a **lower energy consumption** than thermal regeneration.

### INNOVATIVE ASPECTS OF THE TECHNOLOGY

Unlike current methods of regeneration, this new electrochemical reactor **allows recovery any type of spent activated carbon used in different industrial sectors** -water and gas treatment, pharmaceutical and chemical, etc.- **at pilot plant and industrial level in real conditions**.

Therefore, currently, this novel electrochemical reactor is the only available on the market that **allows in-situ regeneration of exhausted activated carbons** in the 10-15 kg. scale, which it can be easily scaled to more than 100 kg.

## MARKET APPLICATIONS

This technology allows electrochemical regeneration of spent activated carbon from different industries, including, among others:

- Wastewater treatment and water purification plants.
- Treatment of combustion gases.
- Gas and liquid purification.
- Metals recovery.
- Food and beverage production.
- Pharmaceutical sector.
- Chemical industry.
- Synthesis of catalysts.

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COLLABORATION SOUGHT

It is looking for companies interested in acquiring this technology for **commercial exploitation** through **patent license agreements**.

Company profile sought: Spent activated carbon regeneration.

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