



PROTECTING MAN AND ENVIRONMENT

aerated activated carbon filtration

Abstract

A Flemish company, specialised in purification techniques based on activated carbon, has developed a new wastewater treatment technology: a certain quantity of oxygen is added to an activated carbon filter, in this manner the activated carbon functions as an adsorber AND catalyst for chemical oxidation. The company is looking for a commercial agreement with technical assistance. The offer includes skilled product design that can help incorporate the technology.

Description

A young and innovative company in Flanders, Belgium, specialised in purification techniques based on activated carbon, has developed a new technology which involves the addition of an accurate and efficient amount of oxygen (from air) to a classic activated carbon contactor (even if the filter is already in use). The activated carbon acts as a catalyst for chemical oxidation processes and by addition of oxygen, aerobic bacteria (freely swimming in the water or attached to the activated carbon) are encouraged to grow and metabolise difficult biodegradable molecules (bio-regeneration in-situ).

Mainly in the wastewater purification systems, activated carbon is frequently used to remove recalcitrant, non-biodegradable compounds from wastewater. By adding extra oxygen to the system, the adsorption capacity of activated carbon, with respect to certain molecules like phenol, increases when the treated water contains high concentrations of oxygen. What is happening is that, in addition to adsorption processes, the chemical (catalyst) and biological oxidation (biofilm) of contaminants is stimulated. This results in the following advantages:

- a) a longer, even permanent lifetime of the activated carbon filter and
- b) a lower concentration of recalcitrant, non biodegradable molecules

However, the growth of bacteria on activated carbon can cause negative effects: an activated carbon filter can blind by an excessive growth or where anaerobic bacteria form sulphides, can cause an undesired odour and colour. Therefore it is important that the COD parameters are very well known so that the system can be designed and controlled to produce positive results. Once this parameters are known, it is possible to design an aerated filtration system that allows reaching the limits of discharge with a longer lifetime of the activated carbon as a result.

The company is looking for other industries who are willing to improve the efficiency of their wastewater treatment by implementing the technology.

Innovations and advantages of the offer

The aerated activated carbon-system stimulates a synergy of different reactions: adsorption, filtration, biological purification and oxidation.

The system offers the following benefits:

- Extended/Permanent activated carbon bed life. On one location, no saturation has been detected for 4 years till now, while theoretically the carbon filter should be saturated after 3 months.
- A rapid stabilisation of the system biology within the carbon bed that is able to cope with toxic shocks.
- Recalcitrant non-biodegradable molecules in the wastewater are metabolised as well as the easily biodegradable organics.
- Nitrification (only at very low loads).

Current and Potential Domain of Application

textile industry, waste treatment industry, wood industry, chemical and food industry, ground remediation, truck and tank cleaning.



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Technology Offer

aerated activated carbon filtration

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For further information (including IPR status)

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